

Sacramento Valley Water Quality Coalition

Nitrogen Management Plan Summary Report Analysis 2017 Crop Year

Prepared for
Central Valley Regional Water Quality Control Board

Prepared by
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EXECUTIVE SUMMARY

Subwatersheds within the Sacramento Valley Water Quality Coalition (SVWQC) (Coalition) collected Nitrogen Management Plan Summary Reports (NMP Summary Reports) for the 2017 crop year that were sent out to SVWQC members within high vulnerability areas (HVAs). The individual Subwatersheds assembled member data and submitted aggregated data for further analysis. A total of 2,544 NMP Summary Report survey forms were sent to members with parcels in HVAs of which 2,198 forms were returned. The returned forms were reviewed and checked for errors and omissions, and members were contacted to correct any noticeable errors. While data quality was generally improved in 2017 compared to 2016, the first year of reporting, and a significant effort was made to correct all errors, some errors may have gone undetected.

Nitrogen (N) consumption ratio summary statistics were calculated by crop for each township and for the whole Coalition. Summary statistics included minimum and maximum values, percentiles (10th, 25th, 50th, 75th, 90th), and outliers (greater than 90th percentile) calculated for following parameters: ratio of applied nitrogen to yield (A/Y); ratio of applied N to N removed (A/R); and the difference between applied N and N removed (A-R).

Additional statistical analysis of the effect of soil type and irrigation type (as identified in member Farm Evaluation Surveys) on outlier status was also completed. Results indicated several townships had a small number of records which limited the relevance of the statistical analysis and/or actual applicability of the outlier determination. Some A/Y values were outliers in an individual township but near average when compared to the overall Coalition. For the smaller acreage crops, the Coalition-wide comparison provides a more useful assessment of outlier status than the township level analysis. The soil and irrigation statistical analyses were limited by sample size and showed little significant effect of these factors on the frequency of outliers across the Coalition.

Results will be provided in individualized summary reports to each member in fall of 2018 as part of the Coalition's education and outreach program. The individual NMP summary reports provide member growers with information on the status of A/Y and A/R values for each of their parcels relative to the township in which they reside.

1 INTRODUCTION

The Central Valley Regional Water Quality Control Board (RWQCB) developed the Long Term Irrigated Lands Regulatory Program (LTILRP) to address surface water quality and to add new groundwater quality monitoring and reporting requirements for agricultural irrigated land. The new requirements were adopted as Waste Discharge Requirements (WDRs) and an associated Monitoring and Reporting Program (MRP). The Sacramento River Watershed WDRs for members of the Sacramento Valley Water Quality Coalition (SVWQC) were adopted March 12, 2014. The requirements for reporting and monitoring specified in the WDR are dependent in part on whether an operation is within a high or low vulnerability area, based on threat to groundwater quality.

High vulnerability areas (HVAs) for the Sacramento River Watershed were identified in the June 2014 Groundwater Quality Assessment Report (GAR) and in subsequent revisions to the GAR in January 2016 and November 2016. Under the WDRs, growers in HVAs are required to prepare and implement a Nitrogen Management Plan (NMP) and an NMP Summary Report annually. SVWQC is required to summarize member nitrogen (N) data to fulfill WDR requirements for the Coalition's Annual Monitoring Report. This summary requires the following: "At a minimum, the statistical summary of nitrogen consumption ratios by crop or other equivalent reporting units and the estimated crop nitrogen needs for the different crop types and soil conditions will describe the range, percentiles (10th, 25th, 50th, 75th, 90th), and any outliers."

This report satisfies Report Component No. 19 – Summary of Reported Nitrogen Data of Attachment B of General Order No. R5-2014-0030-R1. Report Component 19 directs that, "The third-party shall aggregate information from Members' NMP Summary Reports to characterize the input, uptake, and loss of nitrogen fertilizer applications by specific crops in the Sacramento River Watershed." Parameters used to assess N consumption are the ratio of N applied to yield (A/Y), N applied to N removed (A/R), and the difference between N applied and N removed (A-R). For each of these parameters, the minimum and maximum values, percentiles (10th, 25th, 50th, 75th, 90th), and number of outliers are summarized by crop for each township and for the whole Coalition. Outliers are defined by the RWQCB as any member N consumption ratios greater than the 90th percentile of other values. In addition, a statistical analysis of the effects of soil type and irrigation practice on N consumption ratios is presented.

The Coalition will also report back to each member, separate from this report, A/Y and A/R estimates for each of the member's parcels compared to other growers of the same crop in their township. An example of this report is provided in Appendix C.

1.1 BACKGROUND

The area covered by the SVWQC's WDRs encompasses all of the Sacramento River Watershed; however, the data in this report only covers the Valley floor portion of the SVWQC with HVAs designated in the November 2016 revision of the GAR. The SVWQC is operated as a partnership between 13 local subwatershed groups coordinated by the Northern California Water Association (NCWA) (Figure 1). The subwatershed organizations provide leadership for grower outreach and education about the importance of implementing practices protective of surface and groundwater quality, while NCWA, the third-party recognized by the Regional Water Board, manages development and implementation of surface water monitoring, annual reporting, and other Coalition deliverables, such as this report. Irrigated agriculture of the SVWQC extends over 1.3 million acres, roughly 8% of the Sacramento River

Watershed (excluding rice, which is covered under a separate RWQCB order). The remaining approximately 92 percent of the Sacramento River Watershed consists of open space, riparian vegetation, and urban development.



Figure 1. Subwatersheds within SVWQC.

Only 7 of the 13 SVWQC subwatersheds contain HVAs as identified in the November 2016 revision of the GAR which was used for NMP reporting for the 2017 crop year (Solano; Yolo; Sac-Amador; Colusa-Glenn; Butte-Yuba-Sutter; Shasta-Tehama; and Placer-Nevada-South Sutter-North Sac) (Figure 2). The GAR evaluated land use in conjunction with soils and agronomy information and reviewed potential hydrogeologic vulnerabilities to identify practices or physical characteristics that pose a greater risk to groundwater quality impact than other areas. Further analysis then paired these results with groundwater quality data to refine the vulnerability conclusions. The vulnerability analysis was performed at the section level (1-mile square) for each Public Land Survey System (PLSS) section.

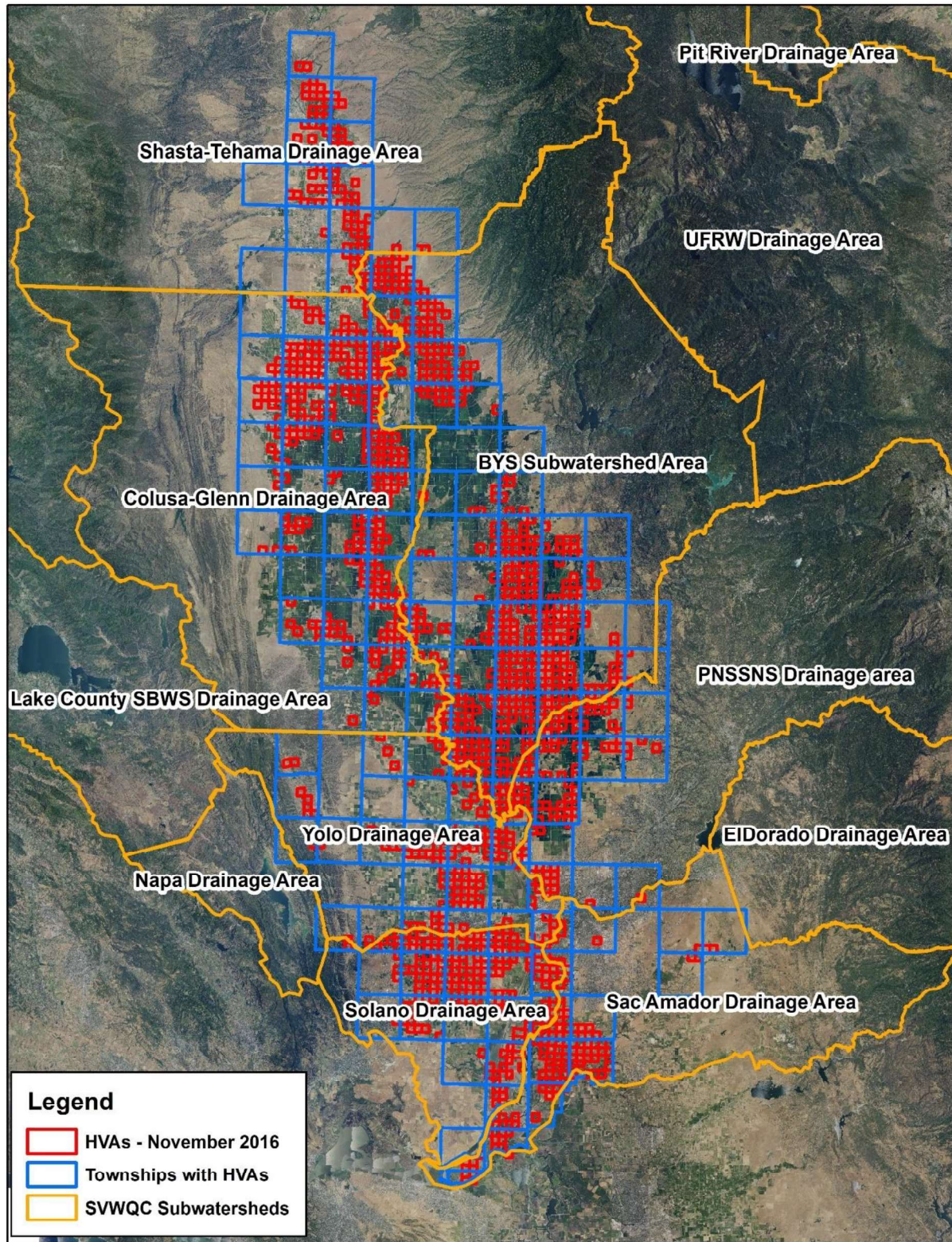


Figure 2. SVWQC HVAs from November 2016 Revision to GAR

1.2 PURPOSE

The purpose of this report is to summarize SVWQC member N data to fulfill the following WDR requirements for the Coalition’s Annual Monitoring Report:

Table 1. Summary of Order Requirements for Member Reported Nitrogen Data

Order Requirements – Page 144 of WDRs	
1	Aggregated information from members’ Nitrogen Management Plan (NMP) Summary Reports;
2	An assessment of NMP Summary Report information for, at a minimum, comparisons of farms with the same crops, similar soil conditions, and similar practices (e.g. irrigation management);
3	A statistical summary of nitrogen consumption ratios by crop or other equivalent reporting units and the estimated crop nitrogen needs for the different crop types and soil conditions will describe the range, percentiles (10 th , 25 th , 75 th , 90 th) and any outliers;
4	A tabular or graphical presentation of the data approved by the Executive Officer (e.g. box and whisker plot);
5	A quality assessment of the collected information by township (e.g. missing data, potentially incorrect/inaccurate reporting), and a description of corrective actions to be taken;
6	An aggregate of the data submitted by members in an electronic format, compatible with ArcGIS, identified to at least the township level.

2 DATA COLLECTION, QUALITY AND ANALYSIS

Grower NMP Summary Report data was collected by each subwatershed within the Coalition, then compiled and analyzed as described below.

2.1 SUMMARY OF GROWER DATA COLLECTION

On the NMP Summary Reports, growers report the total amount of N applied (A) (lbs/acre), and A/Y, the ratio of total N applied per acre to yield (Y) per acre as the indicator of N removed at harvest. Growers may also provide yield which is not required but is requested by the Coalition as reporting yield helps to prevent A/Y calculation errors. When possible, yield is converted by the Coalition to the amount of N removed at harvest (R) using published values of N sequestration in crop tissue (Geisseler, 2016). The Coalition uses the amount of N removed to determine A/R and A-R.

NMP data is reported by members at the level of Management Units (MUs) which represent any fields or assessor’s parcel numbers (APNs) that are managed for nitrate in a similar way. Some members reported data for individual fields while others reported data for a group of fields that were managed similarly. Some MUs may have fields or parcels that are not contiguous and in different townships but are managed similarly for nitrate.

Members submitted NMP Summary Reports to the applicable subwatershed which then entered the data into a standardized Microsoft Excel template. A total of 2,544 NMP Summary Reports were sent to members in HVAs of which 2,198 were returned. Several attempts were made by subwatershed staff to contact members with outstanding reports. The lack of 100% return rate was anticipated given that the November 2016 HVA layer was utilized instead of the January 2016 HVA layer used in the previous year's NMP Summary Report. The November 2016 HVA layer has more than twice the amount of HVAs; thus, many parcels were reported on for the first time this year.

The 2,198 NMP Summary Reports that were returned consisted of 8,813 MUs. Of these MUs, 840 were not required either due to being outside of an HVA or having an exempt crop (e.g. rice, non-irrigated crop, fallow). Another 482 MUs were incomplete and were omitted from the analysis (Table 2). These were flagged for follow-up with the member. Some members had both complete and incomplete MUs on their summary report; thus, the member count in the bottom portion of Table 2 is greater than the total number of summary reports received.

Table 2. Status of NMP Summary Reports Received.

NMP Summary Report Status	Included in Analysis	Count of Members ^d	Number of MUs ^d	Sum of MU Acreage ^d
Not Received	No	346	NR	NR
Received	See below	2,198	8,813	415,032
Received – Exempt Crop ^a	No	240	516	NR ^e
Received – Outside HVA ^b	No	147	383	25,316
Received – Incomplete ^c	No	165	482	20,000 ^f
Received – Complete	Yes	1,998	7,491	379,121

Notes:

NR = Not Reported

^a Includes non-irrigated crops, fallow land, rice, wetlands, aquaculture, irrigated pasture with no N applied

^b Does not include exempt crops

^c Includes MUs that were missing data or where yield and N applied were thought to be a reporting error

^d Member reports can have MUs with parcels that are both inside and outside of an HVA and MUs can be both complete and incomplete; thus, the total count of members, MUs, and sum of acreage is greater than the total received.

^e The majority of the exempt crop records were non-irrigated or fallow fields for which acreage was not provided

^f 41 MUs did not have an acreage listed and thus are not included in the total acreage

The acreage of the crops from complete NMP Summary Reports included in the statistical analysis are shown in Figure 3. The largest acreage crop reported on was walnuts, followed by almonds and processing tomatoes. The acreage of all the crops reported is indicated in Table 3 along with the primary crop group categories which were used for the statistical analysis.

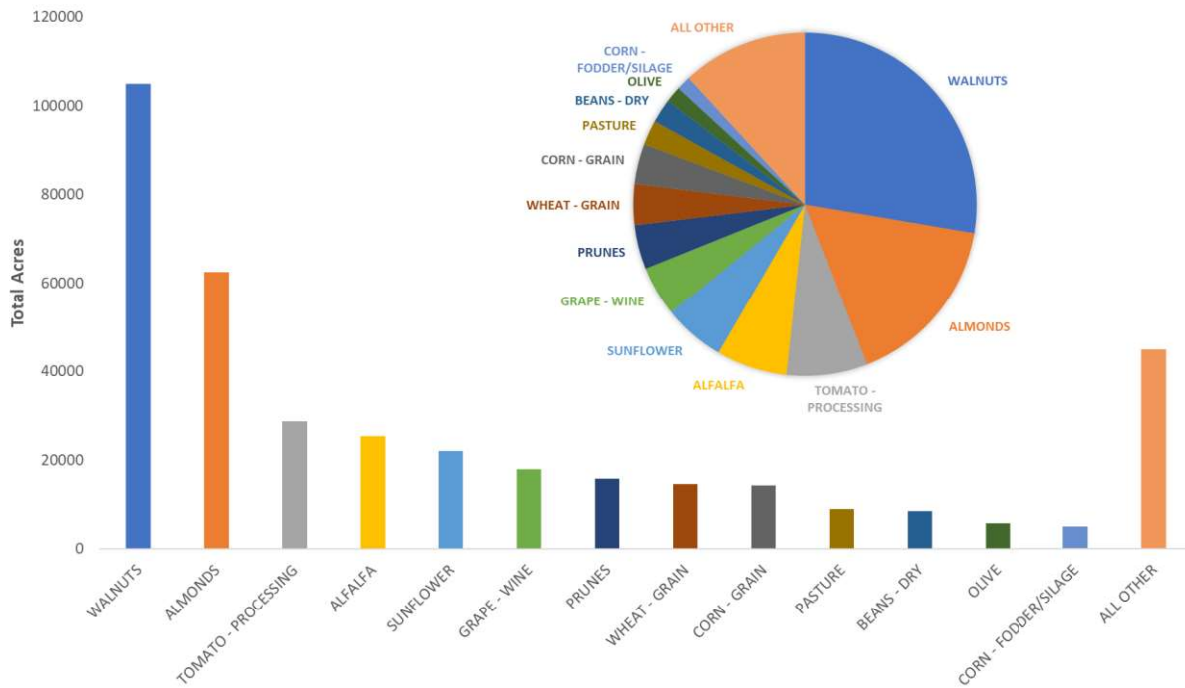


Figure 3. Highest Acreage Crops Reported in the NMP Summary Reports

Table 3. Summary of Crops Reported on SVWQC NMP Summary Reports

Primary Crop ^a	Specific Crop	Number of MUs	Total Acres ^b
3 Grain	3 Grain	6	234
Alfalfa	Alfalfa	467	25359
Alfalfa - Seed	Alfalfa - Seed	4	22
Almonds	Almonds	1195	62431
Almonds/ Pistachio	Almonds/ Pistachio	1	68
Apples	Apples	13	213
Apricots	Apricots	5	10
Arugula	Arugula	1	0.1
Asparagus	Asparagus	5	106
Asparagus - Seed	Asparagus - Seed	1	21
Barley	Barley	19	935
Beans - Dry	Beans - Dry	132	8471
Blackberry	Blackberry	3	2
Broccoli - Seed	Broccoli - Seed	1	6
Broccoli/Broccolini	Broccoli/Broccolini	2	96
Cabbage	Cabbage	1	12
Cabbage - Seed	Cabbage - Seed	1	2
Carrot	Carrot	2	3
Carrot - Seed	Carrot - Seed	3	10

Primary Crop ^a	Specific Crop	Number of MUs	Total Acres ^b
Cauliflower	Cauliflower	2	7
Cauliflower - Seed	Cauliflower - Seed	1	0.5
Cherry	Cherry	14	419
Chestnuts	Chestnuts	1	6
Christmas Trees	Christmas Trees	2	53
Citrus	Orange	3	81
Citrus	Citrus	9	111
Coriander	Coriander	1	75
Coriander - Seed	Coriander - Seed	1	20
Corn - Fodder/Silage	Corn - Fodder/Silage	74	5036
Corn - Grain	Corn - Grain	206	14328
Corn - NR	Corn - NR	14	566
Corn - Sweet	Corn - Sweet	15	379
Cotton	Cotton	11	677
Cover Crop	Cover Crop – Legume	1	0.8
Cover Crop	Cover Crop – Non-Legume	1	54
Cucumber	Cucumber	36	1366
Daikon	Daikon	1	0.2
Dichondra	Dichondra	3	150
Dichondra - Seed	Dichondra - Seed	3	186
Fallow	Fallow	13	780
Fennel	Fennel	1	0.1
Figs	Figs	3	34
Garlic	Garlic	3	154
Gourds	Gourds	1	6
Grain Hay	Grain Hay	1	21
Grape - Bare Roots	Grape - Bare Roots	2	100
Grape - Budwood	Grape - Budwood	1	45
Grape - Other	Grape - Other	2	19
Grape - Root Stock	Grape - Root Stock	6	216
Grape - Table	Grape - Table	4	6
Grape - Wine	Grape - Wine	254	17855
Hay/Forage	Oats/Sudan Grass	1	25
Hay/Forage	Grass Hay	2	89
Hay/Forage	Hay - Vetch	2	134
Hay/Forage	Hay/Forage	8	270
Hay/Forage	Orchard Grass/Alfalfa	6	345
Hay/Forage	Forage/Hay	21	866
Hops	Hops	3	18
Kale	Kale	3	4
Kiwi	Kiwi	14	98

Primary Crop ^a	Specific Crop	Number of MUs	Total Acres ^b
Lavender	Lavender	2	7
Leeks	Leeks	3	8
Lettuce	Lettuce	3	4
Melon - Cantaloupe	Melon - Cantaloupe	3	10
Melon - Honeydew	Melon - Honeydew	9	697
Melon - NR	Melon - NR	6	557
Millet	Millet	1	75
Misc. Fruit Trees	Misc. Fruit Trees	22	311
Misc. Row Crops	Misc. Row Crops	4	54
Misc. Vegetables	Misc. Vegetables	24	255
Misc. Vegetables Seed	Misc. Vegetables Seed	2	61
Mustard Greens	Mustard Greens	2	0.2
Nursery/Ornamentals	Cut Flowers	4	11
Nursery/Ornamentals	Ornamentals	1	11
Nursery/Ornamentals	Nursery	11	161
Oats - Grain	Oats - Grain	13	714
Oats - Hay	Oats - Hay	4	182
Olive	Olive	103	5807
Onion	Onion	8	52
Onion - Seed	Onion - Seed	6	71
Other	Other	20	683
Parsley	Parsley	1	0.1
Pasture	Alfalfa/Pasture	1	136
Pasture	Pasture	198	8897
Peach/Nectarine	Nectarine	1	0.3
Peach/Nectarine	Peach	151	3974
Pear	Pear	60	2698
Pecan	Pecan	28	1184
Peppers	Peppers	20	491
Persimmon	Persimmon	10	109
Pistachio	Pistachio	58	3576
Plum/Pluot	Plum/Pluot	17	793
Pomegranates	Pomegranates	4	15
Potato	Potato	3	9
Prunes	Prunes	354	15814
Pumpkin	Pumpkin	9	101
Radish	Radish	2	0.4
Research	Corn - Research	1	1
Research	Research	5	158
Rice - Wild	Rice - Wild	1	1
Rye/Sudan	Rye/Sudan	3	157

Primary Crop ^a	Specific Crop	Number of MUs	Total Acres ^b
Ryegrass	Ryegrass	32	1206
Safflower	Safflower	88	3601
Seed Crop	Seed Crop	4	124
Sorghum/Milo - Grain	Sorghum/Milo - Grain	36	1631
Spinach	Spinach	2	6
Squash	Squash	23	400
Strawberries	Strawberries	2	0.9
Sudan Grass	Sudan Grass	57	3214
Summer Clover	Summer Clover	1	16
Sunflower	Sunflower	364	21963
Teff	Teff	6	208
Tomato - Fresh	Tomato - Fresh	20	2407
Tomato - NR	Tomato - NR	17	777
Tomato - Processing	Tomato - Processing	487	28762
Triticale - Grain	Triticale - Grain	6	239
Triticale - Hay	Triticale - Hay	2	63
Truffles	Truffles	1	0.5
Turf	Turf	4	251
Turnip	Turnip	3	21
Turnip - Seed	Turnip - Seed	2	8
Vine Seed	Cucumber - Seed	1	27
Vine Seed	Watermelon - Seed	6	285
Vine Seed	Vine Seed	64	3546
Walnuts	Walnuts	2164	104893
Watermelon	Watermelon	19	386
Wheat - Grain	Wheat - Grain	287	14584
Wheat - Hay	Wheat - Hay	1	12
Wheat - No Yield	Wheat	1	10
Winter Vegetable	Winter Vegetable	1	32

Notes:

NR = specific crop type not reported. A/R and A-R could not be calculated for this category.

^a The primary crop group represents similar specific crop types which were grouped together for the statistical analysis.

^b There were 940 MUs consisting of 40,332 acres which had no yield or were non-bearing. These records do not have an A/Y or A/R value since yield is zero. If nitrogen was applied, there will be an A-R value which will be positive.

2.2 SUMMARY OF GROWER DATA QUALITY EVALUATION

Subwatershed staff initially checked all returned forms for completeness. MUs had to include at minimum the following information in order to be analyzed:

- APN
- Crop
- Acreage

- Amount of N applied
- Yield or A/Y ratio
- Yield unit

Records missing one of these components were flagged as incomplete and several attempts to contact the grower to correct the mistake were made. Records containing all the required information were compiled and the data was reviewed for accuracy/ errors (as described below). If errors were found, growers were contacted via follow-up calls to correct these issues. Common errors identified during the review process included:

1. Grower reported APN did not have a matching APN in the corresponding GIS parcel layer, derived from county datasets. These discrepancies typically occurred because of a transcription error or entering the APN in a different format (e.g. without leading zeros). Some discrepancies also occurred where APN lines had been redrawn recently and had not been updated within the County GIS parcel layer.
2. Amount of N fertilizer applied per acre was much higher than typical application values. This could have been the result of a transcription error, reporting total fertilizer applied versus the percent of N in the fertilizer, or total N applied for the field or MU instead of per acre.
3. Production unit was not correct (e.g. tons was listed but pounds was actually used in calculation) or was provided on a volume basis rather than mass basis (e.g. number of trees, cut flowers, square feet of turf, etc.). Corrections from volume to mass basis were made where possible based on typical values for the crop type (Table 4) (e.g. if the yield unit was listed as cartons of oranges and no carton weight was provided, a typical carton weight of 40 lbs was used).
4. Yield was much higher than the typical range of values for a given crop. This was typically the result of either transcription error, failure to convert yield units to pounds (lbs), or using total yield instead of yield per acre. Some yields may have also been reported at a different moisture content than the typical values for the applicable crop. For example, prunes were typically reported by growers on a dry basis, but some growers appeared to report yield on a wet basis which was not indicated on the NMP Summary Report.

Table 4. Estimated Yield Unit Weights for Conversion from Volumetric Units

Crop	Volumetric Yield Unit Provided by Grower	Estimated Yield Unit Weight
Apples	bushel baskets/acre	40 lbs/bushel
Cherry	lug boxes/acre	20 lbs/lug box
Citrus	cartons/acre	40 lbs/carton
Corn	bushels/acre	56 lbs/bushel
Kiwi	trays/acre	7 lbs/tray
Melon	cartons/acre	30 lbs/carton
Pear	bushel baskets/acre	58 lbs/bushel
Christmas Trees	Number of trees/acre	50 lbs/tree
Pumpkin	# of pumpkins/acre	20 lbs/pumpkin

Crop	Volumetric Yield Unit Provided by Grower	Estimated Yield Unit Weight
Pasture	Animal Unit Month (AUM)/acre	1000 lbs/AUM
Tomato – Fresh	Boxes/acre	25 lbs/box

Any records with the above errors were flagged and several follow-up calls were attempted by subwatershed staff to contact the grower and make corrections. If an A/Y value was believed to be incorrect, the subwatershed staff would review the calculation procedure with the grower to attempt to identify and fix the error.

2.3 DATA EXCLUSIONS

After outreach was completed, the following exclusions were made prior to statistical analysis:

1. Exempt crops (rice, non-irrigated crops, fallow fields, wetlands, or aquaculture) were removed. A total of 516 MUs from 240 members were removed for having an exempt crop. Wild rice was not excluded as it is not covered under the Rice Commission WDRs.
2. Any remaining incomplete MUs without an APN, crop, N applied, or yield were excluded. A total of 463 MUs from 153 members were removed for having incomplete data.
3. Records with yields greater than 250,000 lbs/acre or rates of N applied greater than 1,000 lbs/acre were determined to be likely reporting errors and were excluded. Rates higher than these are beyond the reasonable range for any of the crops reported. A total of 19 MUs from 14 members consisting of 988 acres were removed for having questionable yield or N applied values.
4. Parcels completely outside of an HVA were excluded as these are not required for the NMP Summary Report. A total of 383 MUs from 147 members were removed for being outside of an HVA.

In order to evaluate whether a parcel was outside of an HVA and to identify the corresponding township for that parcel, each APN within a MU was joined to a GIS parcel layer and associated with a PLSS T-R block (36 square miles) by the centroid (center point) of the parcel polygon using ArcGIS. Some MUs (28 total parcels) had an APN that could not be mapped and therefore the T-R for these parcels is listed as “Unknown”. This could be due to an error in the reported APN or a correct APN that was recently redrawn and had not yet been updated in the county’s GIS parcel layer.

3 N REMOVED CALCULATION DATA SOURCES AND PROCEDURES

To calculate **R**, the amount of N removed in the harvested portion of each crop, the Coalition relied on estimates from:

1. Nitrogen concentrations in harvested plant parts - A literature overview (Geisseler 2016) https://apps1.cdfa.ca.gov/FertilizerResearch/docs/Geisseler_Report_2016_12_02.pdf

This report includes information on N removal values for each crop as shown in Table 5 and includes complete references for studies providing N removal data. A coefficient of variation (CV) is provided which indicates the variability among the published values for a specific crop. The number of published values both within and outside of California is also shown. In some cases, there are several studies that

provide N removal values; in other cases, there are only one or two studies. Similarly, for some crops N removal values are reported from various parts of the Central Valley, while for other crops, values may be for other states. The time period when the values were published are presented in the detailed discussion of each crop. While the information in Geisseler (2016) provides several factors to evaluate the relevance of N removal values, they do not give an overall confidence rating or reflect all the information and criteria that needs to be considered to determine how well the N removal values represent crop varieties grown within the Coalition.

Therefore, the N removal values in Geisseler (2016) are used in this analysis because they are the best available sources of data, but they should not be considered definitive, and they should be expected to change and improve over time. No conversions from A/Y to A/R or A-R were attempted for crops without a N removed coefficient.

Even if the N removed coefficient used to calculate R is considered a good estimate, differences in the basis on which yield is reported (i.e. fresh vs. dry weight, in-shell vs shelled weight) can affect R values. In addition, for perennial crops, N accumulation in perennial tissue is not included in the R value, and for crops where marketable yield is reported and cull or trash is removed in a processing facility, the calculated amount of N removed underestimates the actual amount (Geisseler, 2016).

Table 5. N Removed (R) Conversion Factors

Crop	# of Observations		CV (%)	N Removed Conversion Factor (lbs N/ lbs yield)
	California	Total		
Field Crops				
Alfalfa - Hay	49	49	12.5	0.031150
Alfalfa – Silage	6	6	17.5	0.012000
Barley – Grain	4	61	14.6	0.016800
Barley – Straw	0	970	31.3	0.007700
Beans, dry - Blackeye	1	164	10.4	0.036500
Beans, dry - Garbanzo	2	108	11.3	0.033600
Beans, dry - Lima	2	75	5.4	0.036150
Corn – Grain	0	1775	20.8	0.012000
Corn – Silage	71	71	10.5	0.003780
Cotton	27	80	29.5	0.021850
Fescue, Tall - Hay	260	260	16.2	0.025400
Oat – Grain	0	134	9.6	0.018850
Oat – Straw	2	526	34.7	0.007400
Oat – Hay	49	49	18.2	0.010850
Orchard Grass - Hay	60	60	20	0.027250
Ryegrass, Perennial - Hay	60	60	16.8	0.027450

Crop	# of Observations		CV (%)	N Removed Conversion Factor (lbs N/ lbs yield)
	California	Total		
Safflower	12	149	20	0.028400
Sorghum – Grain	0	256	29.7	0.016500
Sorghum - Silage	260	260	21	0.003670
Sunflower	0	208	14.3	0.027050
Triticale - Grain	51	51	13	0.020200
Triticale - Straw	0	102	38.3	0.005750
Triticale - Silage	19	19	13.7	0.004515
Wheat, common - Grain	113	113	10.3	0.021500
Wheat - Straw	3	494	33	0.006900
Wheat - Silage	39	39	18.6	0.005250
Wheat, durum - Grain	41	41	3.7	0.021050
Vegetables				
Asparagus	2	19	14	0.002925
Beans, green (snap beans)	1	122	25.7	0.002890
Broccoli	15	46	20.4	0.005600
Carrots	1	167	22.4	0.001645
Corn, sweet	0	50	13.1	0.003585
Cucumbers	1	10	17.4	0.001080
Garlic	1	12	19.5	0.007550
Lettuce, Iceberg	45	68	16.7	0.001315
Lettuce, Romaine	14	26	13.7	0.001810
Melons, Cantaloupe	1	31	15.5	0.002435
Melons, Honeydew	1	12	22.1	0.001475
Melons, Watermelons	1	6	23.9	0.000695
Onions	13	45	19.7	0.001970
Pepper, Bell	6	40	7.9	0.001655
Potatoes	5	64	13.6	0.003120
Pumpkin	1	13	10.1	0.003680
Squash	11	74	22.4	0.001835
Sweet potatoes	11	23	16.8	0.002370

Crop	# of Observations		CV (%)	N Removed Conversion Factor (lbs N/ lbs yield)
	California	Total		
Tomatoes, fresh market	1	34	16.5	0.001305
Tomatoes, processing	24	24	11.1	0.001365
Tree and Vine Crops				
Almonds	31	31	4.1	0.068000
Apples	1	132	35.1	0.000540
Apricots	1	22	114	0.002780
Cherries	1	24	19.8	0.002210
Figs	1	19	18.1	0.001270
Grapefruit	26	27	7.8	0.001480
Grapes - Raisins	16	19	5.8	0.005050
Grapes - Table	16	19	5.8	0.001130
Grapes - Wine	8	38	13	0.001800
Lemons	21	22	10	0.001290
Nectarines	31	41	27.1	0.001820
Olives	6	29	22.8	0.003140
Oranges	26	82	10.9	0.001480
Peaches	5	25	20.7	0.001130
Pears	1	64	17.9	0.000645
Pistachios	11	11	3.5	0.028050
Plums	1	11	11.2	0.001415
Pomegranate	0	7	15	0.007600
Prunes	18	18	16.3	0.005600
Tangerines	1	2	29.2	0.001270
Walnuts	18	18	11.2	0.015950

Notes:

1. Conversion factors calculated from N concentrations expressed in lbs/ton at a moisture content common for the respective crop at harvest.
2. The calculated value for N removed is only accurate on a multi-year basis but may not be accurate for a specific year.
3. For perennial crops, N accumulation in perennial tissue is not included in the value.
4. For most crops where marketable yield is reported and cull or trash is removed in a processing facility, the calculated amount of N removed underestimates the actual amount, the difference being the N in cull or trash.

4 DOCUMENTATION OF STATISTICAL PROCEDURES AND TOOLS

Approach

Statistical analysis was performed with Python, an open-source, high-level performing coding language. The analysis was performed for each parcel within a MU (MU-parcel); thus, in MUs with multiple parcels, the A/Y value for that MU was replicated across each associated parcel. This approach was utilized since some MUs had a large number of parcels (up to 23) which were non-contiguous and spanned multiple townships (up to 7). If a MU had parcels in different townships, the outlier status for those parcels could be different even though the NMP data was identical. Analyzing each parcel separately also allowed for more accurate assignment of soil type information to multi-parcel MUs, especially if they are non-contiguous.

Summary statistics and outlier status for crops with large sample sizes were calculated for each T-R block and for the whole Coalition. For crops with small sample sizes, statistics were generated only for the whole Coalition, since individual T-R statistics were not meaningful.

Crop Grouping

The Coalition grouped some similar crops together for the statistical analysis as indicated by the primary crop class in Table 3. Crops that are harvested in different ways (e.g. grain corn vs. silage corn) or different varieties (e.g. processing vs. fresh market tomatoes) were separated for the analysis. Some growers did not indicate the specific crop type for these crops on their report (e.g. only corn was listed). The Coalition attempted to determine this via follow-up with the grower or by comparison of the reported yield to typical values. If the specific crop type could not be determined, it was followed by “-NR” indicating it was not reported.

Crop age for tree crops may also affect A/Y values. The Coalition requested orchard planting year on the NMP Summary Reports, but there were not enough responses received on this question in order to include crop age in the statistical analysis.

Summary Statistics

The summary statistics calculated were minimum and maximum A/Y, A/R, and A-R (where possible) and the 10th, 25th, 50th, 75th, and 90th percentiles for these parameters. The percentiles represent the value below which a given percentage of the observations fall. For example, the 90th percentile is the value below which 90% of the observations (MU-parcels) fall. If there is only one observation or all observations have the same value, the percentiles can't be calculated. The percentile calculation used linear interpolation between data points; thus, if only two different observations are in a township, both were considered outliers (less than 10th percentile; greater than 90th percentile). The percentiles are more accurate when more data is available.

The summary statistics are provided in Appendix A in tabular format and box and whisker plots for each crop. In the box and whisker plots, the boxes draw the 25th, 50th, and 75th percentiles for A/Y for the given T-R block or Coalition, and whiskers show the range of data occurring no more than 1.5 times the length of the box away from the box (Figure 4). Outliers above the 90th percentile and below the 10th percentile are shown as red dots above and below the boxplot, respectively. The Coalition-wide 90th percentile value is shown as a red horizontal dashed line across the boxplot chart. The A/Y axis for some of the boxplots was cut-off below the highest outliers in order to prevent skewing of the rest of the data. The numbers of records not shown are indicated in a note below the boxplot, and these records are included in the tabular statistics.

The outliers in an individual township may not be an outlier at the Coalition level. Tabular summary statistics are provided below the boxplots for A/Y, A/R, and A-R for each T-R block (where applicable) and for the whole Coalition. For crops with only 1-2 MUs or where all A/Y values were identical, boxplots could not be generated; thus, only tabular Coalition-wide summary statistics were provided (see Other Crops section at the end of Appendix A).

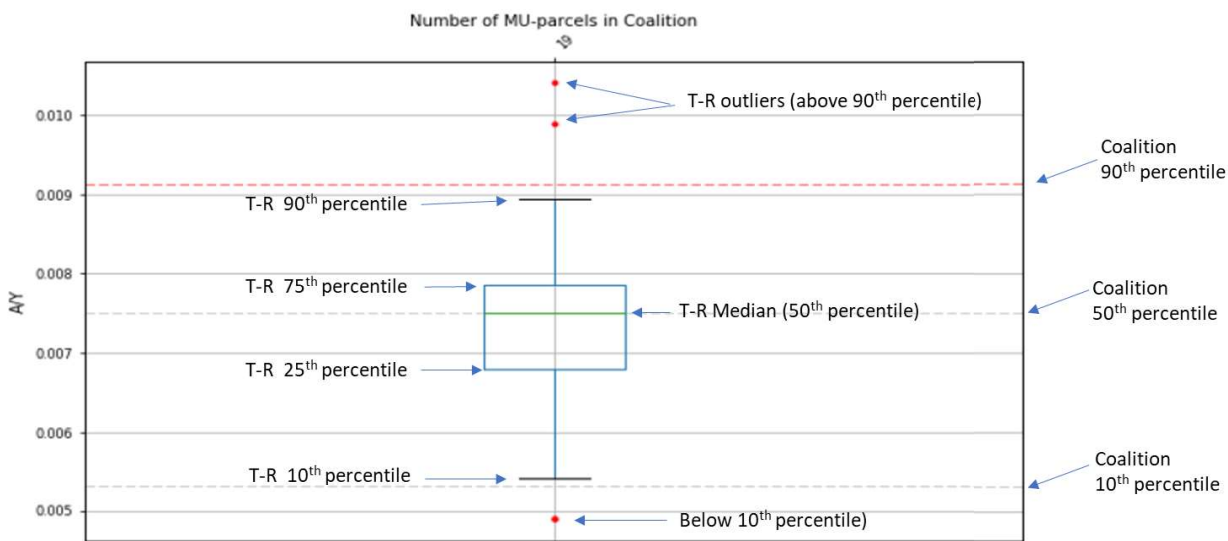


Figure 4. Example of Box and Whisker Plots

Outlier Evaluation

In order to evaluate whether an outlier is due to high N application or low yield, scatterplots of A vs Y are also provided for each crop in Appendix A. Each dot in the scatter plot is a MU-parcel and outliers (A/Y greater than 90%) are highlighted in red. Some x-axes for yield were cutoff below the highest values in order to increase the visibility of the remainder of the data. The numbers of records not shown is indicated below the boxplot. Fertilizer recommendations from University of California Cooperative Extension (UCCE), where available, are shown as blue horizontal dashed lines on the scatterplots. These recommendations vary based on crop age, specific crop type, yield goal, and other site-specific information and thus may not be applicable to specific fields or to the Coalition region. More detailed information on the fertilizer values is provided in Appendix B. Values were typically reported as a range, and only the maximum value in the range is shown on the scatterplots. Some of the values are not recommendations but estimates of the amount of fertilizer used in a typical operation (Appendix B).

GIS Deliverable

An ESRI shapefile and tabular spreadsheet summarizing the A/Y, A/R, and A-R summary statistics by crop in each township, as required by Report Component 19, is provided in Appendix D.

Soil Type and Irrigation Method Analysis

The WDRs further require “an assessment of NMP Summary Report information for, at a minimum, comparisons of farms with the same crops, similar soil conditions, and similar practices (e.g. irrigation management).” Soil type and irrigation method were selected as the parameters to further evaluate

outlier status as described below. This analysis was performed at a Coalition-wide level for each crop since several townships had only a few MUs, limiting the reliability of a township level analysis.

4.1 SOIL TYPE EVALUATION

Soil type was evaluated based on the predominant USDA-NRCS soil drainage class for the largest map unit within each MU-parcel. Soil drainage class refers to the frequency and duration of wet periods under conditions similar to those under which the soil developed. Anthropogenic alteration of the water regime, either through drainage or irrigation, is not a consideration unless the alterations have significantly changed the morphology of the soil. The drainage classes were aggregated into the following four major classes:

1. Well Drained
 - Excessively Drained
 - Somewhat Excessively Drained
 - Well Drained
2. Moderately Well Drained
3. Somewhat Poorly Drained
4. Poorly Drained
 - Poorly Drained
 - Very Poorly Drained

Soil drainage class is often reflective of saturated hydraulic conductivity (K_{sat}) with poorly drained soils often exhibiting low K_{sat} values; however, this is not always the case, as sandy high K_{sat} soils can have poor drainage in areas with high water tables. One advantage of drainage class compared to K_{sat} is it estimates overall water movement throughout the soil profile which can be influenced by soil restrictive layers that may not be reflected in a soil's K_{sat} value.

Soil data was obtained from USDA Soil Survey Geographic Database (SSURGO) (<https://websoilsurvey.nrcs.usda.gov/>). In the SSURGO database, each soil map unit polygon is comprised of one or more unmapped components identified in related tables. Each component makes up an estimated percentage of the map unit. The component making up the highest estimated percentage was selected to represent the drainage class assigned to each map unit polygon. In cases where multiple maximum components existed, the poorest drainage class out of the maximum components was selected. The drainage class was then associated with each MU-parcel using the drainage class that comprised the largest area within the APN.

The influence of soil drainage class on outlier status (outlier or non-outlier) for each crop was assessed using a Chi-square Test of Independence run through the SciPy statistical package in Python (https://docs.scipy.org/doc/scipy-0.15.1/reference/generated/scipy.stats.chi2_contingency.html). The Chi-square Test of Independence evaluates the hypothesis that the outlier status for a given crop and soil drainage class are independent of one another. To test this, a matrix counting the number of outliers and non-outliers associated with each drainage class for each crop was prepared, and the differences in the frequency of outliers among the soil types for each crop were evaluated. The p-value determined from the Chi-square statistic was evaluated against a significance level of 0.05. If the p-value was less than the significance level (0.05), there was a relationship between outliers and drainage class. This analysis was not performed on crops with limited representation in the Coalition because the

sample size was not large enough to obtain a valid result. Even for crops with better representation, the total number of observations within each drainage class could vary greatly (e.g. well drained soils predominate across the valley floor), reducing the reliability of the test.

4.2 IRRIGATION TYPE EVALUATION

The Coalition also evaluated if irrigation practice could influence the frequency of outliers for each crop. Irrigation practice data were obtained from growers' Farm Evaluation Surveys, which are annual submissions providing information about irrigation practices, N management practices, active and abandoned wells, pesticide practices, and sediment/erosion control practices. The primary irrigation practice for each parcel was determined from the Farm Evaluation Survey and associated with the NMP Summary Report data based on APN. When an APN was associated with multiple MUs, crop type and acreage were used to link associated records. Several NMP Summary Report MUs did not have a corresponding record in the irrigation dataset and thus were excluded from the irrigation practice analysis. Irrigation practices were grouped into two broad classes based on water use efficiency:

1. Flood Irrigation
 - Flood
 - Furrow
 - Border Strip
2. Pressurized Irrigation
 - Drip (including subsurface drip)
 - Micro-sprinkler
 - Sprinkler

The flood irrigation class represents the less efficient group of practices compared to the pressurized irrigation class which includes more efficient practices. This grouping was done as some of the specific irrigation practices had low sample sizes for a given crop which would lower the reliability of the analysis. The influence of irrigation practice on outlier status (outlier or non-outlier) for each crop was assessed using the same Chi-square test method utilized to evaluate soil drainage class. If the p-value was less than the significance level (0.05), there was a relationship between outliers and irrigation practice. This analysis was not performed on crops with limited representation in the Coalition because the sample size was not large enough to obtain a valid result.

5 RESULTS

The yield and N applied per acre varied by several orders of magnitude between some crops and within the same crop class (Figures 5 and 6). The high yields for the several of the tree crops, some of which were over 100,000 lbs/acre, were likely reporting errors. N applied generally ranged between 0 – 500 lbs/acre across all crops and varied considerably within each crop group. The high N applied record for walnuts over 800 lbs/acre was likely a reporting error.

The summary statistics grouped by crop are provided in Appendix A. Crops with limited representation do not have a boxplot and are shown in the Other Crops category. The crops for some MUs were a mix of crops (e.g. misc. fruit trees, misc. vegetables). Several crops did not have published N removed coefficients to allow calculation of R. Overall, there were several townships with small numbers of MUs where outlier determination was less reliable. In townships with only two values, these two points marked the highest and lowest values, and thus both were considered outliers (less than 10th percentile and greater than 90th percentile). The A/Y values for vegetable seed crops were several orders of magnitude higher than their non-seed crop counterparts (e.g. squash and melon) due to how seed yield

is measured; thus, this information is important for members to note on their reports. For the crops with large sample sizes, there generally appeared to be a wide range in A/Y values, some of which were orders of magnitude apart. Reporting errors were likely responsible for some of the wide ranges observed in A/Y values.

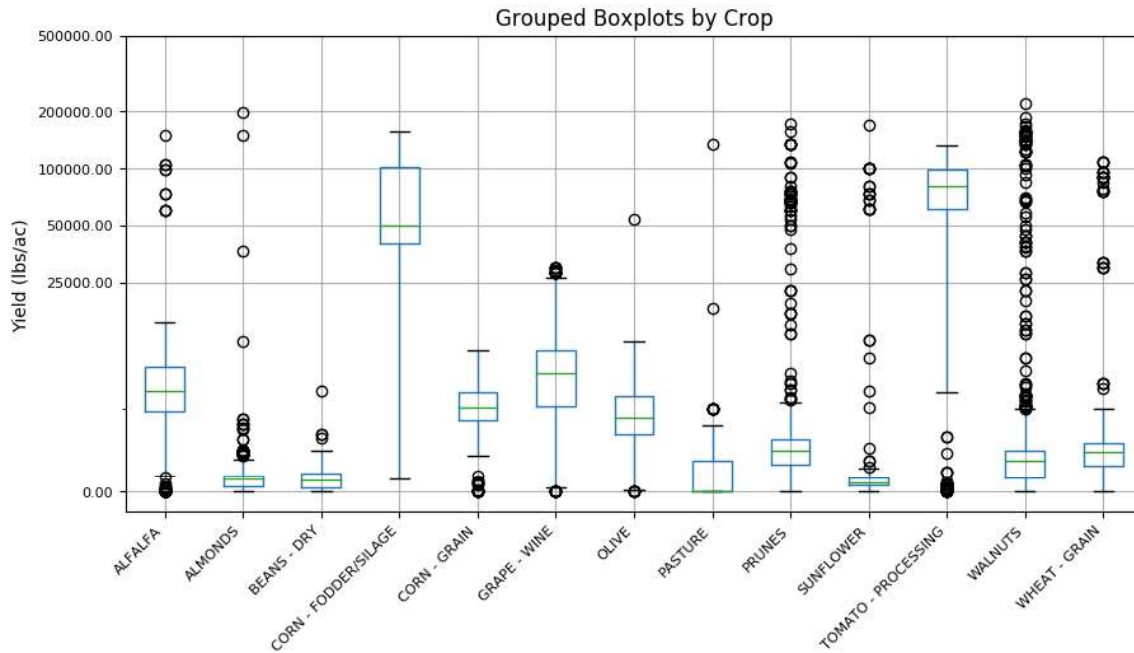


Figure 5. Box and whisker plot showing the yield per acre for the highest acreage crops

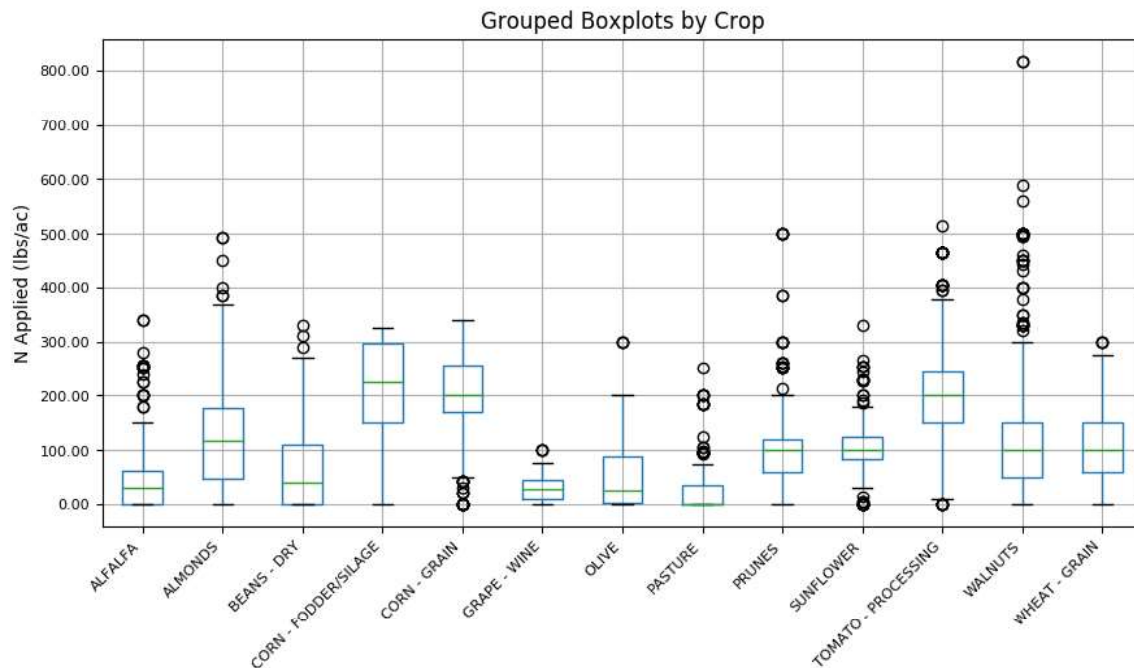


Figure 6. Box and whisker plot showing the N applied per acre for the highest acreage crops

5.1 SOIL TYPE EVALUATION RESULTS

Overall, there was little evidence that soil drainage class influenced the frequency of A/Y outliers for the Coalition’s major crops (Table 6). Some crops had statistically significant effects (prunes, peach, pasture, wine grapes); however, in these cases, the higher percentage of outliers was in the poorly or somewhat poorly drained soils which had fewer observations than the moderately well and well drained soils. Since the poorly and somewhat poorly drained soils generally had a low number of observations, the sample size was not very representative. In the crops without a significant difference, the percentage of outliers was generally similar among the four drainage classes. Several of the crops had around 10% outliers in each of the four drainage classes. The smaller acreage crops which are not shown in Table 6 could not be analyzed individually because of the small sample size. This was compounded by the predominance of well drained soils across the valley floor, which reduced the number of observations collected in other drainage classes. Based on these results, there is little evidence of an effect of soil drainage class on A/Y outliers; however, the limited sample size within drainage classes for most crops limited the reliability of the analysis.

Table 6. Evaluation of the Frequency of A/Y Outliers by Soil Drainage Class.

Crop	USDA-NRCS Drainage Class	# of MU-Parcels	Non-Outliers	Outliers	Percentage of Outliers	P-value
Alfalfa	Poor	38	34	4	11%	0.99812
	Somewhat Poor	45	40	5	11%	
	Moderately Well	137	122	15	11%	
	Well	145	130	15	10%	
Almonds	Poor	39	35	4	10%	0.99680
	Somewhat Poor	63	56	7	11%	
	Moderately Well	138	124	14	10%	
	Well	783	703	80	10%	
Beans - Dry	Poor	19	17	2	11%	0.99399
	Somewhat Poor	32	29	3	9%	
	Moderately Well	35	31	4	11%	
	Well	55	49	6	11%	
Corn - Silage	Poor	26	18	8	31%	0.40211
	Somewhat Poor	3	2	1	33%	
	Moderately Well	5	4	1	20%	
	Well	31	27	4	13%	
Corn - Grain	Poor	53	46	7	13%	0.97270
	Somewhat Poor	51	45	6	12%	
	Moderately Well	20	18	2	10%	
	Well	74	66	8	11%	

Crop	USDA-NRCS Drainage Class	# of MU-Parcels	Non-Outliers	Outliers	Percentage of Outliers	P-value
Cucumber	Poor	11	6	5	45%	0.41047
	Somewhat Poor	5	4	1	20%	
	Moderately Well	7	6	1	14%	
	Well	6	5	1	17%	
Grape - Wine	Poor	97	86	11	11%	0.04782
	Somewhat Poor	66	49	17	26%	
	Moderately Well	0	0	0	0%	
	Well	16	14	2	13%	
Olive	Poor	4	3	1	25%	0.87213
	Somewhat Poor	7	6	1	14%	
	Moderately Well	12	10	2	17%	
	Well	67	59	8	12%	
Pasture	Poor	1	0	1	100%	0.00026
	Somewhat Poor	3	0	3	100%	
	Moderately Well	38	34	4	11%	
	Well	33	27	6	18%	
Peach	Poor	1	0	1	100%	0.03758
	Somewhat Poor	4	3	1	25%	
	Moderately Well	36	32	4	11%	
	Well	114	102	12	11%	
Prunes	Poor	14	8	6	43%	0.00221
	Somewhat Poor	22	18	4	18%	
	Moderately Well	99	88	11	11%	
	Well	260	234	26	10%	
Safflower	Poor	42	35	7	17%	0.47893
	Somewhat Poor	11	8	3	27%	
	Moderately Well	7	6	1	14%	
	Well	11	7	4	36%	
Sunflower	Poor	55	49	6	11%	0.99916
	Somewhat Poor	58	52	6	10%	
	Moderately Well	92	82	10	11%	
	Well	163	146	17	10%	
Tomato - Processing	Poor	71	63	8	11%	0.94766
	Somewhat Poor	110	97	13	12%	
	Moderately Well	59	52	7	12%	
	Well	288	259	29	10%	

Crop	USDA-NRCS Drainage Class	# of MU-Parcels	Non-Outliers	Outliers	Percentage of Outliers	P-value
Vine Seed	Poor	26	23	3	12%	0.87340
	Somewhat Poor	12	10	2	17%	
	Moderately Well	11	9	2	18%	
	Well	30	27	3	10%	
Walnuts	Poor	41	36	5	12%	0.97354
	Somewhat Poor	323	290	33	10%	
	Moderately Well	343	307	36	10%	
	Well	1337	1202	135	10%	
Wheat	Poor	35	31	4	11%	0.99881
	Somewhat Poor	37	33	4	11%	
	Moderately Well	39	35	4	10%	
	Well	137	122	15	11%	

5.2 IRRIGATION PRACTICE EVALUATION RESULTS

The Coalition also evaluated whether primary irrigation practice identified on member’s Farm Evaluation Surveys influenced the frequency of A/Y outliers. Some MUs had multiple primary irrigation practices. In this case, the least efficient method out of the practices listed was chosen for analysis (e.g. if flood and drip were both listed, flood was chosen). Several NMP records could not be associated with the corresponding irrigation information in the farm evaluation data. Overall, both irrigation classes (drip/micro-sprinkler/sprinkler and flood/furrow/border strip) had little difference in the proportion of outliers (Table 7). Pasture and alfalfa were the only crops to have a significant difference, with the pressurized systems having a higher percentage of outliers than flood irrigation systems. Several of the individual crops had small sample sizes which lowered the reliability of the test result and prevented analysis on some. Based on these results, there is little evidence of an effect of irrigation class on A/Y outliers; however, the small sample sizes for most crops limited the reliability of the analysis.

Table 7. Evaluation of the Frequency of A/Y Outliers by Irrigation Class.

Crop	Irrigation Class ¹	# MU-Parcels	Non-Outliers	Outliers	Proportion of Outliers	P-value
Alfalfa	Flood	96	85	11	12.94%	0.04018
	Pressurized	31	22	9	40.91%	
Almonds	Flood	14	12	2	16.67%	0.98555
	Pressurized	497	445	52	11.69%	
Beans - Dry	Flood	44	37	7	18.92%	0.86015
	Pressurized	15	13	2	15.38%	
Corn - Silage	Flood	19	17	2	11.76%	0.84933
	Pressurized	5	4	1	25.00%	

Crop	Irrigation Class ¹	# MU-Parcels	Non-Outliers	Outliers	Proportion of Outliers	P-value
Corn - Grain	Flood	80	69	11	15.94%	0.94969
	Pressurized	51	45	6	13.33%	
Cucumber	Flood	8	7	1	14.29%	0.30492
	Pressurized	11	6	5	83.33%	
Grape - Wine	Flood	25	18	7	38.89%	0.21632
	Pressurized	148	125	23	18.40%	
Olive	Flood	2	1	1	100.00%	0.94075
	Pressurized	33	26	7	26.92%	
Pasture	Flood	32	28	4	14.29%	0.03742
	Pressurized	10	5	5	100.00%	
Peach	Flood	23	19	4	21.05%	0.61773
	Pressurized	92	82	10	12.20%	
Prunes	Flood	58	52	6	11.54%	0.84345
	Pressurized	256	230	26	11.30%	
Safflower	Flood	15	13	2	15.38%	0.57508
	Pressurized	27	20	7	35.00%	
Sunflower	Flood	66	59	7	11.86%	0.80999
	Pressurized	103	92	11	11.96%	
Tomato - Processing	Flood	120	108	12	11.11%	0.86980
	Pressurized	188	169	19	11.24%	
Vine Seed	Flood	31	27	4	14.81%	0.78908
	Pressurized	18	16	2	12.50%	
Walnuts	Flood	224	201	23	11.44%	0.99462
	Pressurized	1178	1060	118	11.13%	
Wheat	Flood	49	42	7	16.67%	0.93032
	Pressurized	25	22	3	13.64%	

Notes:

1. Flood irrigation class includes: flood, furrow, border strip

Pressurized irrigation class includes: drip, sprinkler, and micro-sprinkler

6 CONCLUSIONS

Analysis of the NMP Summary Report statistics identified the following factors which limit the ability to interpret outlier status:

1. Several member NMP Summary Reports (approximately 15%) have not been received yet.
2. Several errors in reported data were identified during QA/QC. While the Coalition tried to identify and fix all of these errors, some values are likely still incorrect.

3. The highest A/Y value in a township is always considered an outlier regardless of how many data points there are or how different they are from each other. Many T-R blocks have only a few MUs, and thus, outliers in these T-Rs may not be an outlier when compared to the entire Coalition. MUs within multiple townships may be an outlier within one township but not in the other.
4. The applicability of the N removed coefficients to crop varieties grown in the Coalition has not been verified and may need to be modified as more data becomes available.
5. The evaluation of soil and irrigation type effect on outlier status is limited for several crops by the small sample size. There were also several NMP records for which a matching irrigation record from the farm evaluation data could not be determined, and there were some MUs which had multiple irrigation types.

Based on these factors, for the smaller acreage crops, the Coalition-wide summary statistics appear to be more useful than the T-R statistics in evaluating outliers. Even for the larger acreage crops, there may be individual townships in which the total number of records is low and outlier determination is not very representative. Reporting errors were likely responsible for some of the wide ranges observed in A/Y values. The addition of yield to the Coalition's survey form reduced the numbers of errors for the 2017 NMP data compared to the previous' years data; however, there are still growers which are reporting yield incorrectly or on a different basis compared to other growers.

7 GROWER FEEDBACK AND OUTREACH

Grower outreach will be conducted in fall/winter 2018. Outreach activities will include individualized reports sent to each grower member in the Coalition who submitted N application and yield data. The reports will include a table showing township averages for N applied, A/Y, and A/R for each of the grower's MU-parcels. An example of an individual grower report is provided in Appendix C.

The grower report is designed to show nitrogen use efficiency for the grower's fields within the context of other growers in the Coalition. Growers are also encouraged to contact the Coalition if they identify any incorrectly reported values that were not identified during the data QA/QC.

8 REFERENCES

Geisseler, D. 2016. Nitrogen concentrations in harvested plant parts - A literature overview.
https://apps1.cdfa.ca.gov/FertilizerResearch/docs/Geisseler_Report_2016_12_02.pdf

APPENDICES

Appendix A: Summary Statistics by Crop for T-R Blocks and Coalition

Appendix B: Fertilizer Recommendations

Appendix C: Example Member NMP Summary Report

Appendix D: Tabular GIS Database Spreadsheet

APPENDIX A

SUMMARY STATISTICS BY CROP FOR T-R BLOCKS AND COALITION

TABLE OF CONTENTS – APPENDIX A

I.	Alfalfa	1
II.	Almonds	10
III.	Beans - Dry	19
IV.	Corn – Fodder/Silage	24
V.	Corn - Grain	29
VI.	Cucumber	37
VII.	Grape - Wine	41
VIII.	Hay/Forage	46
IX.	Misc. Fruit Trees	49
X.	Misc. Vegetables.....	52
XI.	Olive	54
XII.	Pasture.....	59
XIII.	Peach/Nectarine	63
XIV.	Pistachio.....	67
XV.	Plum/Pluot.....	72
XVI.	Prunes	75
XVII.	Ryegrass	84
XVIII.	Safflower	88
XIX.	Sorghum/Milo - Grain	94
XX.	Sudan Grass.....	98
XXI.	Sunflower.....	101
XXII.	Tomato - Processing	109
XXIII.	Vine Seed	118
XXIV.	Walnuts.....	122
XXV.	Wheat - Grain.....	134

XXVI. Other Crops 142

I. ALFALFA

Figure I-1. Box and Whisker plots of A/Y for ALFALFA management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for ALFALFA

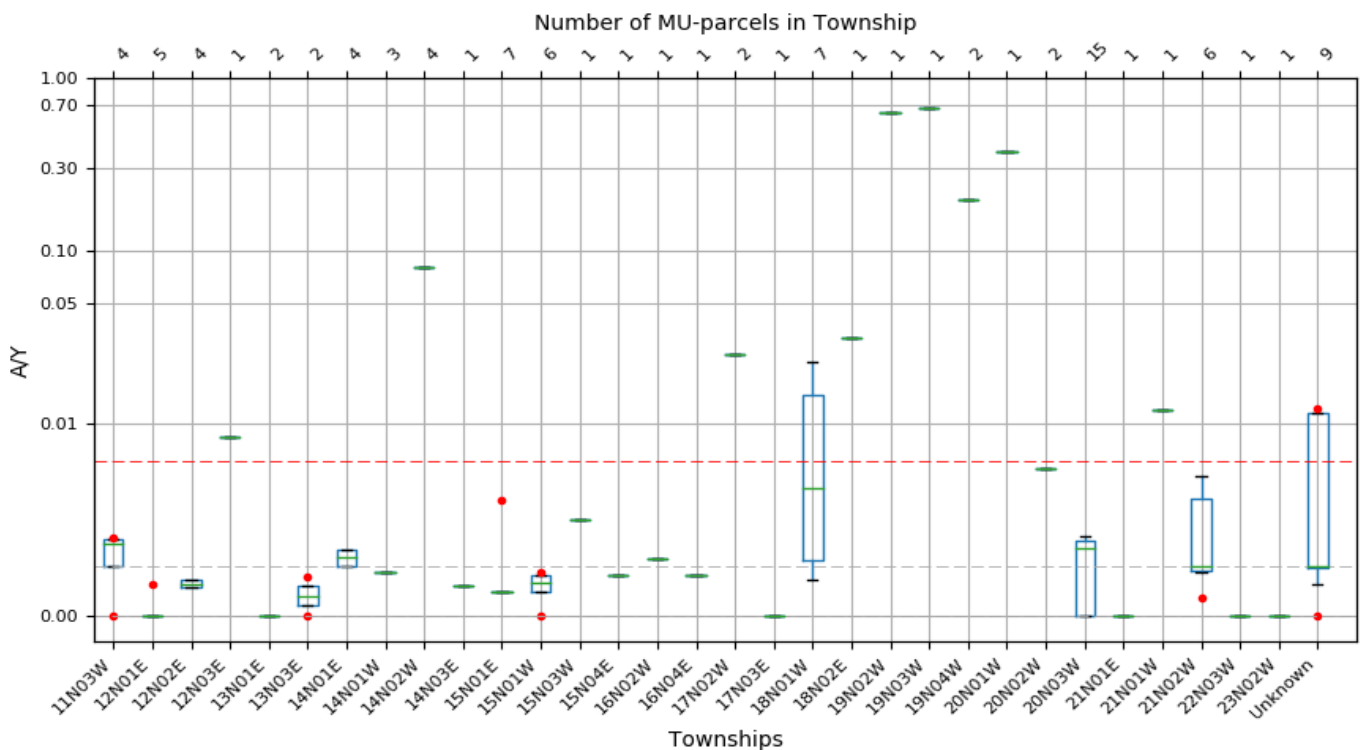
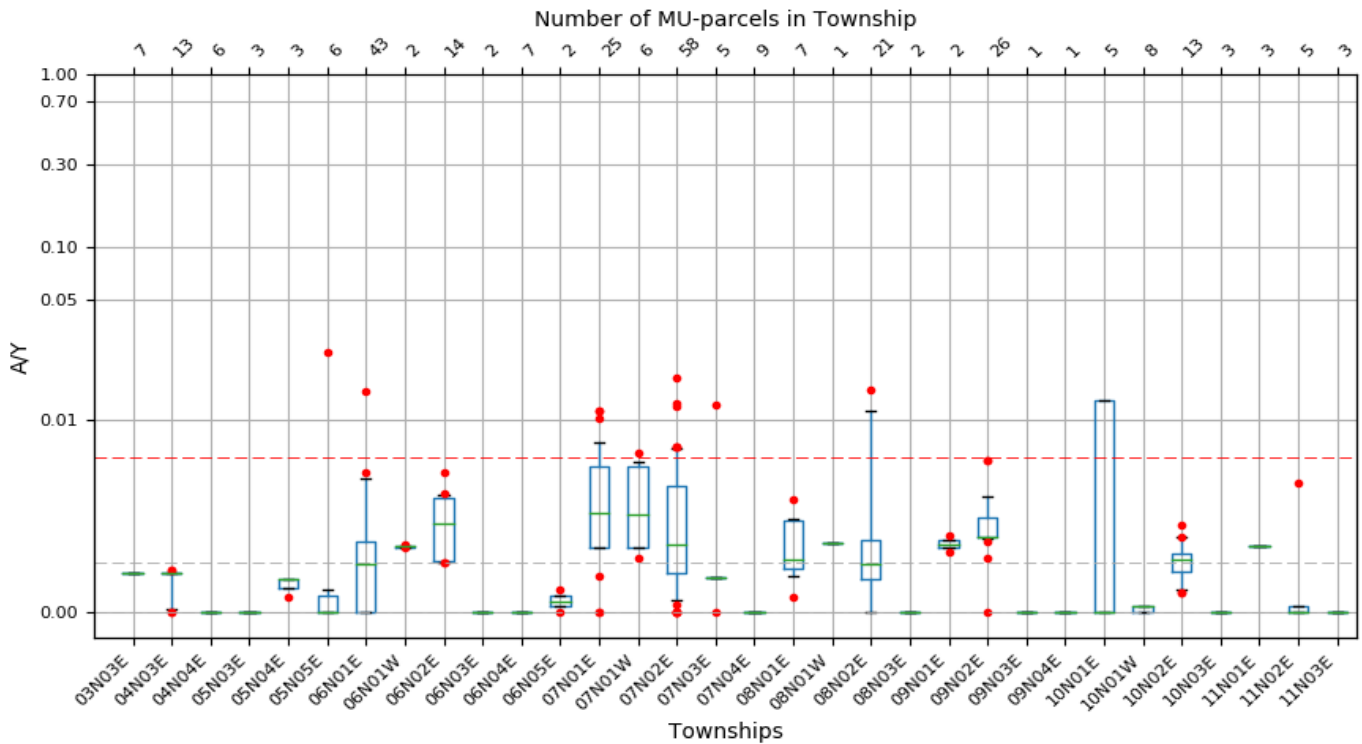


Table I-1. A/Y Summary Statistics for ALFALFA management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
03N03E	7	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0
04N03E	13	0.0	0.0022	0.0	0.002	0.002	0.002	0.0022	2
04N04E	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
05N03E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
05N04E	3	0.0008	0.0018	0.001	0.0013	0.0018	0.0018	0.0018	0
05N05E	6	0.0	0.0246	0.0	0.0	0.0	0.0008	0.0128	1
06N01E	43	0.0	0.0148	0.0	0.0	0.0025	0.0037	0.007	2
06N01W	2	0.0033	0.0035	0.0033	0.0034	0.0034	0.0034	0.0035	1
06N02E	14	0.0026	0.0073	0.0026	0.0026	0.0046	0.0059	0.0062	2
06N03E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
06N04E	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
06N05E	2	0.0	0.0011	0.0001	0.0003	0.0006	0.0008	0.001	1
07N01E	25	0.0	0.0114	0.0025	0.0033	0.0051	0.0076	0.0097	3
07N01W	6	0.0029	0.0083	0.0031	0.0033	0.0051	0.0076	0.008	1
07N02E	58	0.0	0.0174	0.0005	0.002	0.0036	0.0065	0.0085	6
07N03E	5	0.0	0.0123	0.0007	0.0018	0.0018	0.0018	0.0081	1
07N04E	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
08N01E	7	0.0008	0.0058	0.0015	0.0023	0.0027	0.0048	0.0053	1
08N01W	1	0.0036	0.0036						
08N02E	21	0.0	0.015	0.0	0.0017	0.0025	0.0038	0.0113	1
08N03E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
09N01E	2	0.0031	0.004	0.0032	0.0033	0.0036	0.0038	0.0039	1
09N02E	26	0.0	0.0079	0.0038	0.0039	0.0039	0.0049	0.006	2
09N03E	1	0.0	0.0						
09N04E	1	0.0	0.0						
10N01E	5	0.0	0.0131	0.0	0.0	0.0	0.0131	0.0131	0
10N01W	8	0.0	0.0003	0.0	0.0	0.0003	0.0003	0.0003	0
10N02E	13	0.001	0.0045	0.001	0.0021	0.0028	0.003	0.0039	1
10N03E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
11N01E	3	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0
11N02E	5	0.0	0.0067	0.0	0.0	0.0	0.0003	0.0041	1
11N03E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
11N03W	4	0.0	0.004	0.001	0.0025	0.0037	0.004	0.004	0
12N01E	5	0.0	0.0016	0.0	0.0	0.0	0.0	0.001	1
12N02E	4	0.0015	0.0019	0.0015	0.0015	0.0017	0.0019	0.0019	2

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
12N03E	1	0.0093	0.0093						
13N01E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
13N03E	2	0.0	0.0021	0.0002	0.0005	0.001	0.0016	0.0019	1
14N01E	4	0.0026	0.0034	0.0026	0.0026	0.003	0.0034	0.0034	0
14N01W	3	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0
14N02W	4	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0
14N03E	1	0.0016	0.0016						
15N01E	7	0.0013	0.006	0.0013	0.0013	0.0013	0.0013	0.0032	1
15N01W	6	0.0	0.0023	0.0006	0.0013	0.0018	0.0022	0.0023	1
15N03W	1	0.005	0.005						
15N04E	1	0.0021	0.0021						
16N02W	1	0.003	0.003						
16N04E	1	0.0021	0.0021						
17N02W	2	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0
17N03E	1	0.0	0.0						
18N01W	7	0.0019	0.0227	0.0019	0.0029	0.0066	0.0146	0.0227	0
18N02E	1	0.0313	0.0313						
19N02W	1	0.6261	0.6261						
19N03W	1	0.6667	0.6667						
19N04W	2	0.196	0.196	0.196	0.196	0.196	0.196	0.196	0
20N01W	1	0.375	0.375						
20N02W	2	0.0077	0.0077	0.0077	0.0077	0.0077	0.0077	0.0077	0
20N03W	15	0.0	0.0042	0.0	0.0	0.0035	0.0039	0.0042	0
21N01E	1	0.0	0.0						
21N01W	1	0.012	0.012						
21N02W	6	0.0009	0.0072	0.0016	0.0023	0.0026	0.006	0.0072	0
22N03W	1	0.0	0.0						
23N02W	1	0.0	0.0						
Unknown	9	0.0	0.0122	0.0014	0.0025	0.0026	0.0115	0.0117	1

Table I-2. A/R Summary Statistics for ALFALFA management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
03N03E	7	0.0642	0.0642	0.0642	0.0642	0.0642	0.0642	0.0642	0
04N03E	13	0.0	0.0708	0.0012	0.0642	0.0642	0.0642	0.0695	2
04N04E	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
05N03E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
05N04E	3	0.0246	0.0564	0.031	0.0405	0.0564	0.0564	0.0564	0
05N05E	6	0.0	0.7903	0.0	0.0	0.0	0.0274	0.4134	1
06N01E	43	0.0	0.4744	0.0	0.0	0.0803	0.1186	0.2248	2
06N01W	2	0.107	0.1132	0.1076	0.1086	0.1101	0.1116	0.1126	1
06N02E	14	0.0826	0.2339	0.0831	0.085	0.1482	0.1901	0.1972	2
06N03E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
06N04E	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
06N05E	2	0.0	0.0366	0.0037	0.0092	0.0183	0.0274	0.0329	1
07N01E	25	0.0	0.3646	0.0784	0.107	0.1651	0.2425	0.3117	3
07N01W	6	0.0917	0.2674	0.0993	0.107	0.1645	0.2432	0.2588	1
07N02E	58	0.0	0.5598	0.0181	0.0657	0.1132	0.21	0.2747	6
07N03E	5	0.0	0.3959	0.0229	0.0573	0.0573	0.0573	0.2605	1
07N04E	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
08N01E	7	0.0253	0.1875	0.0458	0.0734	0.0874	0.153	0.1688	1
08N01W	1	0.1167	0.1167						
08N02E	21	0.0	0.4815	0.0	0.0562	0.0803	0.1212	0.3618	1
08N03E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
09N01E	2	0.101	0.1273	0.1036	0.1076	0.1142	0.1207	0.1247	1
09N02E	26	0.0	0.2545	0.1213	0.1248	0.1267	0.1574	0.1941	2
09N03E	1	0.0	0.0						
09N04E	1	0.0	0.0						
10N01E	5	0.0	0.4192	0.0	0.0	0.0	0.4192	0.4192	0
10N01W	8	0.0	0.0101	0.0	0.0	0.0101	0.0101	0.0101	0
10N02E	13	0.0323	0.1449	0.0333	0.0678	0.0892	0.0977	0.1263	2
10N03E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
11N01E	3	0.1111	0.1111	0.1111	0.1111	0.1111	0.1111	0.1111	0
11N02E	5	0.0	0.2159	0.0	0.0	0.0	0.0101	0.1336	1
11N03E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
11N03W	4	0.0	0.1297	0.0332	0.083	0.1196	0.1287	0.1293	1
12N01E	5	0.0	0.0519	0.0	0.0	0.0	0.0	0.0311	1
12N02E	4	0.0468	0.0605	0.0468	0.0468	0.0536	0.0605	0.0605	0

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
12N03E	1	0.2986	0.2986						
13N01E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
13N03E	2	0.0	0.0667	0.0067	0.0167	0.0334	0.05	0.06	1
14N01E	4	0.0842	0.1106	0.0842	0.0842	0.0974	0.1106	0.1106	0
14N01W	3	0.0734	0.0734	0.0734	0.0734	0.0734	0.0734	0.0734	0
14N02W	4	2.5682	2.5682	2.5682	2.5682	2.5682	2.5682	2.5682	0
14N03E	1	0.0508	0.0508						
15N01E	7	0.0415	0.1922	0.0415	0.0415	0.0415	0.0415	0.1018	1
15N01W	6	0.0	0.0734	0.0208	0.0415	0.0553	0.0691	0.0713	1
15N03W	1	0.1605	0.1605						
15N04E	1	0.0669	0.0669						
16N02W	1	0.0963	0.0963						
16N04E	1	0.0669	0.0669						
17N02W	2	0.8026	0.8026	0.8026	0.8026	0.8026	0.8026	0.8026	0
17N03E	1	0.0	0.0						
18N01W	7	0.0602	0.7277	0.0602	0.0923	0.2133	0.4705	0.7277	0
18N02E	1	1.0051	1.0051						
19N02W	1	20.1004	20.1004						
19N03W	1	21.4018	21.4018						
19N04W	2	6.2921	6.2921	6.2921	6.2921	6.2921	6.2921	6.2921	0
20N01W	1	12.0385	12.0385						
20N02W	2	0.2472	0.2472	0.2472	0.2472	0.2472	0.2472	0.2472	0
20N03W	15	0.0	0.1338	0.0	0.0	0.1124	0.1248	0.1338	0
21N01E	1	0.0	0.0						
21N01W	1	0.3852	0.3852						
21N02W	6	0.0301	0.2327	0.0512	0.0752	0.0843	0.1956	0.2327	0
22N03W	1	0.0	0.0						
23N02W	1	0.0	0.0						
Unknown	9	0.0	0.3911	0.0428	0.0803	0.0842	0.3692	0.3749	1

Table I-3. A-R Summary Statistics for ALFALFA management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
03N03E	7	-583.0	-583.0	-583.0	-583.0	-583.0	-583.0	-583.0	0
04N03E	13	-583.0	-214.31	-583.0	-583.0	-583.0	-405.22	-355.16	2
04N04E	6	-373.8	-249.2	-373.8	-373.8	-373.8	-280.35	-249.2	0
05N03E	3	-436.1	-292.81	-436.1	-436.1	-436.1	-364.45	-321.47	1
05N04E	3	-443.62	-435.02	-441.9	-439.32	-435.02	-435.02	-435.02	0
05N05E	6	-373.8	-12.28	-373.8	-372.48	-355.59	-342.65	-177.47	1
06N01E	43	-458.4	-78.5	-458.4	-458.4	-377.81	-293.16	-148.18	5
06N01W	2	-333.8	-189.49	-319.37	-297.72	-261.64	-225.57	-203.92	1
06N02E	14	-482.11	-295.65	-450.69	-355.1	-343.02	-314.34	-308.11	1
06N03E	2	-436.1	-436.1	-436.1	-436.1	-436.1	-436.1	-436.1	0
06N04E	7	-517.09	-118.37	-498.4	-429.87	-323.96	-311.5	-234.25	1
06N05E	2	-373.8	-368.52	-373.27	-372.48	-371.16	-369.84	-369.05	1
07N01E	25	-539.1	-31.15	-510.83	-377.86	-333.8	-306.75	-233.57	2
07N01W	6	-396.1	-269.29	-370.12	-341.55	-333.8	-304.17	-281.79	1
07N02E	58	-517.51	-19.94	-423.4	-377.0	-338.62	-306.7	-218.56	6
07N03E	5	-411.1	-56.45	-411.1	-411.1	-411.1	-373.8	-183.39	1
07N04E	9	-436.1	-292.19	-386.26	-373.8	-311.5	-311.5	-302.65	1
08N01E	7	-576.85	-295.65	-554.2	-468.17	-324.97	-297.63	-295.65	0
08N01W	1	-302.65	-302.65						
08N02E	21	-562.54	-234.57	-551.98	-497.15	-458.4	-345.06	-234.57	0
08N03E	2	-249.2	-249.2	-249.2	-249.2	-249.2	-249.2	-249.2	0
09N01E	2	-498.47	-380.6	-486.68	-469.0	-439.54	-410.07	-392.39	1
09N02E	26	-498.4	-162.55	-490.7	-490.7	-371.68	-296.59	-211.31	3
09N03E	1	-186.9	-186.9						
09N04E	1	-168.21	-168.21						
10N01E	5	-311.5	-249.65	-311.5	-311.5	-311.5	-249.65	-249.65	0
10N01W	8	-467.25	-205.59	-345.66	-293.55	-293.55	-288.69	-253.56	1
10N02E	13	-522.7	-233.9	-519.9	-512.68	-490.7	-327.64	-313.51	1
10N03E	3	-404.95	-299.66	-404.95	-404.95	-404.95	-352.31	-320.72	1
11N01E	3	-251.96	-251.96	-251.96	-251.96	-251.96	-251.96	-251.96	0
11N02E	5	-311.5	-283.34	-311.5	-311.5	-311.5	-293.55	-287.42	1
11N03E	3	-404.95	-368.82	-404.95	-404.95	-404.95	-386.88	-376.04	1
11N03W	4	-321.34	-268.38	-318.39	-313.96	-291.5	-270.72	-269.32	1
12N01E	5	-441.08	-365.01	-441.08	-441.08	-441.08	-441.08	-395.44	1
12N02E	4	-306.76	-289.37	-306.76	-306.76	-298.06	-289.37	-289.37	0

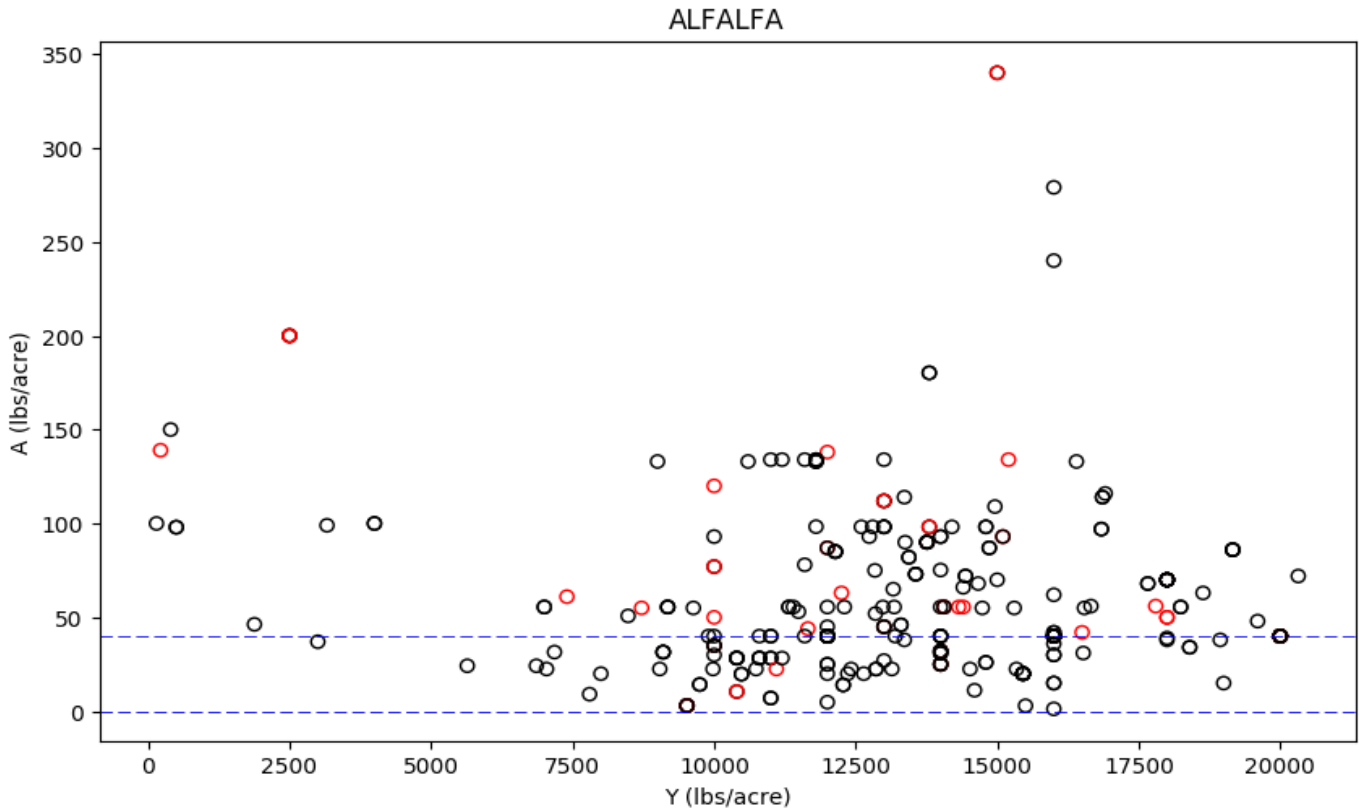
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
12N03E	1	-218.5	-218.5						
13N01E	2	-441.08	-441.08	-441.08	-441.08	-441.08	-441.08	-441.08	0
13N03E	2	-377.95	-342.65	-374.42	-369.12	-360.3	-351.48	-346.18	1
14N01E	4	-2795.7	-2050.1	-2795.7	-2795.7	-2422.9	-2050.1	-2050.1	0
14N01W	3	-404.1	-404.1	-404.1	-404.1	-404.1	-404.1	-404.1	0
14N02W	4	122.12	122.12	122.12	122.12	122.12	122.12	122.12	0
14N03E	1	-373.81	-373.81						
15N01E	7	-461.45	-213.38	-461.45	-461.45	-461.45	-461.45	-362.22	1
15N01W	6	-3015.6	-373.8	-3015.6	-2377.06	-461.45	-418.44	-388.95	1
15N03W	1	-261.5	-261.5						
15N04E	1	-348.8	-348.8						
16N02W	1	-281.5	-281.5						
16N04E	1	-348.8	-348.8						
17N02W	2	-24.6	-24.6	-24.6	-24.6	-24.6	-24.6	-24.6	0
17N03E	1	-4672.5	-4672.5						
18N01W	7	-468.4	-127.25	-468.4	-452.4	-343.1	-235.17	-127.25	0
18N02E	1	0.5	0.5						
19N02W	1	132.08	132.08						
19N03W	1	95.33	95.33						
19N04W	2	82.42	82.42	82.43	82.42	82.42	82.42	82.42	0
20N01W	1	137.54	137.54						
20N02W	2	-234.5	-234.5	-234.5	-234.5	-234.5	-234.5	-234.5	0
20N03W	15	-1619.0	-276.5	-1619.0	-623.0	-490.7	-373.8	-276.5	0
21N01E	1	-554.47	-554.47						
21N01W	1	-191.5	-191.5						
21N02W	6	-483.4	-286.8	-472.9	-460.9	-456.4	-329.2	-286.8	0
22N03W	1	-10.9	-10.9						
Unknown	9	-442.33	-208.65	-371.51	-320.57	-295.65	-229.2	-223.6	1

Table I-4. Summary Statistics for ALFALFA management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	412	0.0	0.6667	0.0	0.0003	0.0026	0.0049	0.0081	42
A/R	412	0.0	21.4018	0.0	0.0101	0.0826	0.1566	0.2597	42
A-R	411	-4672.5	137.54	-510.83	-442.97	-355.06	-293.55	-214.31	41

Figure I-2. Scatter plot of A vs. Y for ALFALFA with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



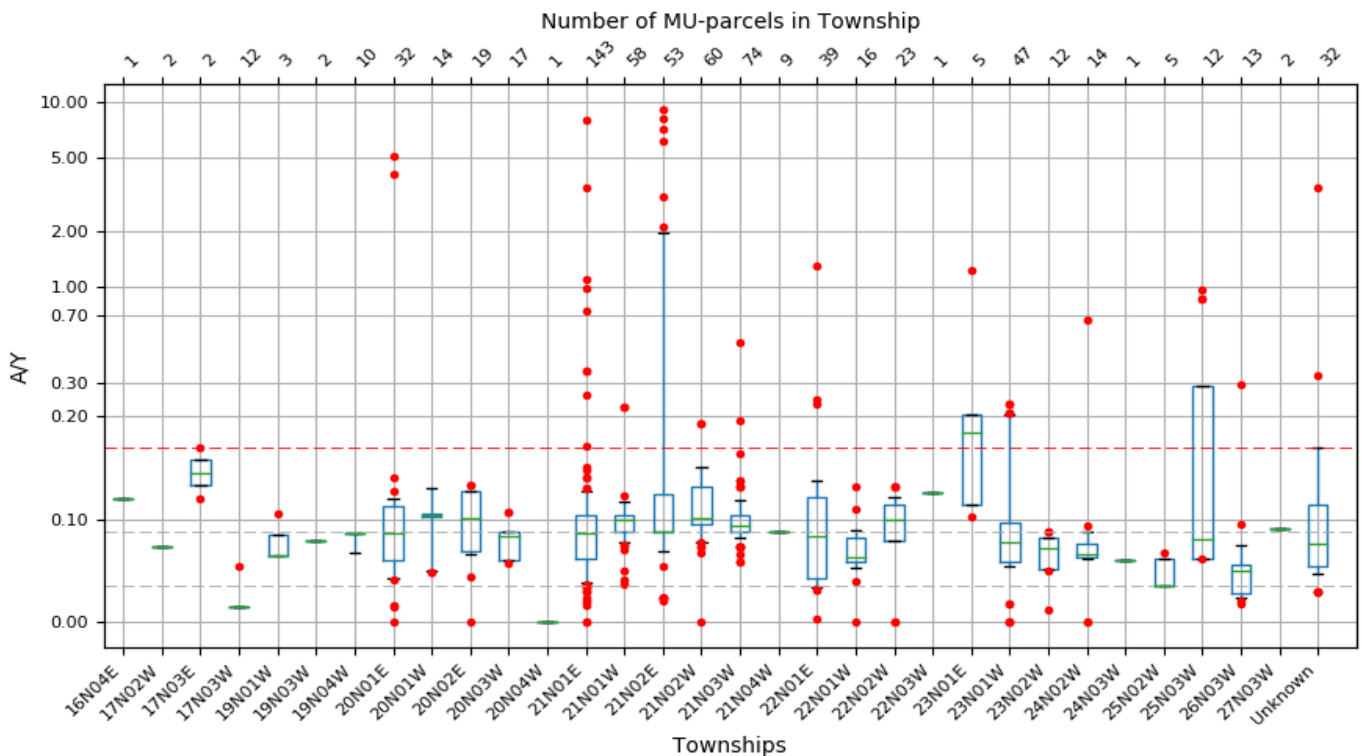
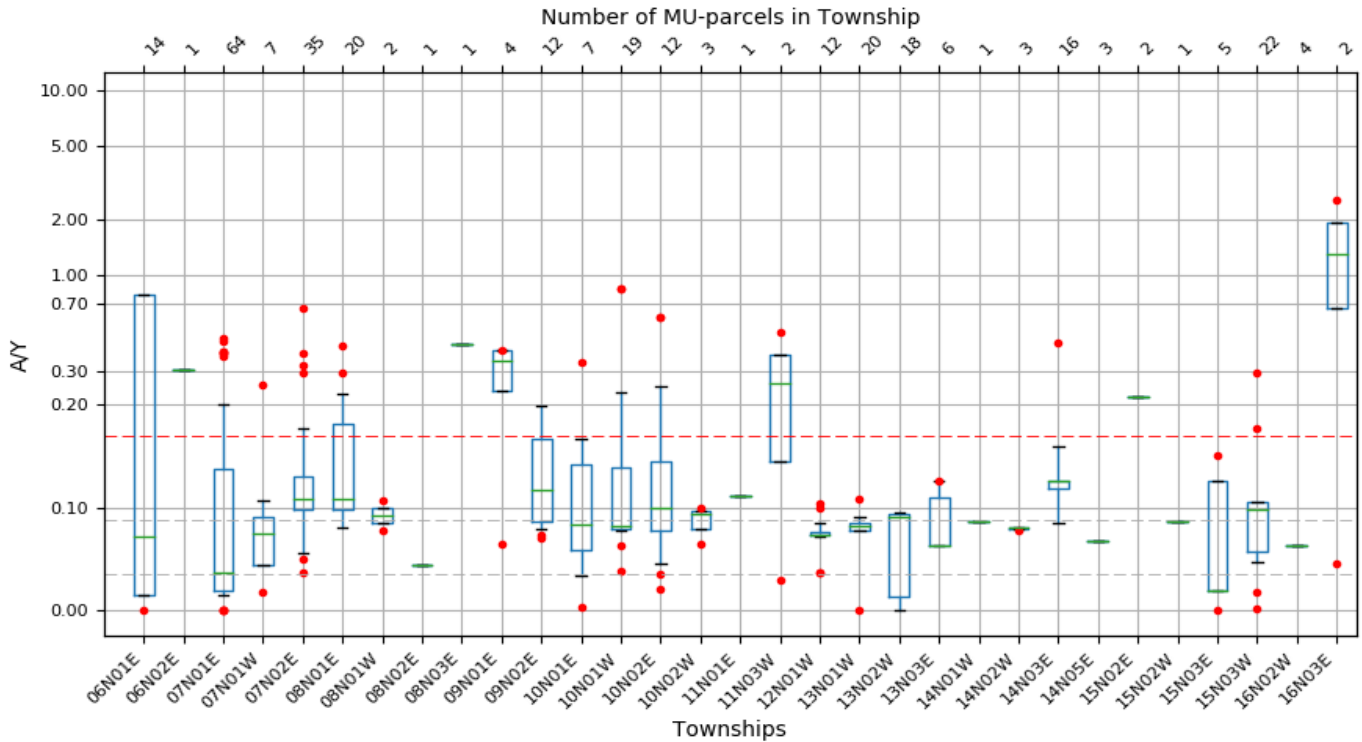
NOTE: 9.0 record(s) above Yield value of 25000 lbs/acre not shown to avoid skewing of scatter plot.

II. ALMONDS

Figure II-1. Box and Whisker plots of A/Y for ALMONDS management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for ALMONDS



NOTE: 1 record(s) with A/Y value > 10 lbs/acre not shown to avoid skewing of box plot.

Table II-1. A/Y Summary Statistics for ALMONDS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	14	0.0	0.78	0.015	0.015	0.0715	0.78	0.78	0
06N02E	1	0.3067	0.3067						
07N01E	64	0.0	0.4565	0.015	0.0185	0.0366	0.1378	0.3172	7
07N01W	7	0.0181	0.2536	0.0331	0.0437	0.075	0.0908	0.1655	1
07N02E	35	0.0367	0.6667	0.0552	0.0974	0.1083	0.1296	0.249	4
08N01E	20	0.08	0.4177	0.08	0.0979	0.1081	0.1818	0.2338	2
08N01W	2	0.0769	0.1063	0.0798	0.0842	0.0916	0.099	0.1034	1
08N02E	1	0.0444	0.0444						
08N03E	1	0.4237	0.4237						
09N01E	4	0.0649	0.3935	0.1342	0.2382	0.342	0.3894	0.3919	1
09N02E	12	0.0693	0.1993	0.074	0.0864	0.1171	0.1665	0.1993	0
10N01E	7	0.0032	0.3368	0.0214	0.0584	0.0833	0.1419	0.2347	1
10N01W	19	0.0386	0.8506	0.075	0.0786	0.0812	0.139	0.3568	2
10N02E	12	0.0201	0.5933	0.0361	0.077	0.1	0.1444	0.5591	2
10N02W	3	0.0646	0.1	0.0704	0.0791	0.0936	0.0968	0.0987	1
11N01E	1	0.1104	0.1104						
11N03W	2	0.0289	0.49	0.075	0.1442	0.2594	0.3747	0.4439	1
12N01W	12	0.0357	0.1034	0.0393	0.0723	0.0726	0.0757	0.0985	2
13N01W	20	0.0	0.1075	0.0769	0.0769	0.0824	0.0846	0.0909	1
13N02W	18	0.0	0.0955	0.0	0.0131	0.0902	0.0941	0.0955	0
13N03E	6	0.0625	0.1263	0.0625	0.0625	0.0625	0.1094	0.1256	1
14N01W	1	0.0866	0.0866						
14N02W	3	0.0769	0.08	0.0775	0.0784	0.08	0.08	0.08	0
14N03E	16	0.084	0.4296	0.084	0.118	0.125	0.125	0.1591	1
14N05E	3	0.0666	0.0666	0.0666	0.0666	0.0666	0.0666	0.0666	0
15N02E	2	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0
15N02W	1	0.0857	0.0857						
15N03E	5	0.0004	0.1506	0.0078	0.0189	0.0189	0.125	0.1404	1
15N03W	22	0.0015	0.2947	0.0472	0.0574	0.0971	0.1054	0.1054	2
16N02W	4	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0
16N03E	2	0.0452	2.5408	0.2948	0.6691	1.293	1.9169	2.2912	1
16N04E	1	0.12	0.12						
17N02W	2	0.0731	0.0731	0.0731	0.0731	0.0731	0.0731	0.0731	0
17N03E	2	0.12	0.17	0.125	0.1325	0.145	0.1575	0.165	1
17N03W	12	0.015	0.0533	0.015	0.015	0.015	0.015	0.015	1

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
19N01W	3	0.0643	0.1059	0.0643	0.0643	0.0643	0.0851	0.0976	1
19N03W	2	0.0783	0.0783	0.0783	0.0783	0.0783	0.0783	0.0783	0
19N04W	10	0.0667	0.0864	0.0667	0.086	0.0864	0.0864	0.0864	0
20N01E	32	0.0	5.0975	0.0411	0.0603	0.0855	0.1128	0.1268	4
20N01W	14	0.0478	0.1293	0.0485	0.1026	0.1042	0.1059	0.1293	0
20N02E	19	0.0	0.1333	0.0612	0.0683	0.1015	0.1277	0.1288	2
20N03W	17	0.0564	0.1067	0.0593	0.0593	0.0833	0.0875	0.0955	2
20N04W	1	0.0	0.0						
21N01E	143	0.0	8.0	0.0372	0.0608	0.0857	0.104	0.1295	15
21N01W	58	0.0371	0.2255	0.0762	0.0882	0.1	0.1034	0.1167	3
21N02E	53	0.0207	9.0975	0.0564	0.0882	0.0882	0.1238	2.0731	6
21N02W	60	0.0	0.1931	0.0773	0.0944	0.1009	0.1318	0.1507	2
21N03W	74	0.0585	0.5	0.0754	0.0875	0.0935	0.1044	0.128	8
21N04W	9	0.0875	0.0875	0.0875	0.0875	0.0875	0.0875	0.0875	0
22N01E	39	0.0026	1.2988	0.0337	0.0427	0.0836	0.1217	0.1374	3
22N01W	16	0.0	0.1318	0.046	0.0584	0.0621	0.0822	0.0999	2
22N02W	23	0.0	0.1318	0.0795	0.0795	0.1	0.1136	0.1296	3
22N03W	1	0.1261	0.1261						
23N01E	5	0.1026	1.2405	0.107	0.1135	0.1836	0.2039	0.8259	1
23N01W	47	0.0	0.2341	0.0391	0.0588	0.0774	0.0968	0.2055	5
23N02W	12	0.011	0.088	0.0496	0.0511	0.0718	0.0818	0.0874	2
24N02W	14	0.0	0.66	0.0183	0.0622	0.066	0.0758	0.0916	2
24N03W	1	0.06	0.06						
25N02W	5	0.0352	0.0667	0.0352	0.0352	0.0352	0.0611	0.0645	1
25N03W	12	0.061	0.96	0.0611	0.0611	0.0801	0.2925	0.87	3
26N03W	13	0.017	0.2962	0.0214	0.028	0.0489	0.055	0.0908	2
27N03W	2	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0
Unknown	32	0.0287	3.4247	0.0313	0.0533	0.0755	0.1136	0.17	2

Table II-2. A/R Summary Statistics for ALMONDS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	14	0.0	11.4706	0.2199	0.2199	1.0512	11.4706	11.4706	0
06N02E	1	4.5098	4.5098						
07N01E	64	0.0	6.7133	0.2199	0.2727	0.5391	2.0262	4.6646	7
07N01W	7	0.266	3.729	0.4864	0.6427	1.1029	1.336	2.4331	1
07N02E	35	0.5397	9.8039	0.8123	1.4323	1.5931	1.9065	3.6617	4
08N01E	20	1.1765	6.143	1.1765	1.4392	1.5897	2.6733	3.4383	2
08N01W	2	1.1312	1.5633	1.1744	1.2392	1.3472	1.4553	1.5201	1
08N02E	1	0.6536	0.6536						
08N03E	1	6.2313	6.2313						
09N01E	4	0.9544	5.7869	1.974	3.5033	5.0302	5.7273	5.7631	1
09N02E	12	1.0197	2.9312	1.0888	1.2708	1.7227	2.4485	2.9312	3
10N01E	7	0.0466	4.9528	0.3144	0.8586	1.2243	2.0868	3.4517	1
10N01W	19	0.5672	12.5085	1.1024	1.1564	1.1937	2.0446	5.2468	2
10N02E	12	0.2957	8.7255	0.5311	1.132	1.4706	2.1242	8.2226	2
10N02W	3	0.9502	1.4706	1.0356	1.1636	1.377	1.4238	1.4519	1
11N01E	1	1.624	1.624						
11N03W	2	0.4257	7.2059	1.1037	2.1208	3.8158	5.5108	6.5279	1
12N01W	12	0.5252	1.5211	0.5777	1.0634	1.0678	1.1138	1.4487	2
13N01W	20	0.0	1.5809	1.1312	1.1312	1.2108	1.2443	1.3369	1
13N02W	18	0.0	1.4047	0.0	0.1922	1.327	1.3836	1.4047	0
13N03E	6	0.9191	1.8576	0.9191	0.9191	0.9191	1.6084	1.8479	1
14N01W	1	1.273	1.273						
14N02W	3	1.1312	1.1765	1.1403	1.1538	1.1765	1.1765	1.1765	0
14N03E	16	1.2353	6.3183	1.2353	1.7361	1.8382	1.8382	2.3396	1
14N05E	3	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0
15N02E	2	3.2353	3.2353	3.2353	3.2353	3.2353	3.2353	3.2353	0
15N02W	1	1.2604	1.2604						
15N03E	5	0.006	2.2151	0.115	0.2785	0.2785	1.8382	2.0643	1
15N03W	22	0.0218	4.3344	0.6937	0.8443	1.4285	1.5499	1.5499	2
16N02W	4	0.9191	0.9191	0.9191	0.9191	0.9191	0.9191	0.9191	0
16N03E	2	0.6644	37.3652	4.3345	9.8396	19.0148	28.19	33.6951	1
16N04E	1	1.7654	1.7654						
17N02W	2	1.0747	1.0747	1.0747	1.0747	1.0747	1.0747	1.0747	0
17N03E	2	1.7654	2.5	1.8389	1.949	2.1327	2.3164	2.4265	1
17N03W	12	0.2206	0.7843	0.2206	0.2206	0.2206	0.2206	0.2206	1

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
19N01W	3	0.9454	1.5571	0.9454	0.9454	0.9454	1.2512	1.4348	1
19N03W	2	1.1509	1.1509	1.1509	1.1509	1.1509	1.1509	1.1509	0
19N04W	10	0.9804	1.2701	0.9804	1.2647	1.2701	1.2701	1.2701	0
20N01E	32	0.0	74.9632	0.6042	0.887	1.2569	1.6585	1.8659	4
20N01W	14	0.7026	1.9016	0.7124	1.5083	1.5327	1.5571	1.9016	0
20N02E	19	0.0	1.9608	0.9001	1.0049	1.4926	1.8779	1.8945	2
20N03W	17	0.8291	1.5686	0.8715	0.8715	1.2255	1.2868	1.4039	2
20N04W	1	0.0	0.0						
21N01E	143	0.0	117.6471	0.5476	0.8938	1.2605	1.5294	1.9047	15
21N01W	58	0.5463	3.3155	1.12	1.2976	1.4706	1.52	1.7157	3
21N02E	53	0.3046	133.7868	0.8296	1.2976	1.2976	1.8209	30.4862	6
21N02W	60	0.0	2.8396	1.1365	1.3888	1.4836	1.9377	2.2156	2
21N03W	74	0.8605	7.3529	1.1082	1.2868	1.3747	1.5349	1.8814	8
21N04W	9	1.2868	1.2868	1.2868	1.2868	1.2868	1.2868	1.2868	0
22N01E	39	0.0384	19.1005	0.4949	0.6277	1.229	1.7898	2.0209	3
22N01W	16	0.0	1.9377	0.6752	0.8583	0.9134	1.2084	1.4693	2
22N02W	23	0.0	1.9377	1.1698	1.1698	1.4706	1.6711	1.9049	3
22N03W	1	1.8545	1.8545						
23N01E	5	1.5083	18.2425	1.5725	1.6688	2.6999	2.9991	12.1451	1
23N01W	47	0.0	3.443	0.5754	0.8643	1.1389	1.4237	3.0224	5
23N02W	12	0.1622	1.2941	0.7286	0.7516	1.0566	1.2029	1.285	2
24N02W	14	0.0	9.7059	0.0	0.8971	0.9706	0.9706	1.2503	2
24N03W	1	0.8824	0.8824						
25N02W	5	0.0	0.9804	0.0	0.0	0.0	0.8987	0.9477	1
25N03W	12	0.8971	14.1176	0.8987	0.8987	1.1781	4.3015	12.7941	1
26N03W	13	0.0	4.3559	0.0	0.0	0.3088	0.8088	1.3353	2
27N03W	2	1.3235	1.3235	1.3235	1.3235	1.3235	1.3235	1.3235	0
Unknown	32	0.4219	50.3626	0.4593	0.7843	1.1103	1.6704	2.5	2

Table II-3. A-R Summary Statistics for ALMONDS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	14	-146.88	71.2	-72.3	-37.1	6.98	71.2	71.2	0
06N02E	1	35.8	35.8						
07N01E	64	-405.41	271.59	-228.68	-69.65	-7.34	86.26	123.14	6
07N01W	7	-238.74	155.88	-126.62	-49.83	14.0	38.74	100.44	1
07N02E	35	-39.41	166.95	-14.1	34.15	77.87	96.16	117.34	4
08N01E	20	12.0	168.78	12.0	37.56	68.67	86.41	123.96	2
08N01W	2	3.13	57.72	8.59	16.78	30.43	44.08	52.26	1
08N02E	1	-42.4	-42.4						
08N03E	1	20.99	20.99						
09N01E	4	-5.73	91.55	7.9	28.35	48.35	65.64	81.19	1
09N02E	12	1.94	157.6	17.93	32.91	49.41	68.09	68.8	1
10N01E	7	-90.76	155.63	-82.57	-30.86	15.39	49.2	103.53	1
10N01W	19	-82.4	142.06	10.58	16.22	23.4	86.6	136.17	1
10N02E	12	-109.58	166.32	-44.11	22.53	48.0	116.19	157.6	1
10N02W	3	-8.8	144.0	-1.4	9.7	28.2	86.1	120.84	1
11N01E	1	76.46	76.46						
11N03W	2	-178.08	211.0	-139.17	-80.81	16.46	113.73	172.09	1
12N01W	12	-67.8	47.48	-60.3	9.75	10.6	15.9	31.98	2
13N01W	20	-62.56	50.4	11.6	11.6	26.95	43.2	50.4	0
13N02W	18	-1224.0	63.98	-136.54	-29.72	44.7	46.1	55.88	1
13N03E	6	-2.2	102.6	-2.2	-2.2	-2.2	41.0	79.0	1
14N01W	1	45.03	45.03						
14N02W	3	11.6	30.0	15.28	20.8	30.0	30.0	30.0	0
14N03E	16	16.0	336.69	16.0	55.9	102.6	102.6	102.6	1
14N05E	3	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	
15N02E	2	15.05	15.05	15.05	15.05	15.05	15.05	15.05	0
15N02W	1	55.98	55.98						
15N03E	5	-13289.17	102.6	-8098.69	-312.97	-312.97	66.26	88.07	1
15N03W	22	-9871.61	177.64	-55.2	-29.52	83.38	101.1	106.08	1
16N02W	4	-13.2	-13.2	-13.2	-13.2	-13.2	-13.2	-13.2	0
16N03E	2	-61.62	27.25	-52.73	-39.4	-17.18	5.03	18.36	1
16N04E	1	45.12	45.12						
17N02W	2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	0
17N03E	2	45.12	204.0	61.01	84.84	124.56	164.28	188.11	1
17N03W	12	-265.0	-44.0	-265.0	-265.0	-265.0	-265.0	-265.0	1

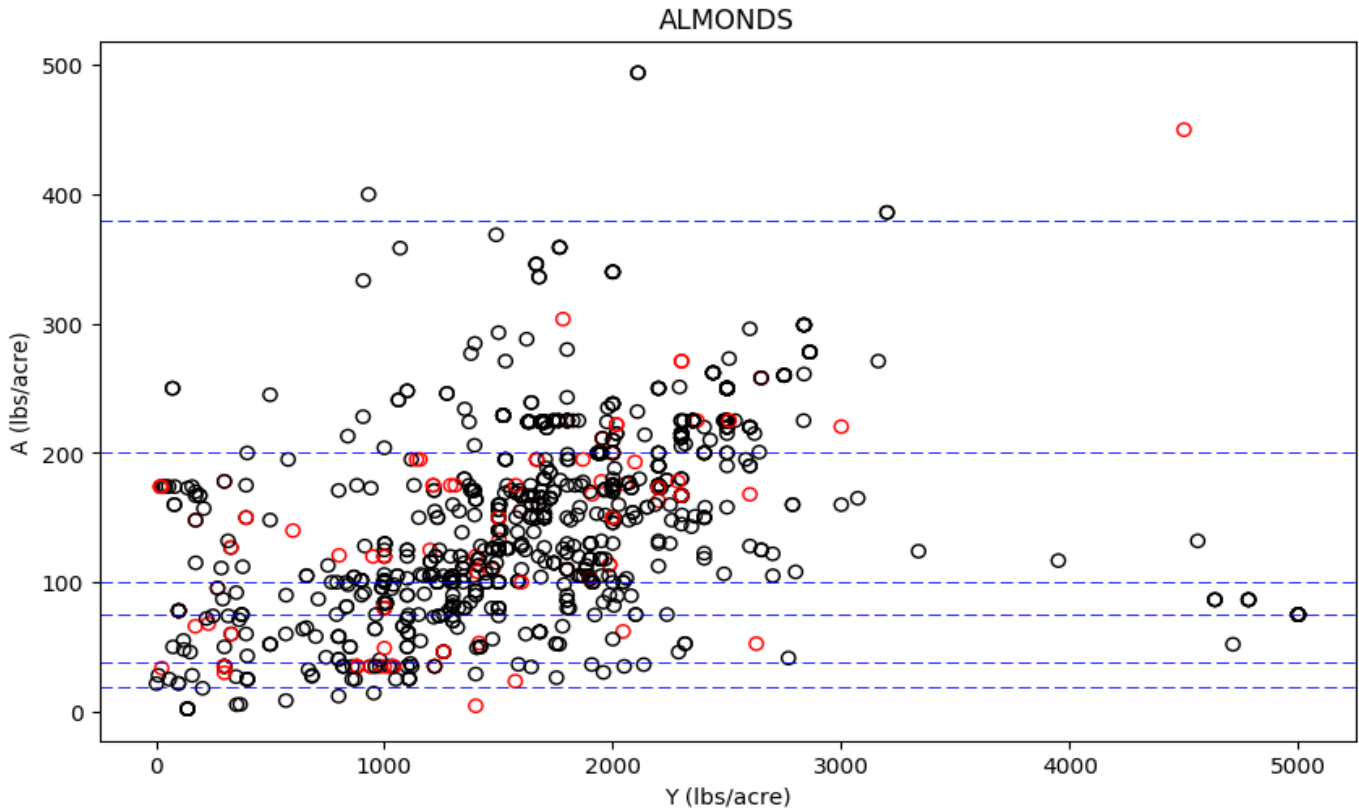
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
19N01W	3	-5.2	64.4	-5.2	-5.2	-5.2	29.6	50.48	1
19N03W	2	23.6	23.6	23.6	23.6	23.6	23.6	23.6	0
19N04W	10	-2.0	40.4	-2.0	36.0	40.4	40.4	40.4	0
20N01E	32	-102.91	171.68	-53.77	-10.32	36.14	53.66	65.76	4
20N01W	14	-36.4	106.68	-35.2	64.4	65.9	67.4	106.68	0
20N02E	19	-238.0	105.18	-10.86	0.6	48.14	88.2	105.18	0
20N03W	17	-11.8	58.0	-11.8	-8.66	36.8	39.0	53.2	2
20N04W	1	-68.0	-68.0						
21N01E	143	-398.8	245.04	-34.35	-10.94	23.38	53.0	77.1	14
21N01W	58	-102.98	173.2	13.2	21.35	68.42	80.0	80.0	2
21N02E	53	-66.2	172.7	-17.36	34.4	34.4	77.09	165.59	6
21N02W	60	-2497.16	159.37	12.23	43.05	73.0	108.4	125.64	2
21N03W	74	-17.84	191.0	13.78	39.0	55.6	58.6	106.48	8
21N04W	9	39.0	39.0	39.0	39.0	39.0	39.0	39.0	0
22N01E	39	-500.88	267.43	-35.72	-20.76	18.0	34.88	113.16	1
22N01W	16	-95.2	108.4	-54.24	-12.93	-9.87	19.84	48.73	2
22N02W	23	-142.8	168.4	25.4	25.4	55.6	100.4	108.4	2
22N03W	1	46.08	46.08						
23N01E	5	67.4	189.77	76.35	89.77	108.8	163.33	179.19	1
23N01W	47	-449.96	350.52	-41.0	-14.38	13.18	59.97	235.21	5
23N02W	12	-268.57	38.18	-44.3	-38.0	2.77	15.18	19.52	2
24N02W	12	-7.57	103.15	-7.28	-3.77	-3.48	24.47	37.3	2
24N03W	1	-17.6	-17.6						
25N02W	5	-46.56	-2.0	-46.56	-46.56	-46.56	-12.4	-6.16	1
25N03W	12	-16.41	155.17	-12.4	-12.4	8.6	75.99	153.95	1
26N03W	13	-108.9	114.1	-79.44	-71.41	-39.13	-23.23	42.11	2
27N03W	2	29.33	29.33	29.33	29.33	29.33	29.33	29.33	0
Unknown	32	-68.05	285.71	-47.96	-22.0	10.17	58.58	204.0	2

Table II-4. Summary Statistics for ALMONDS management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	1057	0.0	9.0975	0.0347	0.0636	0.0882	0.11	0.17	103
A/R	1057	0.0	133.7868	0.4541	0.9353	1.2976	1.6183	2.5	103
A-R	1055	-13289.17	350.52	-46.5	-5.34	34.4	68.42	108.64	106

Figure II-2. Scatter plot of A vs. Y for ALMONDS with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



NOTE: 12.0 record(s) above Yield value of 5000 lbs/acre not shown to avoid skewing of scatter plot.

III. BEANS - DRY

Figure III-1. Box and Whisker plots of A/Y for BEANS - DRY management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for BEANS - DRY

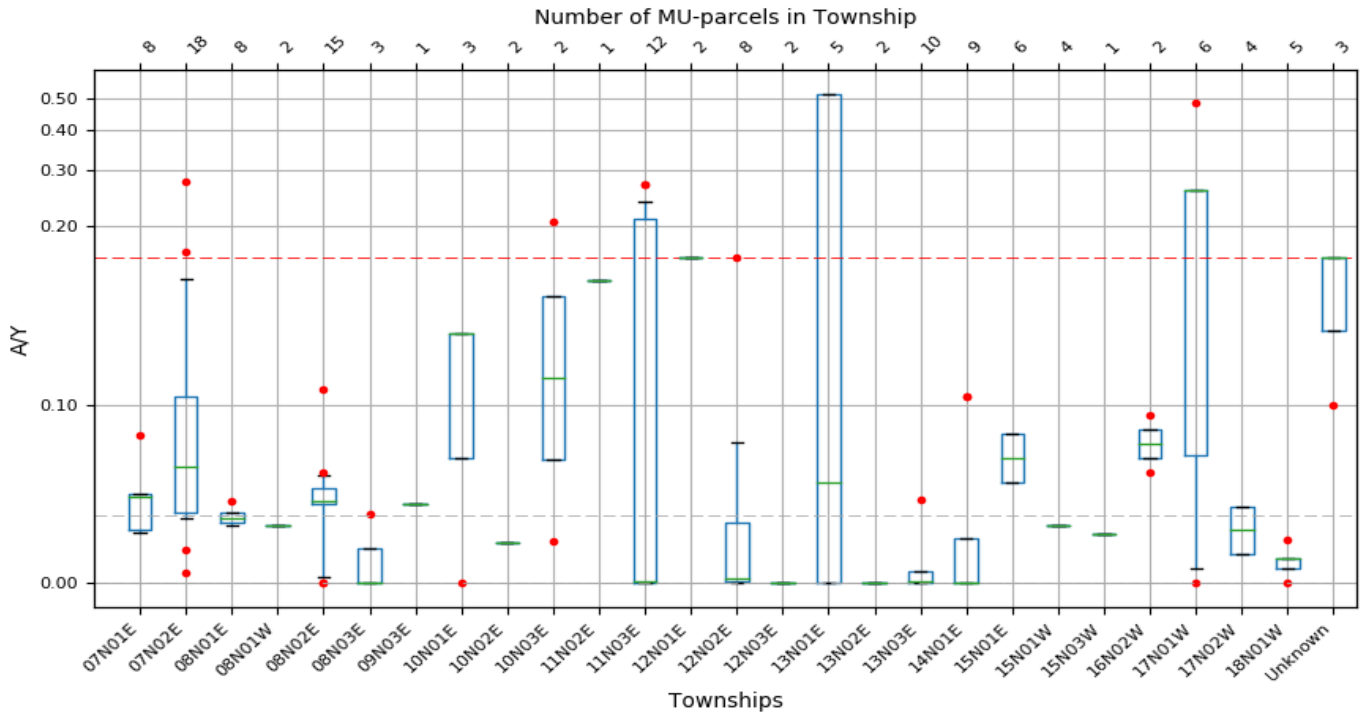


Table III-1. A/Y Summary Statistics for BEANS - DRY management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
07N01E	8	0.0284	0.0826	0.0284	0.03	0.0483	0.05	0.0598	1
07N02E	18	0.0059	0.2771	0.031	0.0392	0.065	0.1042	0.1749	2
08N01E	8	0.032	0.0457	0.032	0.0336	0.0364	0.0395	0.0415	1
08N01W	2	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0
08N02E	15	0.0	0.1082	0.0012	0.0438	0.0458	0.0534	0.0612	2
08N03E	3	0.0	0.0387	0.0	0.0	0.0	0.0194	0.031	1
09N03E	1	0.0444	0.0444						
10N01E	3	0.0	0.1402	0.028	0.0701	0.1402	0.1402	0.1402	0
10N02E	2	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0
10N03E	2	0.0235	0.2067	0.0418	0.0693	0.1151	0.1609	0.1884	1
11N02E	1	0.1699	0.1699						
11N03E	12	0.0	0.2713	0.0	0.0	0.0004	0.2112	0.268	2
12N01E	2	0.1823	0.1823	0.1823	0.1823	0.1823	0.1823	0.1823	0
12N02E	8	0.0	0.1823	0.0	0.0005	0.002	0.034	0.1097	1
12N03E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
13N01E	5	0.0	0.5164	0.0	0.0	0.056	0.5164	0.5164	0
13N02E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
13N03E	10	0.0	0.0464	0.0	0.0002	0.0007	0.006	0.01	1
14N01E	9	0.0	0.1042	0.0	0.0	0.0	0.025	0.1042	2
15N01E	6	0.056	0.0833	0.056	0.056	0.0696	0.0833	0.0833	0
15N01W	4	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0.0322	0
15N03W	1	0.0272	0.0272						
16N02W	2	0.0615	0.0944	0.0648	0.0697	0.0779	0.0862	0.0911	1
17N01W	6	0.0	0.4833	0.0041	0.0712	0.26	0.26	0.3717	1
17N02W	4	0.0164	0.0425	0.0164	0.0164	0.0295	0.0425	0.0425	0
18N01W	5	0.0	0.0244	0.0033	0.0082	0.0133	0.0133	0.02	1
Unknown	3	0.1	0.1823	0.1165	0.1412	0.1823	0.1823	0.1823	0

Table III-2. A/R Summary Statistics for BEANS - DRY management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
07N01E	8	0.8017	2.3326	0.8017	0.8478	1.3637	1.4116	1.6879	1
07N02E	18	0.1675	7.8235	0.875	1.1071	1.8352	2.94	4.9389	2
08N01E	8	0.9023	1.2889	0.9025	0.9474	1.029	1.1152	1.1714	1
08N01W	2	0.9097	0.9097	0.9097	0.9097	0.9097	0.9097	0.9097	0
08N02E	15	0.0	3.0544	0.0347	1.2371	1.294	1.5079	1.7285	2
08N03E	3	0.0	1.0922	0.0	0.0	0.0	0.5461	0.8738	1
09N03E	1	1.2548	1.2548						
10N01E	3	0.0	3.9596	0.7919	1.9798	3.9596	3.9596	3.9596	0
10N02E	2	0.6274	0.6274	0.6274	0.6274	0.6274	0.6274	0.6274	0
10N03E	2	0.6643	5.8347	1.1813	1.9569	3.2495	4.5421	5.3177	1
11N02E	1	4.7968	4.7968						
11N03E	12	0.0	7.66	0.0	0.0	0.0104	5.9621	7.5653	2
12N01E	2	5.1466	5.1466	5.1466	5.1466	5.1466	5.1466	5.1466	0
12N02E	8	0.0	5.1466	0.0	0.0156	0.0569	0.9618	3.0968	1
12N03E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
13N01E	5	0.0	14.5791	0.0	0.0	1.5802	14.5791	14.5791	0
13N02E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
13N03E	10	0.0	1.3111	0.0	0.0052	0.0208	0.1688	0.283	1
14N01E	9	0.0	2.9409	0.0	0.0	0.0	0.7071	2.9409	0
15N01E	6	1.5802	2.3527	1.5802	1.5802	1.9664	2.3527	2.3527	0
15N01W	4	0.9079	0.9079	0.9079	0.9079	0.9079	0.9079	0.9079	
15N03W	1	0.7676	0.7676						
16N02W	2	1.7374	2.6664	1.8303	1.9696	2.2019	2.4341	2.5735	1
17N01W	6	0.0	13.6458	0.1155	2.0084	7.3405	7.3405	10.4932	1
17N02W	4	0.4638	1.1999	0.4638	0.4638	0.8318	1.1999	1.1999	0
18N01W	5	0.0	0.6887	0.0924	0.231	0.3764	0.3764	0.5638	1
Unknown	3	2.8233	5.1466	3.288	3.985	5.1466	5.1466	5.1466	2

Table III-3. A-R Summary Statistics for BEANS - DRY management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

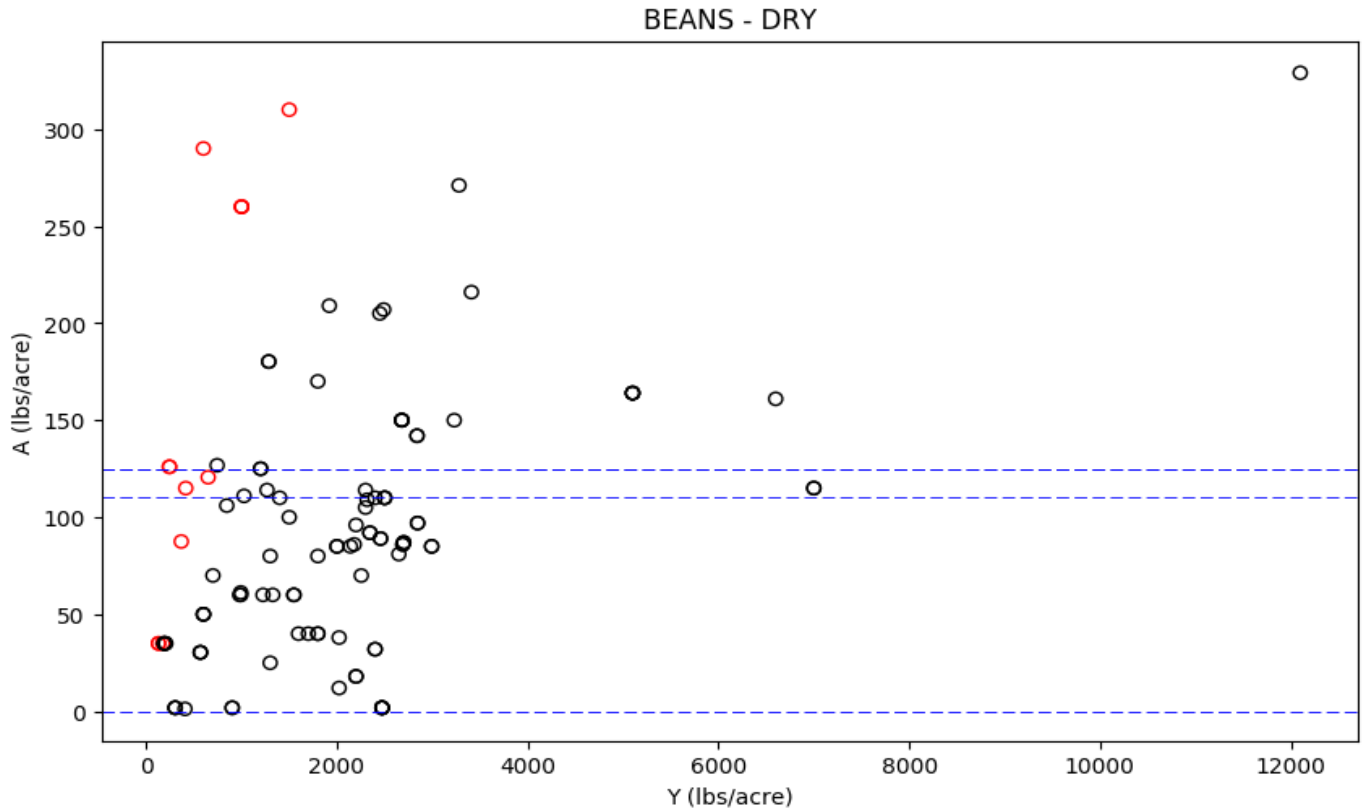
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
07N01E	8	-21.02	154.82	-21.02	-14.88	29.73	41.41	75.43	1
07N02E	18	-59.65	140.99	-8.71	8.9	58.0	99.61	118.4	2
08N01E	8	-9.32	23.53	-9.29	-5.16	0.72	8.86	13.48	1
08N01W	2	-8.63	-8.63	-8.63	-8.63	-8.63	-8.63	-8.63	0
08N02E	15	-14.42	74.66	-13.92	10.23	18.08	23.14	25.66	2
08N03E	3	-33.85	5.06	-33.38	-32.68	-31.51	-13.22	-2.25	1
09N03E	1	16.24	16.24						
10N01E	3	-44.28	134.71	-8.48	45.22	134.71	134.71	134.71	0
10N02E	2	-23.76	-23.76	-23.76	-23.76	-23.76	-23.76	-23.76	0
10N03E	2	-20.21	256.87	7.49	49.06	118.33	187.6	229.16	1
11N02E	1	27.7	27.7						
11N03E	12	-85.77	74.47	-77.92	-77.92	-70.84	29.26	30.43	1
12N01E	2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	0
12N02E	8	-85.77	60.41	-75.32	-70.84	-30.14	-8.73	37.86	1
12N03E	2	-70.84	-48.53	-68.61	-65.26	-59.68	-54.1	-50.76	1
13N01E	5	-70.84	117.36	-70.84	-70.84	55.07	117.36	117.36	0
13N02E	2	-70.84	-2.94	-64.05	-53.86	-36.89	-19.91	-9.73	1
13N03E	10	-85.77	35.59	-85.77	-78.49	-31.88	-8.96	-4.5	1
14N01E	9	-43.71	82.5	-42.74	-42.5	-1.35	-1.35	82.5	0
15N01E	6	28.75	55.07	28.75	28.75	41.91	55.07	55.07	0
15N01W	4	-16.64	-16.64	-16.64	-16.64	-16.64	-16.64	-16.64	0
15N03W	1	-99.58	-99.58						
16N02W	2	33.95	106.24	41.18	52.03	70.1	88.17	99.02	1
17N01W	6	-77.92	268.75	-68.92	11.2	224.58	224.58	246.66	1
17N02W	4	-132.94	14.16	-132.94	-132.94	-59.39	14.16	14.16	0
18N01W	5	-77.92	-53.01	-75.86	-72.77	-59.92	-53.01	-53.01	0
Unknown	3	28.2	45.21	28.2	28.2	28.2	36.7	41.8	1

Table III-4. Summary Statistics for BEANS - DRY management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	144	0.0	0.5164	0.0	0.002	0.0374	0.0796	0.1823	13
A/R	144	0.0	14.5791	0.0	0.0569	1.0574	2.2469	5.1466	13
A-R	144	-132.94	268.75	-76.38	-33.7	3.52	30.96	100.39	15

Figure III-2. Scatter plot of A vs. Y for BEANS - DRY with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



IV. CORN - FODDER/SILAGE

Figure IV-1. Box and Whisker plots of A/Y for CORN - FODDER/SILAGE management units grouped by T-R. Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for CORN - FODDER/SILAGE

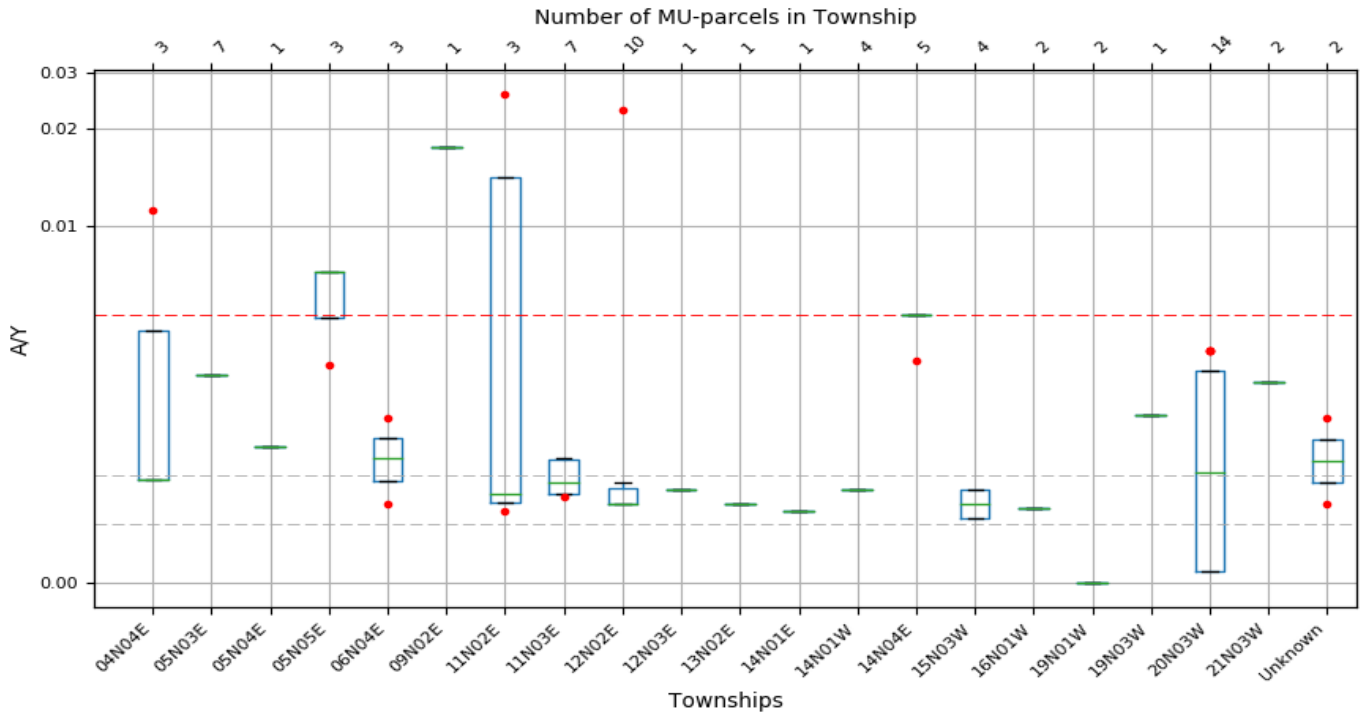


Table IV-1. A/Y Summary Statistics for CORN - FODDER/SILAGE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N04E	3	0.0029	0.0112	0.0029	0.0029	0.0029	0.007	0.0095	1
05N03E	7	0.0058	0.0058	0.0058	0.0058	0.0058	0.0058	0.0058	0
05N04E	1	0.0038	0.0038						
05N05E	3	0.0061	0.0087	0.0066	0.0074	0.0087	0.0087	0.0087	0
06N04E	3	0.0022	0.0046	0.0025	0.0028	0.0035	0.004	0.0044	1
09N02E	1	0.0175	0.0175						
11N02E	3	0.002	0.0256	0.0021	0.0023	0.0025	0.014	0.021	1
11N03E	7	0.0024	0.0035	0.0025	0.0025	0.0028	0.0034	0.0035	0
12N02E	10	0.0022	0.0228	0.0022	0.0022	0.0022	0.0026	0.0048	1
12N03E	1	0.0026	0.0026						
13N02E	1	0.0022	0.0022						
14N01E	1	0.002	0.002						
14N01W	4	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0
14N04E	5	0.0062	0.0075	0.0067	0.0075	0.0075	0.0075	0.0075	0
15N03W	4	0.0018	0.0026	0.0018	0.0018	0.0022	0.0026	0.0026	0
16N01W	2	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0
19N01W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
19N03W	1	0.0047	0.0047						
20N03W	14	0.0003	0.0065	0.0003	0.0003	0.0031	0.006	0.0065	4
21N03W	2	0.0056	0.0056	0.0056	0.0056	0.0056	0.0056	0.0056	0
Unknown	2	0.0022	0.0046	0.0024	0.0028	0.0034	0.004	0.0044	1

Table IV-2. A/R Summary Statistics for CORN - FODDER/SILAGE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N04E	3	0.7559	2.9762	0.7559	0.7559	0.7559	1.866	2.5321	1
05N03E	7	1.5432	1.5432	1.5432	1.5432	1.5432	1.5432	1.5432	0
05N04E	1	0.9921	0.9921						
05N05E	3	1.6176	2.2894	1.752	1.9535	2.2894	2.2894	2.2894	0
06N04E	3	0.582	1.2169	0.6484	0.748	0.9139	1.0654	1.1563	1
09N02E	1	4.6296	4.6296						
11N02E	3	0.5291	6.7807	0.5556	0.5953	0.6614	3.721	5.5568	1
11N03E	7	0.6349	0.9391	0.6508	0.6614	0.7408	0.9127	0.9312	1
12N02E	10	0.5701	6.0347	0.5701	0.5701	0.5701	0.7044	1.2702	1
12N03E	1	0.701	0.701						
13N02E	1	0.5701	0.5701						
14N01E	1	0.5423	0.5423						
14N01W	4	0.6944	0.6944	0.6944	0.6944	0.6944	0.6944	0.6944	0
14N04E	5	1.6362	1.9841	1.7754	1.9841	1.9841	1.9841	1.9841	4
15N03W	4	0.463	0.6962	0.463	0.463	0.5796	0.6962	0.6962	0
16N01W	2	0.552	0.552	0.552	0.552	0.552	0.552	0.552	0
19N01W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
19N03W	1	1.2346	1.2346						
20N03W	14	0.0688	1.7196	0.0688	0.0688	0.8267	1.5745	1.7196	0
21N03W	2	1.4697	1.4697	1.4697	1.4697	1.4697	1.4697	1.4697	0
Unknown	2	0.5701	1.2169	0.6348	0.7318	0.8935	1.0552	1.1522	1

Table IV-3. A-R Summary Statistics for CORN - FODDER/SILAGE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

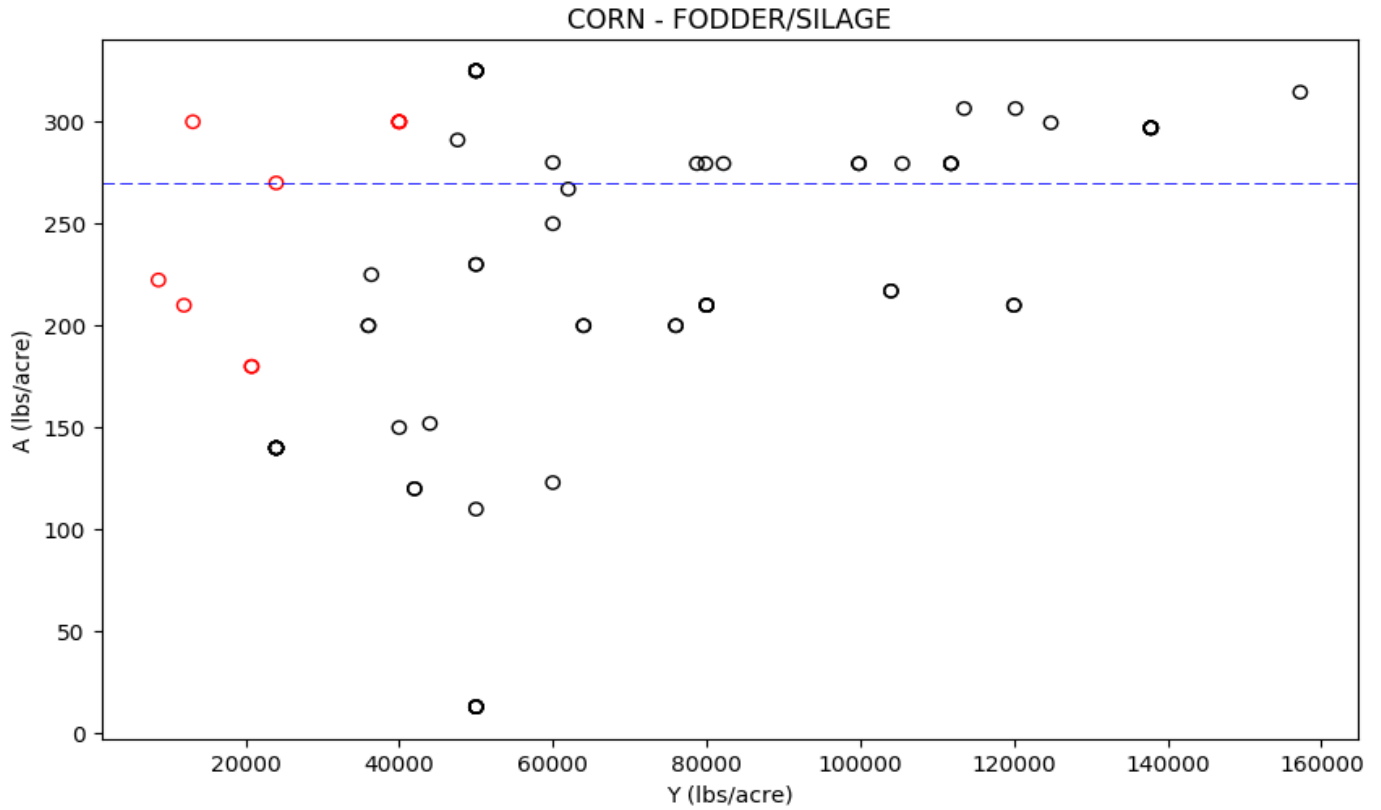
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N04E	3	-38.76	179.28	-38.76	-38.76	-38.76	70.26	135.67	1
05N03E	7	49.28	49.28	49.28	49.28	49.28	49.28	49.28	0
05N04E	1	-1.2	-1.2						
05N05E	3	101.38	111.12	101.38	101.38	101.38	106.25	109.17	1
06N04E	3	-79.0	41.0	-66.06	-46.66	-14.32	13.34	29.94	1
09N02E	1	164.64	164.64						
11N02E	3	-279.94	189.58	-252.58	-211.52	-143.1	23.24	123.05	1
11N03E	7	-172.24	-18.14	-154.76	-143.1	-97.82	-26.79	-20.68	1
12N02E	10	-223.96	250.29	-223.96	-223.96	-223.96	-128.92	-63.01	1
12N03E	1	-119.21	-119.21						
13N02E	1	-223.96	-223.96						
14N01E	1	-103.8	-103.8						
14N01W	4	-92.4	-92.4	-92.4	-92.4	-92.4	-92.4	-92.4	0
14N04E	5	87.48	148.8	112.01	148.8	148.8	148.8	148.8	0
15N03W	4	-243.6	-87.28	-243.6	-243.6	-165.44	-87.28	-87.28	0
16N01W	2	-176.12	-176.12	-176.12	-176.12	-176.12	-176.12	-176.12	0
19N01W	2	-6.05	-6.05	-6.05	-6.05	-6.05	-6.05	-6.05	0
19N03W	1	53.2	53.2						
20N03W	14	-176.0	136.0	-176.0	-176.0	-41.92	110.16	136.0	0
21N03W	2	63.92	63.92	63.92	63.92	63.92	63.92	63.92	0
Unknown	2	-223.96	41.0	-197.46	-157.72	-91.48	-25.24	14.5	1

Table IV-4. Summary Statistics for CORN - FODDER/SILAGE management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	80	0.0	0.0256	0.0017	0.0022	0.003	0.0058	0.0075	6
A/R	80	0.0	6.7807	0.4236	0.5701	0.7913	1.5432	1.9841	6
A-R	80	-279.94	250.29	-223.96	-153.95	-34.99	63.92	137.28	8

Figure IV-2. Scatter plot of A vs. Y for CORN - FODDER/SILAGE with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



V. CORN - GRAIN

Figure V-1. Box and Whisker plots of A/Y for CORN - GRAIN management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for CORN - GRAIN

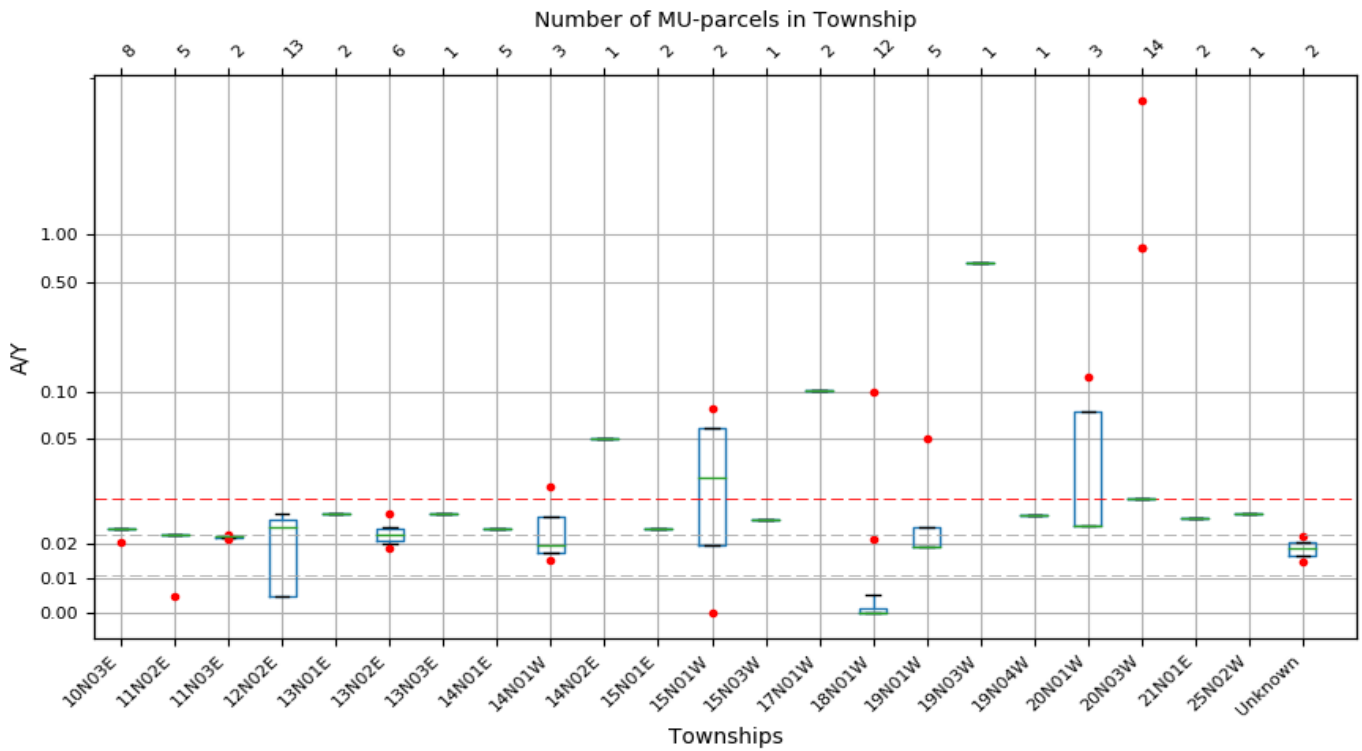
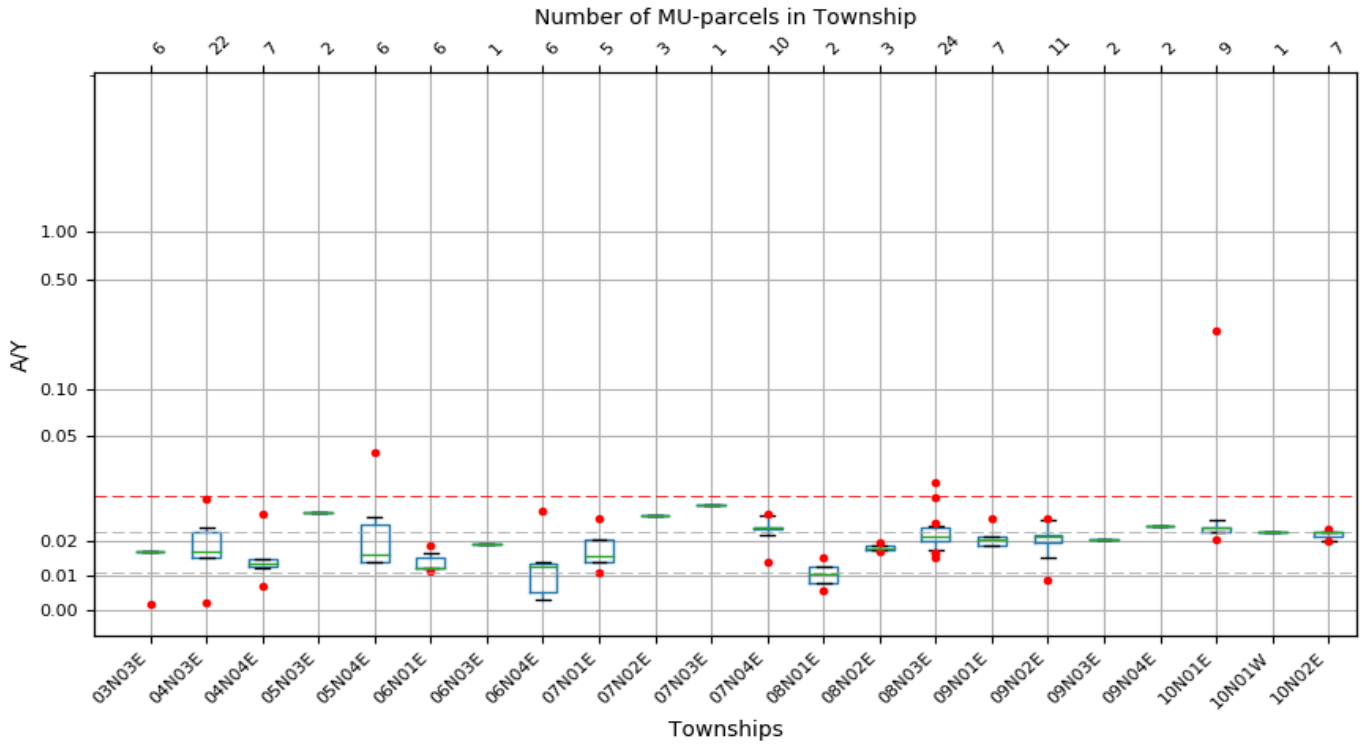


Table V-1. A/Y Summary Statistics for CORN - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
03N03E	6	0.0018	0.0167	0.0092	0.0167	0.0167	0.0167	0.0167	0
04N03E	22	0.0022	0.032	0.0152	0.0152	0.0167	0.0224	0.0238	1
04N04E	7	0.007	0.0275	0.0099	0.0126	0.0134	0.0147	0.0198	1
05N03E	2	0.0281	0.0281	0.0281	0.0281	0.0281	0.0281	0.0281	0
05N04E	6	0.0136	0.0455	0.0136	0.0136	0.0159	0.0246	0.0361	1
06N01E	6	0.011	0.0186	0.0116	0.0122	0.0122	0.0152	0.0174	1
06N03E	1	0.0188	0.0188						
06N04E	6	0.0029	0.0287	0.0029	0.0053	0.0125	0.0133	0.0212	1
07N01E	5	0.0107	0.0264	0.0119	0.0136	0.0157	0.0201	0.0239	1
07N02E	3	0.0272	0.0272	0.0272	0.0272	0.0272	0.0272	0.0272	0
07N03E	1	0.03	0.03						
07N04E	10	0.0136	0.0275	0.0205	0.0232	0.0236	0.0239	0.027	1
08N01E	2	0.0055	0.015	0.0064	0.0079	0.0102	0.0126	0.014	1
08N02E	3	0.0167	0.0195	0.0169	0.0173	0.0178	0.0186	0.0192	1
08N03E	24	0.0151	0.0366	0.0167	0.0199	0.0213	0.0236	0.0248	3
09N01E	7	0.0186	0.0261	0.0186	0.0186	0.0204	0.021	0.0231	1
09N02E	11	0.0087	0.0261	0.0152	0.0195	0.0212	0.0217	0.0261	0
09N03E	2	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201	0
09N04E	2	0.0242	0.0242	0.0242	0.0242	0.0242	0.0242	0.0242	0
10N01E	9	0.0204	0.2375	0.0218	0.0222	0.0238	0.0238	0.0681	1
10N01W	1	0.0222	0.0222						
10N02E	7	0.0198	0.0231	0.0199	0.0211	0.0222	0.0222	0.0226	1
10N03E	8	0.0201	0.0242	0.023	0.0242	0.0242	0.0242	0.0242	0
11N02E	5	0.0046	0.0222	0.0116	0.0222	0.0222	0.0222	0.0222	0
11N03E	2	0.0213	0.0222	0.0214	0.0215	0.0217	0.022	0.0221	1
12N02E	13	0.0046	0.0283	0.0046	0.0046	0.0245	0.0269	0.0283	0
13N01E	2	0.0283	0.0283	0.0283	0.0283	0.0283	0.0283	0.0283	0
13N02E	6	0.0186	0.0283	0.0193	0.0205	0.0223	0.0241	0.0264	1
13N03E	1	0.0283	0.0283						
14N01E	5	0.0243	0.0243	0.0243	0.0243	0.0243	0.0243	0.0243	0
14N01W	3	0.015	0.0361	0.0159	0.0172	0.0194	0.0278	0.0328	1
14N02E	1	0.05	0.05						
15N01E	2	0.0243	0.0243	0.0243	0.0243	0.0243	0.0243	0.0243	0
15N01W	2	0.0	0.0772	0.0077	0.0193	0.0386	0.0579	0.0695	1
15N03W	1	0.0265	0.0265						

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
17N01W	2	0.1008	0.1008	0.1008	0.1008	0.1008	0.1008	0.1008	0
18N01W	12	0.0	0.0998	0.0	0.0	0.0	0.0013	0.0197	2
19N01W	5	0.019	0.05	0.019	0.019	0.019	0.0246	0.0398	1
19N03W	1	0.6667	0.6667						
19N04W	1	0.0281	0.0281						
20N01W	3	0.025	0.125	0.025	0.025	0.025	0.075	0.105	1
20N03W	14	0.033	7.2	0.033	0.033	0.033	0.033	0.8264	1
21N01E	2	0.0273	0.0273	0.0273	0.0273	0.0273	0.0273	0.0273	0
25N02W	1	0.0286	0.0286						
Unknown	2	0.0147	0.0221	0.0154	0.0166	0.0184	0.0202	0.0214	1

Table V-2. A/R Summary Statistics for CORN - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
03N03E	6	0.1515	1.3889	0.7702	1.3889	1.3889	1.3889	1.3889	0
04N03E	22	0.1838	2.6634	1.2708	1.2708	1.3889	1.8713	1.9841	1
04N04E	7	0.5843	2.2917	0.8258	1.0502	1.1135	1.2255	1.652	1
05N03E	2	2.3438	2.3438	2.3438	2.3438	2.3438	2.3438	2.3438	0
05N04E	6	1.1364	3.7879	1.1364	1.1364	1.3258	2.0454	3.005	1
06N01E	6	0.9191	1.553	0.9678	1.0164	1.0164	1.2651	1.4505	1
06N03E	1	1.5625	1.5625						
06N04E	6	0.2381	2.3884	0.2381	0.439	1.0417	1.1127	1.7624	1
07N01E	5	0.8929	2.2031	0.9881	1.131	1.3095	1.6734	1.9912	1
07N02E	3	2.2645	2.2645	2.2645	2.2645	2.2645	2.2645	2.2645	0
07N03E	1	2.4994	2.4994						
07N04E	10	1.1364	2.2929	1.7147	1.935	1.9681	1.9896	2.2536	1
08N01E	2	0.4545	1.25	0.534	0.6534	0.8522	1.0511	1.1704	1
08N02E	3	1.3889	1.6246	1.4071	1.4344	1.4798	1.5522	1.5956	1
08N03E	24	1.2554	3.0484	1.3926	1.6613	1.7737	1.9646	2.0695	3
09N01E	7	1.5481	2.179	1.5481	1.5481	1.7003	1.7452	1.9242	1
09N02E	11	0.7252	2.179	1.2681	1.6227	1.7655	1.8087	2.172	1
09N03E	2	1.6757	1.6757	1.6757	1.6757	1.6757	1.6757	1.6757	0
09N04E	2	2.0204	2.0204	2.0204	2.0204	2.0204	2.0204	2.0204	0
10N01E	9	1.6964	19.7917	1.8195	1.8503	1.9792	1.9792	5.6806	1
10N01W	1	1.8519	1.8519						
10N02E	7	1.6467	1.9231	1.6568	1.7577	1.8519	1.8519	1.8804	1
10N03E	8	1.6757	2.0204	1.917	2.0204	2.0204	2.0204	2.0204	0
11N02E	5	0.3838	1.8519	0.9704	1.8503	1.8519	1.8519	1.8519	0
11N03E	2	1.7765	1.8519	1.784	1.7954	1.8142	1.833	1.8444	1
12N02E	13	0.3838	2.3611	0.3838	0.3838	2.0431	2.2396	2.3611	0
13N01E	2	2.3611	2.3611	2.3611	2.3611	2.3611	2.3611	2.3611	0
13N02E	6	1.5505	2.3611	1.6086	1.7101	1.8594	2.0042	2.2036	1
13N03E	1	2.3611	2.3611						
14N01E	5	2.0238	2.0238	2.0238	2.0238	2.0238	2.0238	2.0238	0
14N01W	3	1.25	3.0093	1.3236	1.434	1.6181	2.3137	2.7311	1
14N02E	1	4.1667	4.1667						
15N01E	2	2.0238	2.0238	2.0238	2.0238	2.0238	2.0238	2.0238	0
15N01W	2	0.0	6.4327	0.6433	1.6082	3.2164	4.8245	5.7894	1
15N03W	1	2.211	2.211						

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
17N01W	2	8.4028	8.4028	8.4028	8.4028	8.4028	8.4028	8.4028	0
18N01W	12	0.0	8.3126	0.0	0.0	0.0	0.1076	1.6368	2
19N01W	5	1.5823	4.1667	1.5823	1.5823	1.5823	2.0531	3.3213	1
19N03W	1	55.5556	55.5556						
19N04W	1	2.3438	2.3438						
20N01W	3	2.0833	10.4167	2.0833	2.0833	2.0833	6.25	8.75	1
20N03W	14	2.7466	600.0	2.7466	2.7466	2.7466	2.7466	68.8705	1
21N01E	2	2.2727	2.2727	2.2727	2.2727	2.2727	2.2727	2.2727	0
25N02W	1	2.381	2.381						
Unknown	2	1.2255	1.8403	1.287	1.3792	1.5329	1.6866	1.7788	1

Table V-3. A-R Summary Statistics for CORN - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
03N03E	6	-112.0	56.0	-28.0	56.0	56.0	56.0	56.0	0
04N03E	22	-137.12	140.52	39.0	39.0	56.0	74.44	79.36	1
04N04E	7	-59.76	93.0	-24.98	7.0	15.8	27.6	53.76	1
05N03E	2	129.0	129.0	129.0	129.0	129.0	129.0	129.0	0
05N04E	6	18.0	147.2	18.0	18.0	43.0	99.5	128.6	1
06N01E	6	-13.2	106.83	-5.54	2.12	2.12	43.13	81.81	1
06N03E	1	81.0	81.0						
06N04E	6	-64.0	93.3	-64.0	-47.0	4.0	14.5	55.65	1
07N01E	5	-18.0	163.83	-2.0	22.0	52.0	120.72	146.58	1
07N02E	3	139.6	139.6	139.6	139.6	139.6	139.6	139.6	0
07N03E	1	158.7	158.7						
07N04E	10	18.0	127.84	91.15	109.54	111.52	112.57	126.11	1
08N01E	2	-72.0	42.0	-60.6	-43.5	-15.0	13.5	30.6	1
08N02E	3	56.0	98.04	58.87	63.18	70.36	84.2	92.5	1
08N03E	24	35.61	126.34	49.24	72.04	82.04	90.42	97.13	3
09N01E	7	76.32	110.92	81.83	85.5	85.5	103.7	106.89	1
09N02E	11	-41.68	132.2	44.4	78.54	86.72	98.82	119.6	1
09N03E	2	76.61	76.61	76.61	76.61	76.61	76.61	76.61	0
09N04E	2	106.06	106.06	106.06	106.06	106.06	106.06	106.06	0
10N01E	9	117.0	270.6	121.19	122.24	141.0	141.0	186.92	1
10N01W	1	119.6	119.6						
10N02E	7	87.76	119.6	93.31	106.1	119.6	119.6	119.6	0
10N03E	8	76.61	106.06	97.23	106.06	106.06	106.06	106.06	0
11N02E	5	-67.44	122.24	7.38	119.6	119.6	119.6	121.18	1
11N03E	2	87.64	119.6	90.84	95.63	103.62	111.61	116.4	1
12N02E	13	-67.44	154.7	-67.44	-67.44	142.7	147.0	153.16	2
13N01E	2	147.0	147.0	147.0	147.0	147.0	147.0	147.0	0
13N02E	6	80.6	147.0	88.3	102.25	124.8	137.6	143.8	1
13N03E	1	147.0	147.0						
14N01E	5	86.0	86.0	86.0	86.0	86.0	86.0	86.0	0
14N01W	3	36.0	173.6	44.08	56.2	76.4	125.0	154.16	1
14N02E	1	228.0	228.0						
15N01E	2	86.0	86.0	86.0	86.0	86.0	86.0	86.0	0
15N01W	2	-140.4	92.9	-117.07	-82.08	-23.75	34.58	69.57	1
15N03W	1	180.2	180.2						

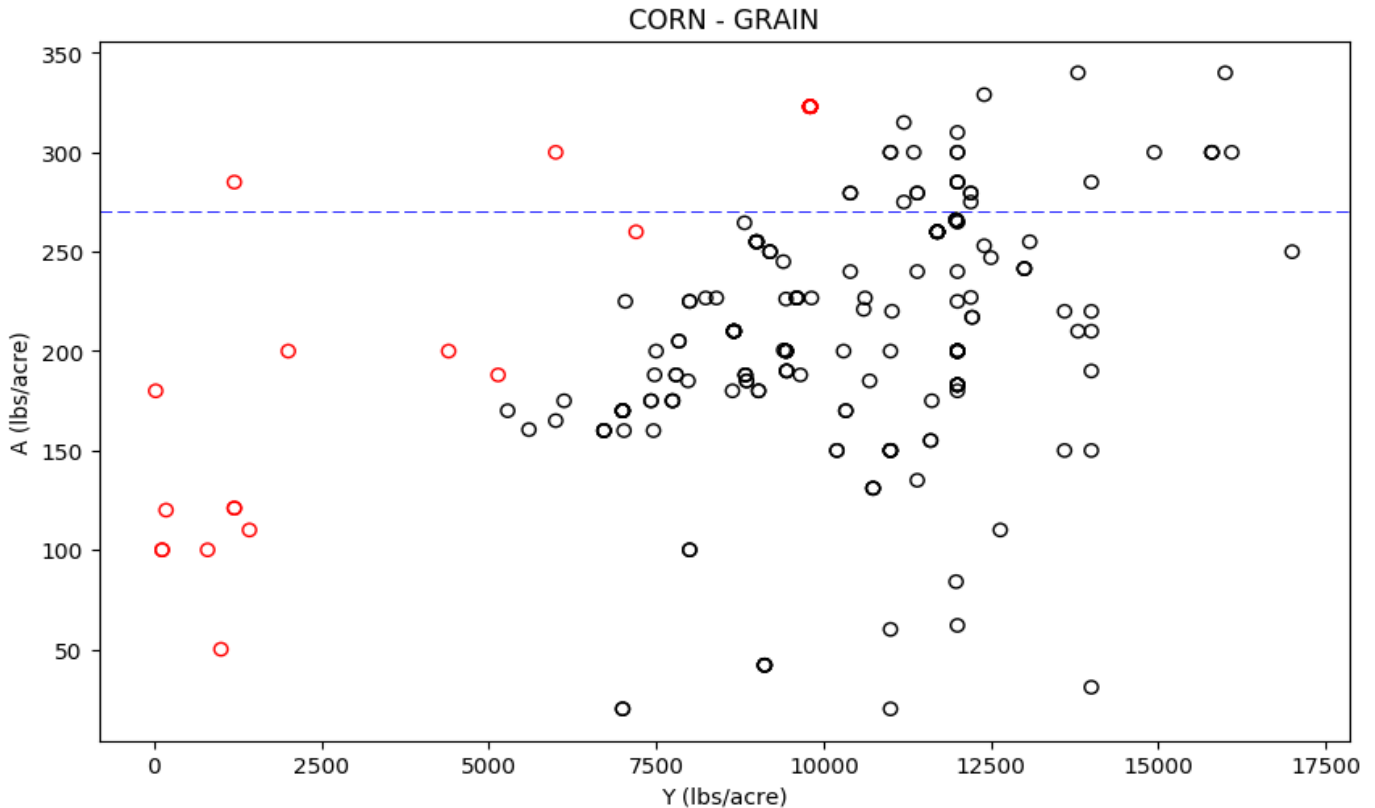
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
17N01W	2	106.6	106.6	106.6	106.6	106.6	106.6	106.6	0
18N01W	12	-168.0	175.94	-168.0	-168.0	-168.0	-146.5	125.0	2
19N01W	5	38.0	174.4	66.96	110.4	110.4	110.4	148.8	1
19N03W	1	117.84	117.84						
19N04W	1	180.6	180.6						
20N01W	3	90.4	156.0	103.52	123.2	156.0	156.0	156.0	0
20N03W	14	98.55	205.4	122.89	205.4	205.4	205.4	205.4	0
21N01E	2	168.0	168.0	168.0	168.0	168.0	168.0	168.0	0
25N02W	1	101.5	101.5						
Unknown	2	46.0	121.0	53.5	64.75	83.5	102.25	113.5	1

Table V-4. Summary Statistics for CORN - GRAIN management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	237	0.0	7.2	0.0109	0.0167	0.0222	0.025	0.033	15
A/R	237	0.0	600.0	0.9086	1.3889	1.8503	2.0833	2.7466	15
A-R	237	-168.0	270.6	-15.12	56.0	89.29	122.24	157.08	24

Figure V-2. Scatter plot of A vs. Y for CORN - GRAIN with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers (A/Y > 90% for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



VI. CUCUMBER

Figure VI-1. Box and Whisker plots of A/Y for CUCUMBER management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for CUCUMBER

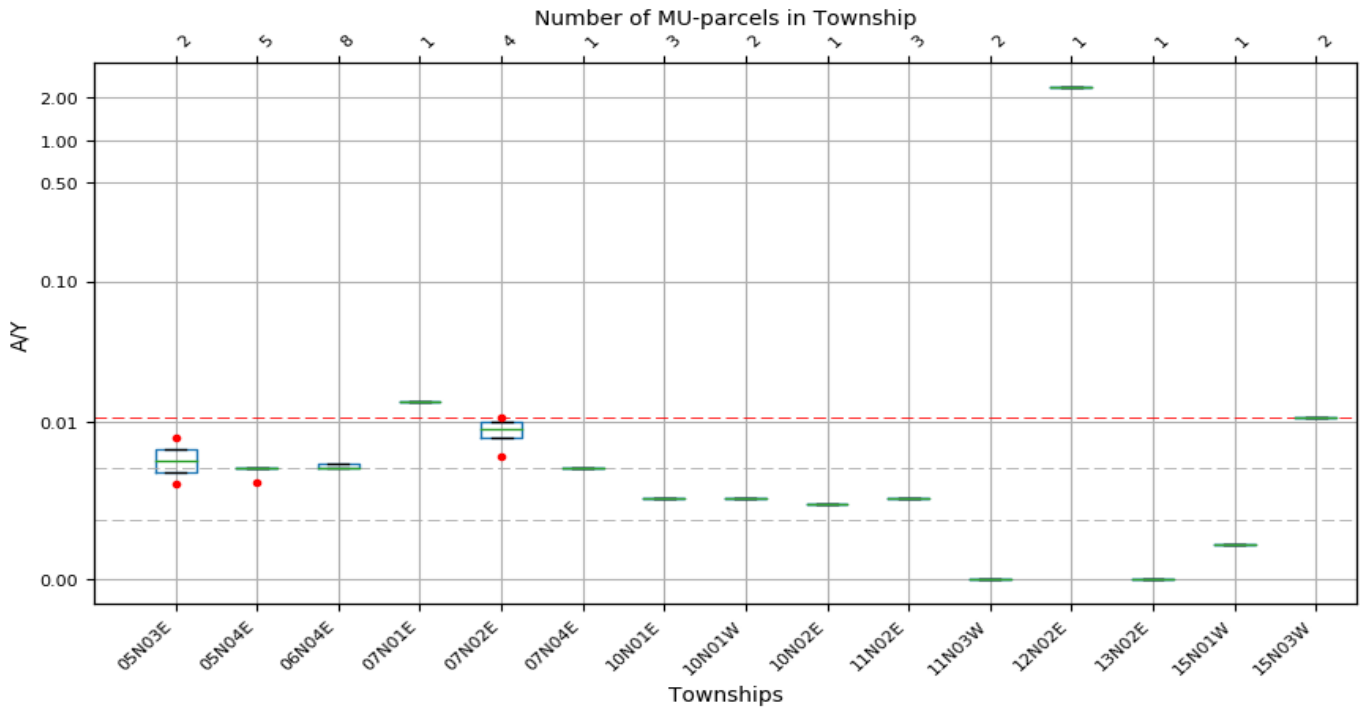


Table VI-1. A/Y Summary Statistics for CUCUMBER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	2	0.0061	0.009	0.0064	0.0068	0.0076	0.0083	0.0087	1
05N04E	5	0.0062	0.0071	0.0066	0.0071	0.0071	0.0071	0.0071	0
06N04E	8	0.0071	0.0074	0.0071	0.0071	0.0071	0.0074	0.0074	0
07N01E	1	0.014	0.014						
07N02E	4	0.0078	0.0109	0.0083	0.009	0.0096	0.0101	0.0106	1
07N04E	1	0.0071	0.0071						
10N01E	3	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0
10N01W	2	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0
10N02E	1	0.0048	0.0048						
11N02E	3	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0
11N03W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
12N02E	1	2.3669	2.3669						
13N02E	1	0.0	0.0						
15N01W	1	0.0022	0.0022						
15N03W	2	0.0109	0.0109	0.0109	0.0109	0.0109	0.0109	0.0109	0

Table VI-2. A/R Summary Statistics for CUCUMBER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	2	5.6077	8.3333	5.8803	6.2891	6.9705	7.6519	8.0607	1
05N04E	5	5.787	6.5359	6.0866	6.5359	6.5359	6.5359	6.5359	0
06N04E	8	6.5359	6.8083	6.5359	6.5359	6.5359	6.8083	6.8083	3
07N01E	1	12.9531	12.9531						
07N02E	4	7.2464	10.0916	7.6944	8.3663	8.9256	9.3565	9.7976	1
07N04E	1	6.5359	6.5359						
10N01E	3	4.8006	4.8006	4.8006	4.8006	4.8006	4.8006	4.8006	0
10N01W	2	4.8006	4.8006	4.8006	4.8006	4.8006	4.8006	4.8006	0
10N02E	1	4.3981	4.3981						
11N02E	3	4.8006	4.8006	4.8006	4.8006	4.8006	4.8006	4.8006	0
11N03W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
12N02E	1	2191.5407	2191.5407						
13N02E	1	0.0	0.0						
15N01W	1	2.0748	2.0748						
15N03W	2	10.0902	10.0902	10.0902	10.0902	10.0902	10.0902	10.0902	0

Table VI-3. A-R Summary Statistics for CUCUMBER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

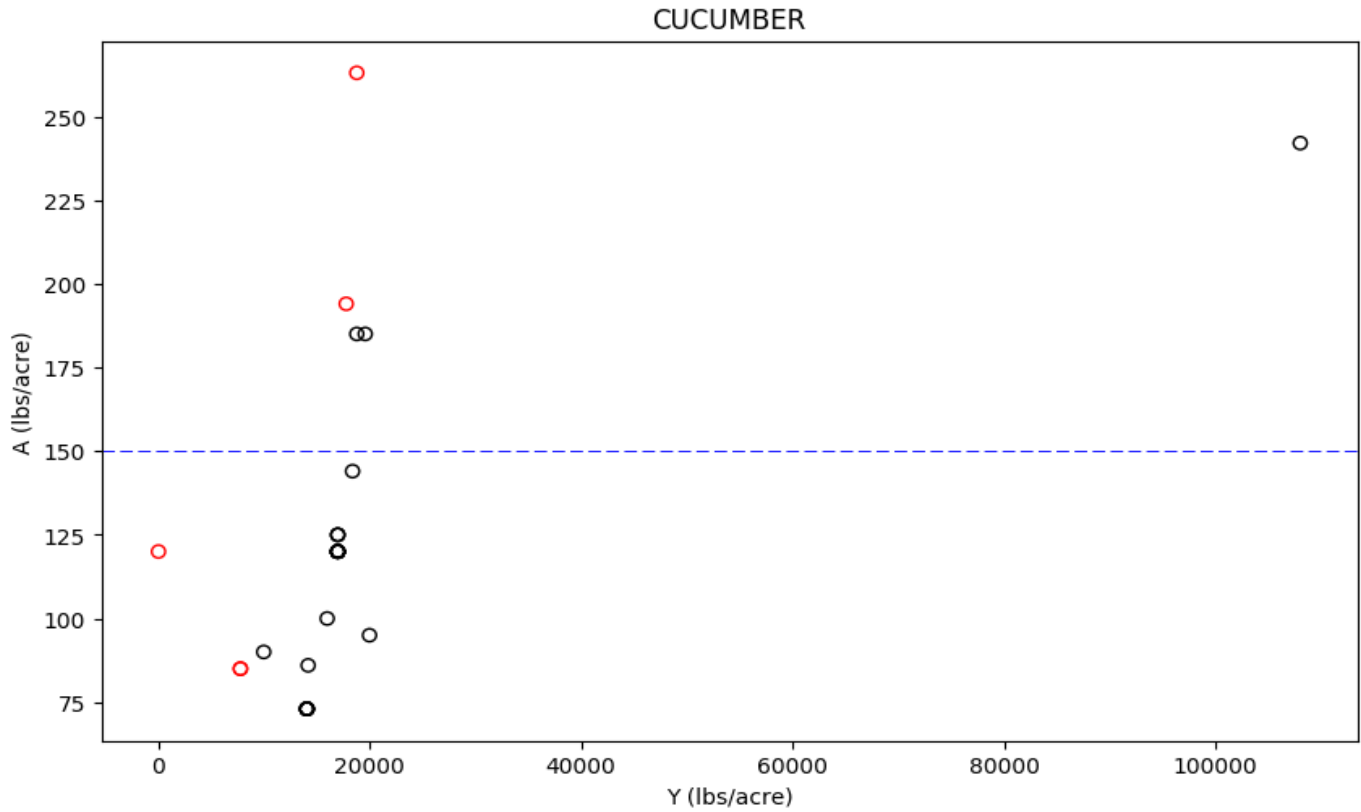
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	2	70.66	79.2	71.52	72.8	74.93	77.07	78.35	1
05N04E	5	82.72	101.64	90.29	101.64	101.64	101.64	101.64	0
06N04E	8	101.64	106.64	101.64	101.64	101.64	106.64	106.64	0
07N01E	1	242.7	242.7						
07N02E	4	124.13	174.78	136.04	153.91	164.26	167.22	171.75	1
07N04E	1	101.64	101.64						
10N01E	3	57.79	57.79	57.79	57.79	57.79	57.79	57.79	0
10N01W	2	57.79	57.79	57.79	57.79	57.79	57.79	57.79	0
10N02E	1	73.4	73.4						
11N02E	3	57.79	57.79	57.79	57.79	57.79	57.79	57.79	0
11N03W	2	-2.75	-1.24	-2.6	-2.38	-2.0	-1.62	-1.39	1
12N02E	1	119.95	119.95						
13N02E	1	-0.05	-0.05						
15N01W	1	125.36	125.36						
15N03W	2	76.58	76.58	76.58	76.58	76.58	76.58	76.58	0

Table VI-4. Summary Statistics for CUCUMBER management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	37	0.0	2.3669	0.0038	0.0052	0.0071	0.0074	0.0109	2
A/R	37	0.0	2191.5407	3.4688	4.8006	6.5359	6.8083	10.0902	3
A-R	37	-2.75	242.7	57.79	57.79	101.64	106.64	140.75	4

Figure VI-2. Scatter plot of A vs. Y for CUCUMBER with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



VII. GRAPE - WINE

Figure VII-1. Box and Whisker plots of A/Y for GRAPE - WINE management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for GRAPE - WINE

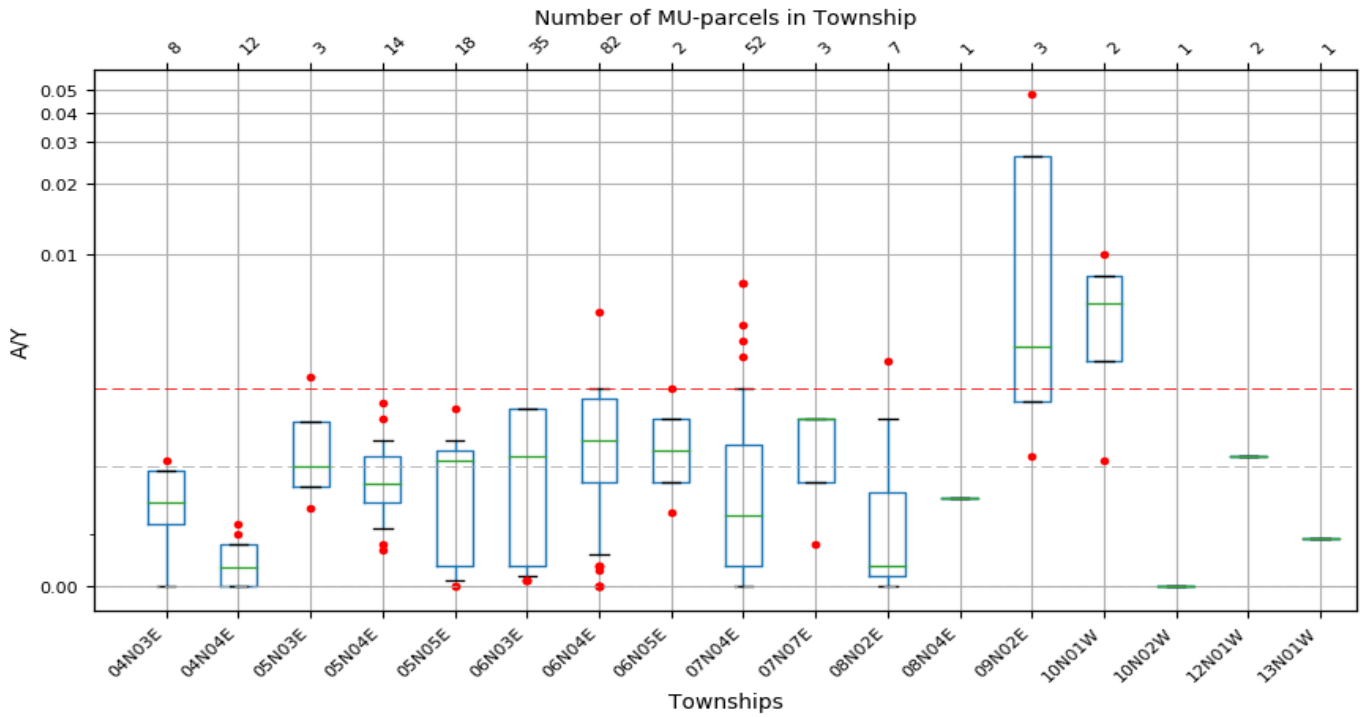


Table VII-1. A/Y Summary Statistics for GRAPE - WINE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	8	0.0	0.0024	0.0	0.0012	0.0016	0.0022	0.0023	1
04N04E	12	0.0	0.0012	0.0	0.0	0.0004	0.0008	0.001	2
05N03E	3	0.0015	0.004	0.0017	0.0019	0.0023	0.0032	0.0037	1
05N04E	14	0.0007	0.0035	0.0009	0.0016	0.002	0.0025	0.0031	2
05N05E	18	0.0	0.0034	0.0001	0.0004	0.0024	0.0026	0.0028	1
06N03E	35	0.0001	0.0034	0.0001	0.0004	0.0025	0.0034	0.0034	0
06N04E	82	0.0	0.0057	0.0004	0.002	0.0028	0.0036	0.0038	1
06N05E	2	0.0014	0.0038	0.0016	0.002	0.0026	0.0032	0.0036	1
07N04E	52	0.0	0.0075	0.0	0.0004	0.0014	0.0027	0.0038	5
07N07E	3	0.0008	0.0032	0.0013	0.002	0.0032	0.0032	0.0032	0
08N02E	7	0.0	0.0043	0.0	0.0002	0.0004	0.0018	0.0036	1
08N04E	1	0.0017	0.0017						
09N02E	3	0.0025	0.0481	0.0029	0.0036	0.0046	0.0264	0.0394	1
10N01W	2	0.0024	0.01	0.0032	0.0043	0.0062	0.0081	0.0092	1
10N02W	1	0.0	0.0						
12N01W	2	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0
13N01W	1	0.0009	0.0009						

Table VII-2. A/R Summary Statistics for GRAPE - WINE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	8	0.0	1.3398	0.0	0.6697	0.8929	1.2384	1.2688	1
04N04E	12	0.0	0.6944	0.0	0.0	0.1984	0.463	0.5463	2
05N03E	3	0.8333	2.2389	0.9192	1.048	1.2626	1.7508	2.0436	1
05N04E	14	0.3704	1.9181	0.5027	0.8974	1.092	1.3872	1.7205	2
05N05E	18	0.0224	1.896	0.0308	0.226	1.309	1.4338	1.5432	1
06N03E	35	0.0652	1.8638	0.089	0.2199	1.3889	1.8638	1.8638	0
06N04E	82	0.0	3.1713	0.2327	1.0936	1.5385	1.9841	2.1044	2
06N05E	2	0.7905	2.118	0.9232	1.1224	1.4542	1.7861	1.9852	1
07N04E	52	0.0	4.1667	0.0	0.2199	0.7508	1.5127	2.1044	5
07N07E	3	0.4545	1.8056	0.7247	1.13	1.8056	1.8056	1.8056	0
08N02E	7	0.0	2.3718	0.0	0.105	0.2099	1.0061	2.0301	1
08N04E	1	0.9259	0.9259						
09N02E	3	1.4065	26.7094	1.634	1.9752	2.5438	14.6266	21.8763	1
10N01W	2	1.3493	5.5556	1.7699	2.4009	3.4524	4.504	5.135	1
10N02W	1	0.0	0.0						
12N01W	2	1.3889	1.3889	1.3889	1.3889	1.3889	1.3889	1.3889	0
13N01W	1	0.4938	0.4938						

Table VII-3. A-R Summary Statistics for GRAPE - WINE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

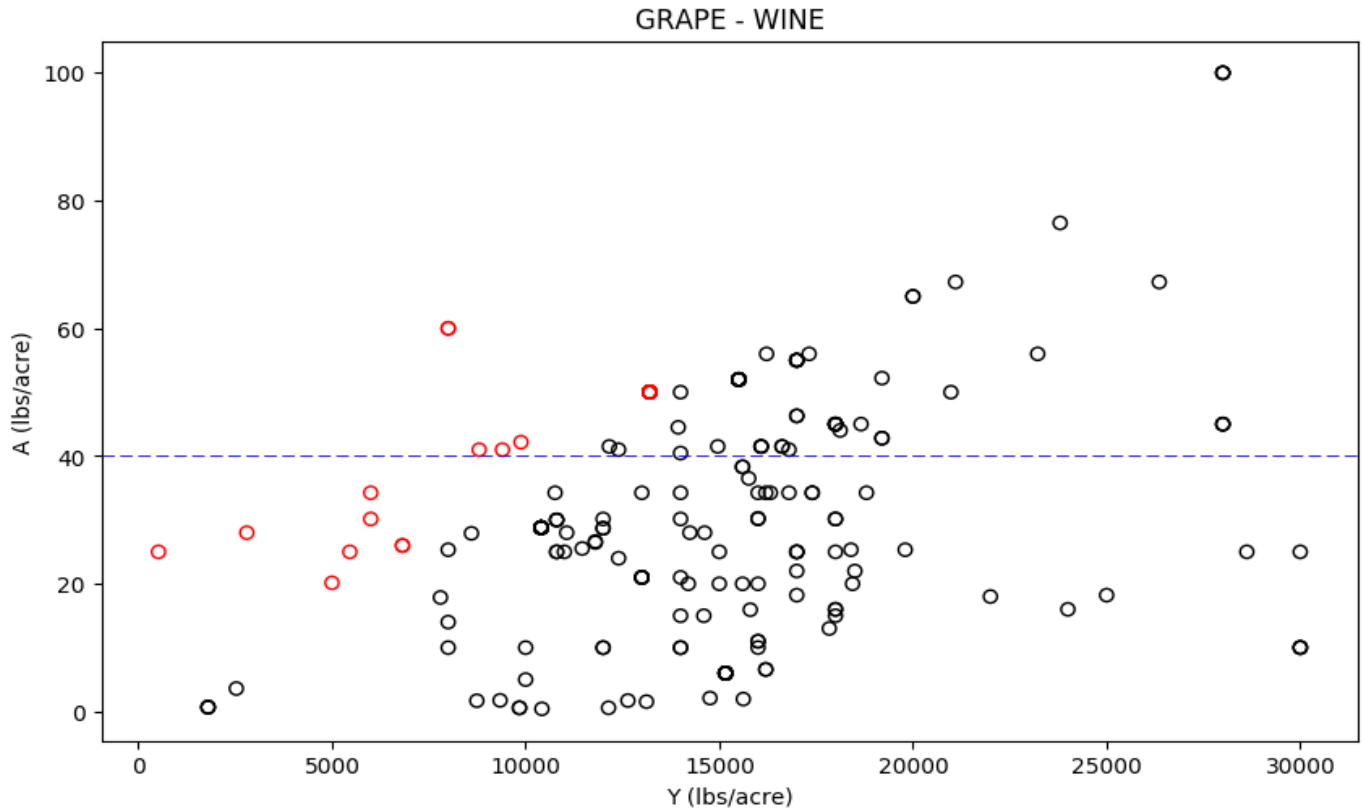
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	8	-52.42	11.41	-40.5	-12.9	-5.4	8.24	9.19	1
04N04E	12	-23.65	-4.4	-18.0	-15.9	-14.4	-11.6	-8.36	2
05N03E	3	-4.2	11.15	-2.32	0.5	5.2	8.18	9.96	1
05N04E	14	-27.2	26.8	-15.24	-2.4	2.87	13.55	21.45	2
05N05E	18	-22.57	19.61	-21.66	-17.13	7.81	10.56	12.56	1
06N03E	35	-26.17	33.66	-21.29	-18.72	12.6	24.1	24.1	1
06N04E	82	-44.39	49.6	-21.04	2.93	10.08	26.24	26.24	4
06N05E	2	-0.95	13.72	0.51	2.72	6.38	10.05	12.26	1
07N04E	52	-50.9	45.6	-31.12	-21.29	-6.84	15.38	25.12	6
07N07E	3	-21.6	29.0	-11.48	3.7	29.0	29.0	29.0	0
08N02E	7	-3.24	24.4	-3.24	-2.9	-2.56	4.93	17.21	1
08N04E	1	-2.0	-2.0						
09N02E	3	8.09	24.06	9.51	11.63	15.17	19.62	22.29	1
10N01W	2	11.39	22.96	12.55	14.29	17.18	20.07	21.8	1
10N02W	1	-10.8	-10.8						
12N01W	2	12.6	12.6	12.6	12.6	12.6	12.6	12.6	0
13N01W	1	-16.4	-16.4						

Table VII-4. Summary Statistics for GRAPE - WINE management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	247	0.0	0.0481	0.0	0.0007	0.0023	0.0032	0.0038	35
A/R	247	0.0	26.7094	0.0249	0.4048	1.2721	1.7974	2.1044	13
A-R	247	-52.42	49.6	-21.79	-13.1	5.56	19.38	26.24	10

Figure VII-2. Scatter plot of A vs. Y for GRAPE - WINE with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



VIII. HAY/FORAGE

Figure VIII-1. Box and Whisker plots of A/Y for HAY/FORAGE management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for HAY/FORAGE

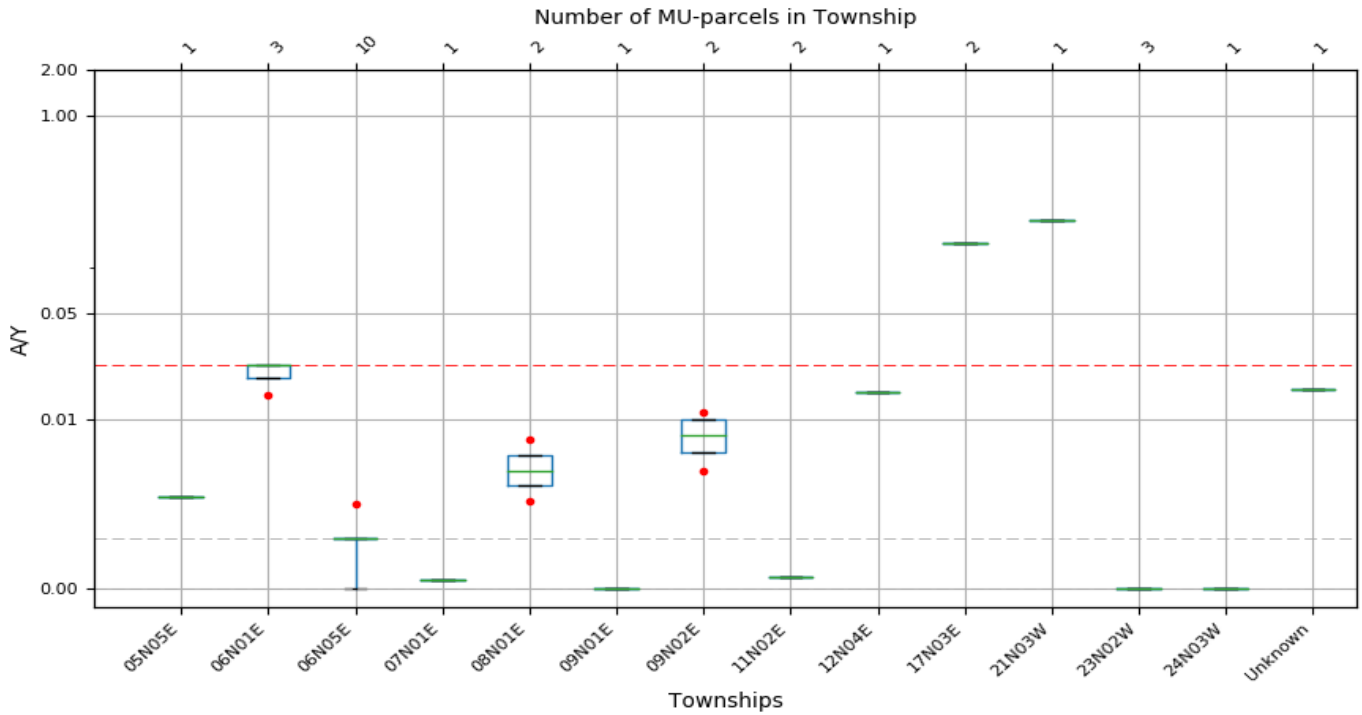


Table VIII-1. A/Y Summary Statistics for HAY/FORAGE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N05E	1	0.0054	0.0054						
06N01E	3	0.0144	0.023	0.0161	0.0187	0.023	0.023	0.023	0
06N05E	10	0.0	0.005	0.0	0.003	0.003	0.003	0.0032	1
07N01E	1	0.0005	0.0005						
08N01E	2	0.0052	0.0088	0.0056	0.0061	0.007	0.0079	0.0084	1
09N01E	1	0.0	0.0						
09N02E	2	0.007	0.0111	0.0074	0.008	0.0091	0.0101	0.0107	1
11N02E	2	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0
12N04E	1	0.0153	0.0153						
17N03E	2	0.1439	0.1439	0.1439	0.1439	0.1439	0.1439	0.1439	0
21N03W	1	0.2067	0.2067						
23N02W	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
24N03W	1	0.0	0.0						
Unknown	1	0.016	0.016						

Table VIII-2. A/R Summary Statistics for HAY/FORAGE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	2	0.7861	0.7861	0.7861	0.7861	0.7861	0.7861	0.7861	0
07N01E	1	0.0163	0.0163						
08N01E	2	0.1796	0.3017	0.1918	0.2101	0.2407	0.2712	0.2895	1
09N02E	1	0.24	0.24						

Table VIII-3. A-R Summary Statistics for HAY/FORAGE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

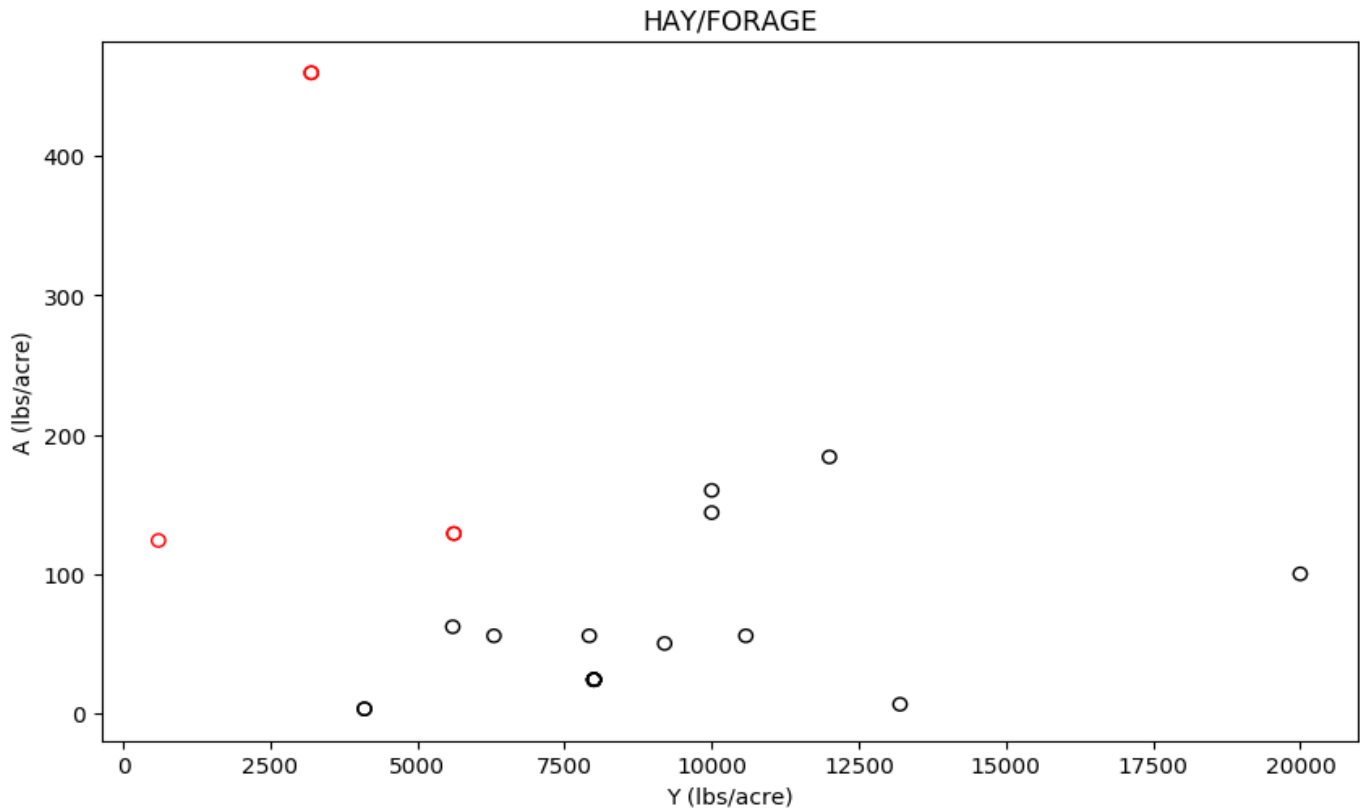
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	2	-35.1	-35.1	-35.1	-35.1	-35.1	-35.1	-35.1	0
07N01E	1	-379.14	-379.14						
08N01E	2	-253.44	-128.46	-240.94	-222.19	-190.95	-159.7	-140.96	1
09N02E	1	-175.76	-175.76						

Table VIII-4. Summary Statistics for HAY/FORAGE management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	31	0.0	0.2067	0.0	0.0006	0.003	0.0128	0.023	3
A/R	6	0.0163	0.7861	0.098	0.1947	0.2709	0.665	0.7861	0
A-R	6	-379.14	-35.1	-316.29	-234.02	-152.11	-58.44	-35.1	0

Figure VIII-2. Scatter plot of A vs. Y for HAY/FORAGE with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers (A/Y > 90% for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



IX. MISC FRUIT TREES

Figure IX-1. Box and Whisker plots of A/Y for MISC FRUIT TREES management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for MISC FRUIT TREES

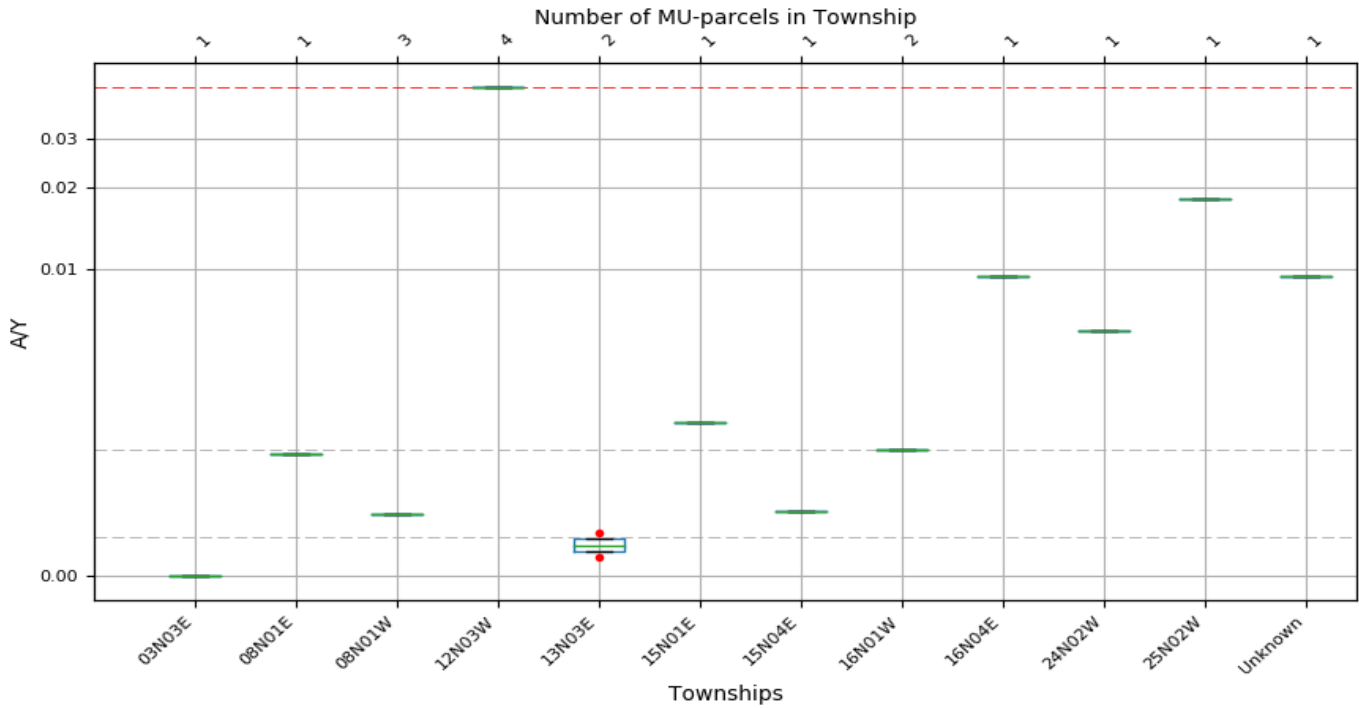


Table IX-1. A/Y Summary Statistics for MISC FRUIT TREES management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
03N03E	1	0.0	0.0						
08N01E	1	0.004	0.004						
08N01W	3	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0
12N03W	4	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0
13N03E	2	0.0006	0.0014	0.0007	0.0008	0.001	0.0012	0.0013	1
15N01E	1	0.005	0.005						
15N04E	1	0.0021	0.0021						
16N01W	2	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0
16N04E	1	0.0098	0.0098						
24N02W	1	0.008	0.008						
25N02W	1	0.018	0.018						
Unknown	1	0.0098	0.0098						

Table IX-4. Summary Statistics for MISC FRUIT TREES management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	19	0.0	0.046	0.0012	0.002	0.0041	0.0139	0.046	0

Figure IX-2. Scatter plot of A vs. Y for MISC FRUIT TREES with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



X. MISC VEGETABLES

Figure X-1. Box and Whisker plots of A/Y for MISC VEGETABLES management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers (A/Y > 90% percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for MISC VEGETABLES

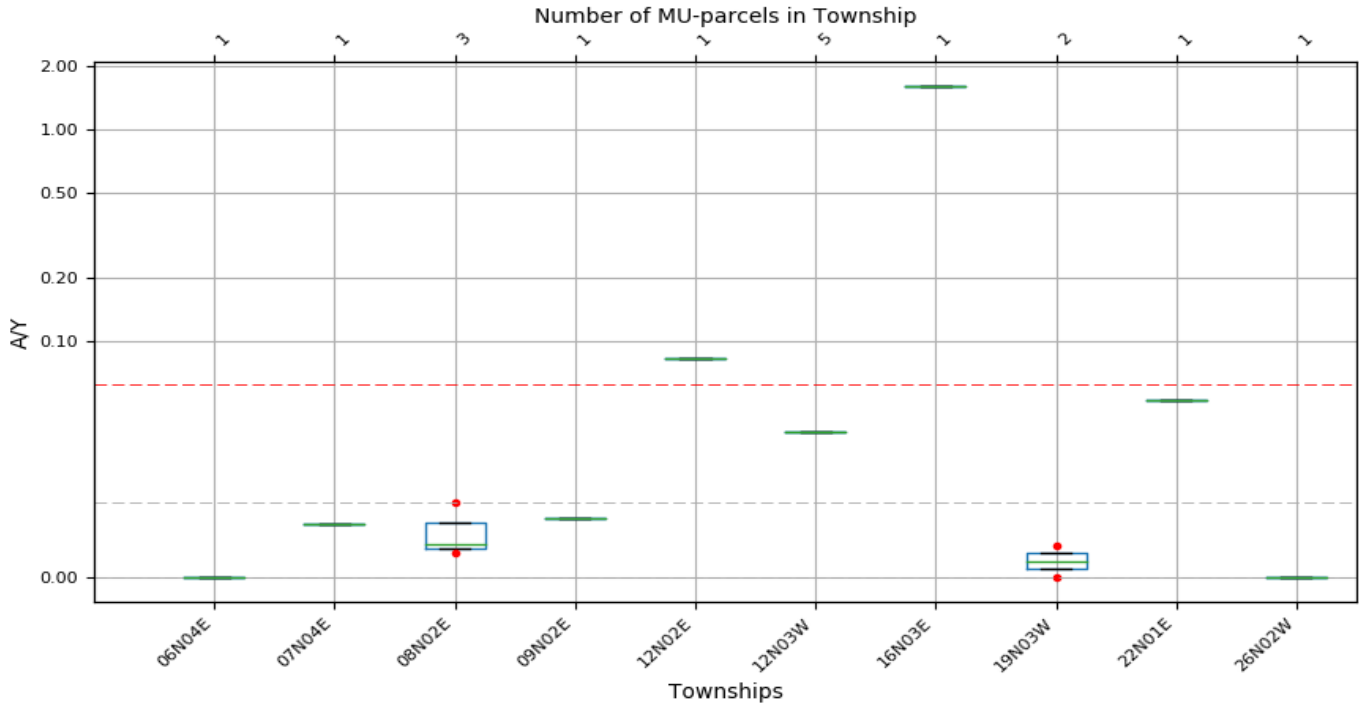


Table X-1. A/Y Summary Statistics for MISC VEGETABLES management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

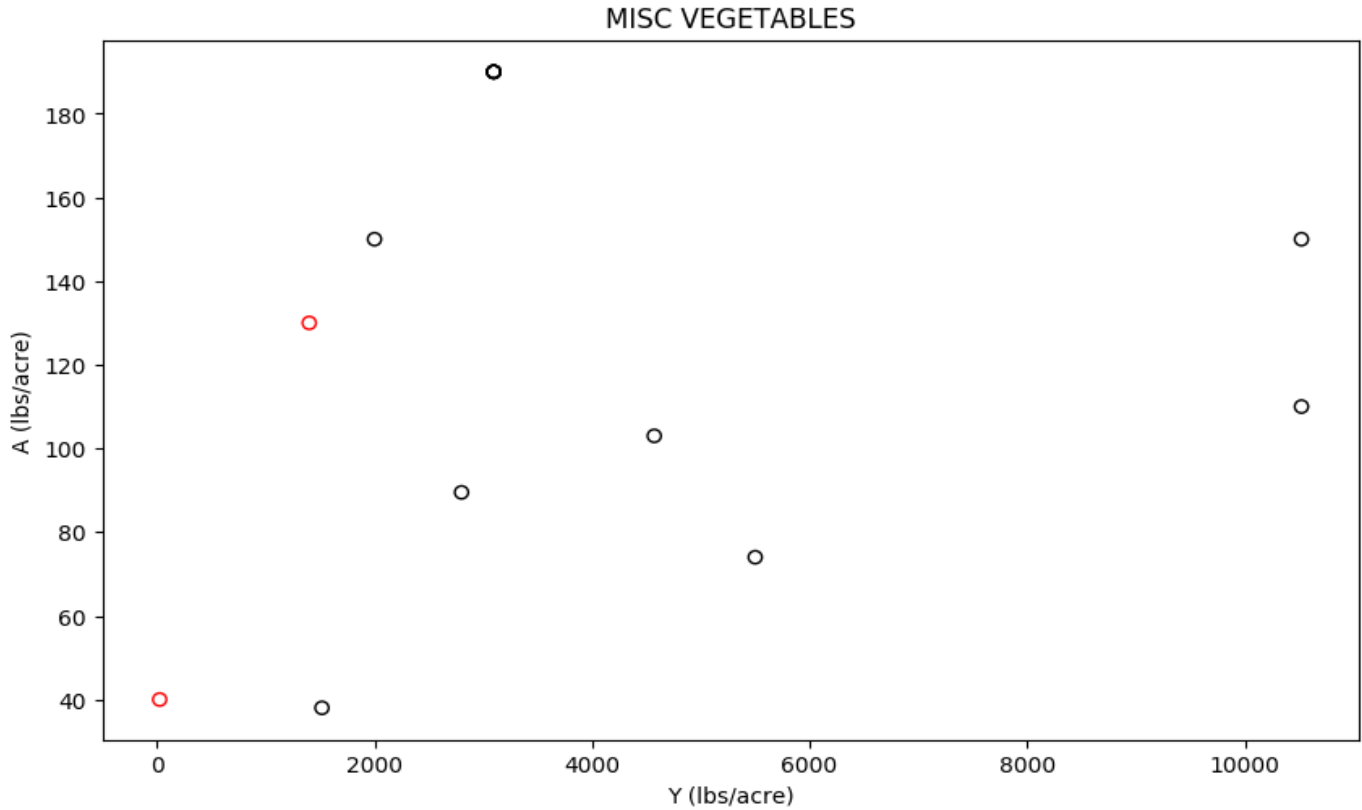
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N04E	1	0.0	0.0						
07N04E	1	0.0225	0.0225						
08N02E	3	0.0105	0.032	0.0113	0.0124	0.0143	0.0232	0.0285	1
09N02E	1	0.025	0.025						
12N02E	1	0.0929	0.0929						
12N03W	5	0.0614	0.0614	0.0614	0.0614	0.0614	0.0614	0.0614	
16N03E	1	1.6	1.6						
19N03W	2	0.0	0.0135	0.0014	0.0034	0.0068	0.0101	0.0122	1
22N01E	1	0.075	0.075						
26N02W	1	0.0	0.0						

Table X-4. Summary Statistics for MISC VEGETABLES management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	17	0.0	1.6	0.0	0.0135	0.032	0.0614	0.0822	2

Figure X-2. Scatter plot of A vs. Y for MISC VEGETABLES with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers (A/Y > 90% for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



XI. OLIVE

Figure XI-1. Box and Whisker plots of A/Y for OLIVE management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for OLIVE

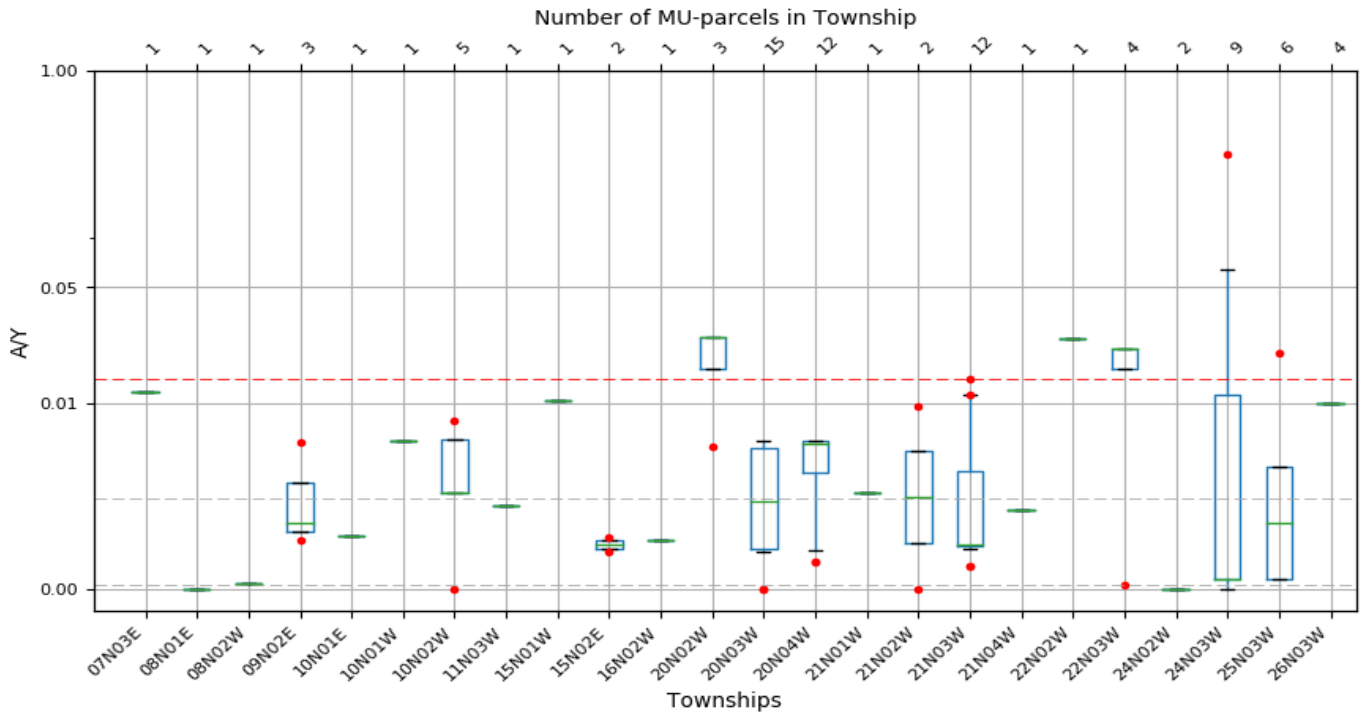


Table XI-1. A/Y Summary Statistics for OLIVE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
07N03E	1	0.0118	0.0118						
08N01E	1	0.0	0.0						
08N02W	1	0.0003	0.0003						
09N02E	3	0.0026	0.0079	0.0028	0.0031	0.0036	0.0058	0.007	1
10N01E	1	0.0029	0.0029						
10N01W	1	0.008	0.008						
10N02W	5	0.0	0.0091	0.0021	0.0052	0.0052	0.0081	0.0087	1
11N03W	1	0.0045	0.0045						
15N01W	1	0.0104	0.0104						
15N02E	2	0.002	0.0028	0.0021	0.0022	0.0024	0.0026	0.0027	1
16N02W	1	0.0026	0.0026						
20N02W	3	0.0077	0.025	0.0112	0.0164	0.025	0.025	0.025	0
20N03W	15	0.0	0.008	0.0008	0.0022	0.0047	0.0076	0.008	0
20N04W	12	0.0015	0.008	0.0016	0.0063	0.0078	0.008	0.008	0
21N01W	1	0.0052	0.0052						
21N02W	2	0.0	0.0099	0.001	0.0025	0.005	0.0074	0.0089	1
21N03W	12	0.0012	0.014	0.0013	0.0024	0.0024	0.0064	0.0114	2
21N04W	1	0.0043	0.0043						
22N02W	1	0.0246	0.0246						
22N03W	4	0.0002	0.0214	0.0066	0.0161	0.0214	0.0214	0.0214	0
24N02W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
24N03W	9	0.0	0.3125	0.0	0.0005	0.0005	0.0113	0.1141	1
25N03W	6	0.0005	0.02	0.0005	0.0005	0.0036	0.0066	0.0133	1
26N03W	4	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0

Table XI-2. A/R Summary Statistics for OLIVE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
07N03E	1	3.7619	3.7619						
08N01E	1	0.0	0.0						
08N02W	1	0.0951	0.0951						
09N02E	3	0.8166	2.5127	0.8797	0.9742	1.1319	1.8223	2.2365	1
10N01E	1	0.9231	0.9231						
10N01W	1	2.5478	2.5478						
10N02W	5	0.0	2.9061	0.6642	1.6606	1.6606	2.5832	2.7769	1
11N03W	1	1.4281	1.4281						
15N01W	1	3.3174	3.3174						
15N02E	2	0.6369	0.907	0.6639	0.7044	0.772	0.8395	0.88	1
16N02W	1	0.8208	0.8208						
20N02W	3	2.4677	7.9618	3.5665	5.2148	7.9618	7.9618	7.9618	0
20N03W	15	0.0	2.5504	0.2572	0.689	1.4825	2.4284	2.5478	1
20N04W	12	0.4777	2.5504	0.4975	2.0136	2.5049	2.5504	2.5504	0
21N01W	1	1.672	1.672						
21N02W	2	0.0	3.1573	0.3157	0.7893	1.5787	2.368	2.8416	1
21N03W	12	0.3981	4.4586	0.4292	0.7408	0.7514	2.0142	3.6332	2
21N04W	1	1.3719	1.3719						
22N02W	1	7.8345	7.8345						
22N03W	4	0.0796	6.8244	2.103	5.1382	6.8244	6.8244	6.8244	3
24N02W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
24N03W	9	0.0	99.5223	0.0	0.1736	0.1736	3.6056	36.3376	1
25N03W	6	0.1736	6.354	0.1736	0.1736	1.1378	2.1019	4.228	1
26N03W	4	3.1847	3.1847	3.1847	3.1847	3.1847	3.1847	3.1847	0

Table XI-3. A-R Summary Statistics for OLIVE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

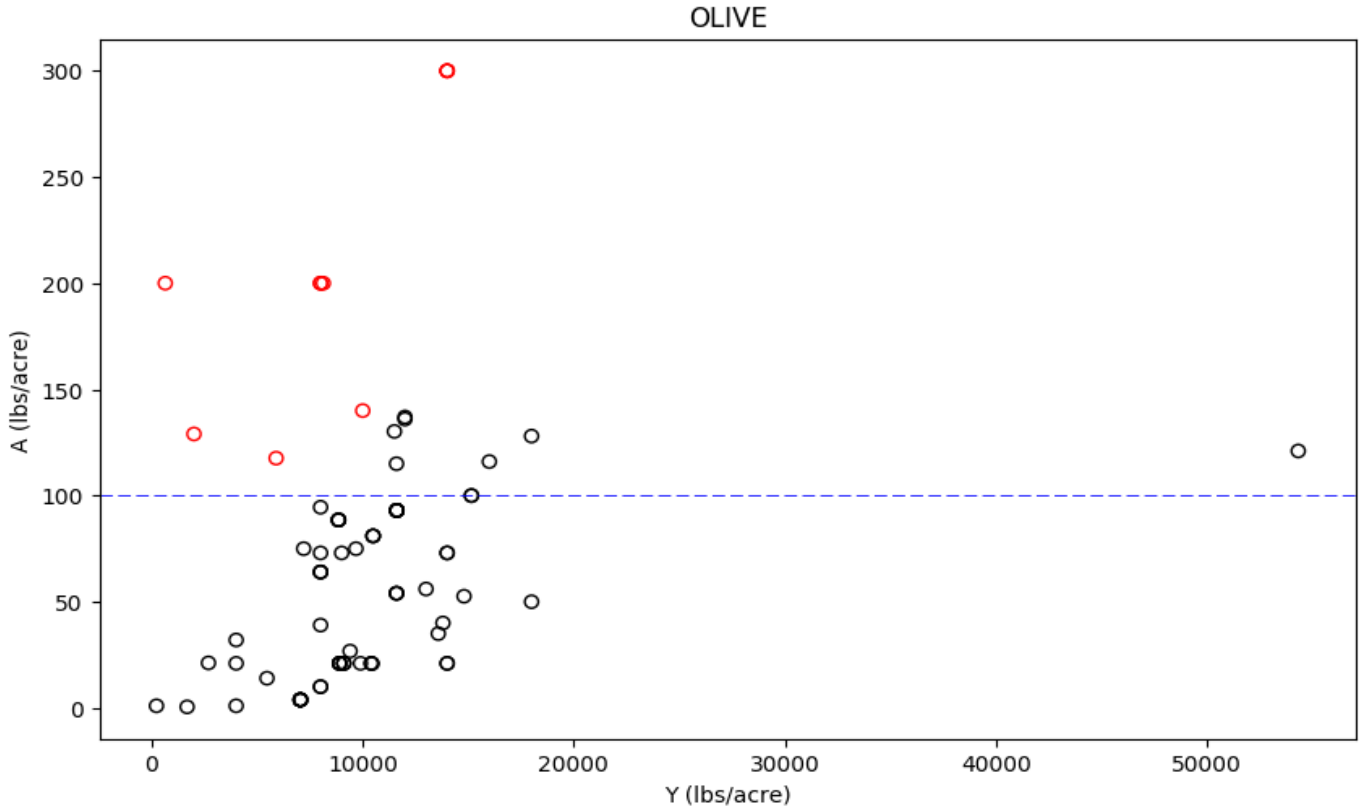
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
07N03E	1	69.38	69.38						
08N01E	1	-27.82	-27.82						
08N02W	1	-4.76	-4.76						
09N02E	3	-3.14	12.76	-1.29	1.49	6.13	9.45	11.44	1
10N01E	1	-3.33	-3.33						
10N01W	1	19.44	19.44						
10N02W	5	-4.26	47.88	9.06	29.04	29.04	44.74	46.62	1
11N03W	1	0.3	0.3						
15N01W	1	52.39	52.39						
15N02E	2	-11.91	-2.75	-10.99	-9.62	-7.33	-5.04	-3.66	1
16N02W	1	-7.64	-7.64						
20N02W	3	44.61	174.88	70.66	109.74	174.88	174.88	174.88	0
20N03W	15	-31.4	71.48	-23.5	-9.62	17.58	38.88	62.07	2
20N04W	12	-22.96	56.54	-21.67	33.53	52.3	56.54	56.54	0
21N01W	1	8.44	8.44						
21N02W	2	-25.12	78.58	-14.75	0.8	26.73	52.65	68.21	1
21N03W	12	-49.63	108.6	-15.12	-8.99	-6.95	37.76	99.22	2
21N04W	1	15.18	15.18						
22N02W	1	174.47	174.47						
22N03W	4	-11.56	256.04	68.72	189.14	256.04	256.04	256.04	0
24N03W	7	-18.28	197.99	-18.28	-18.28	-18.28	108.4	152.83	1
25N03W	6	-18.28	99.1	-18.28	-18.28	17.07	52.42	75.76	1
26N03W	4	60.72	60.72	60.72	60.72	60.72	60.72	60.72	0

Table XI-4. Summary Statistics for OLIVE management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	91	0.0	0.3125	0.0002	0.002	0.0049	0.008	0.014	9
A/R	91	0.0	99.5223	0.0796	0.64	1.5525	2.5504	4.4586	9
A-R	87	-49.63	256.04	-18.28	-7.61	17.58	56.54	103.03	9

Figure XI-2. Scatter plot of A vs. Y for OLIVE with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



XII. PASTURE

Figure XII-1. Box and Whisker plots of A/Y for PASTURE management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for PASTURE

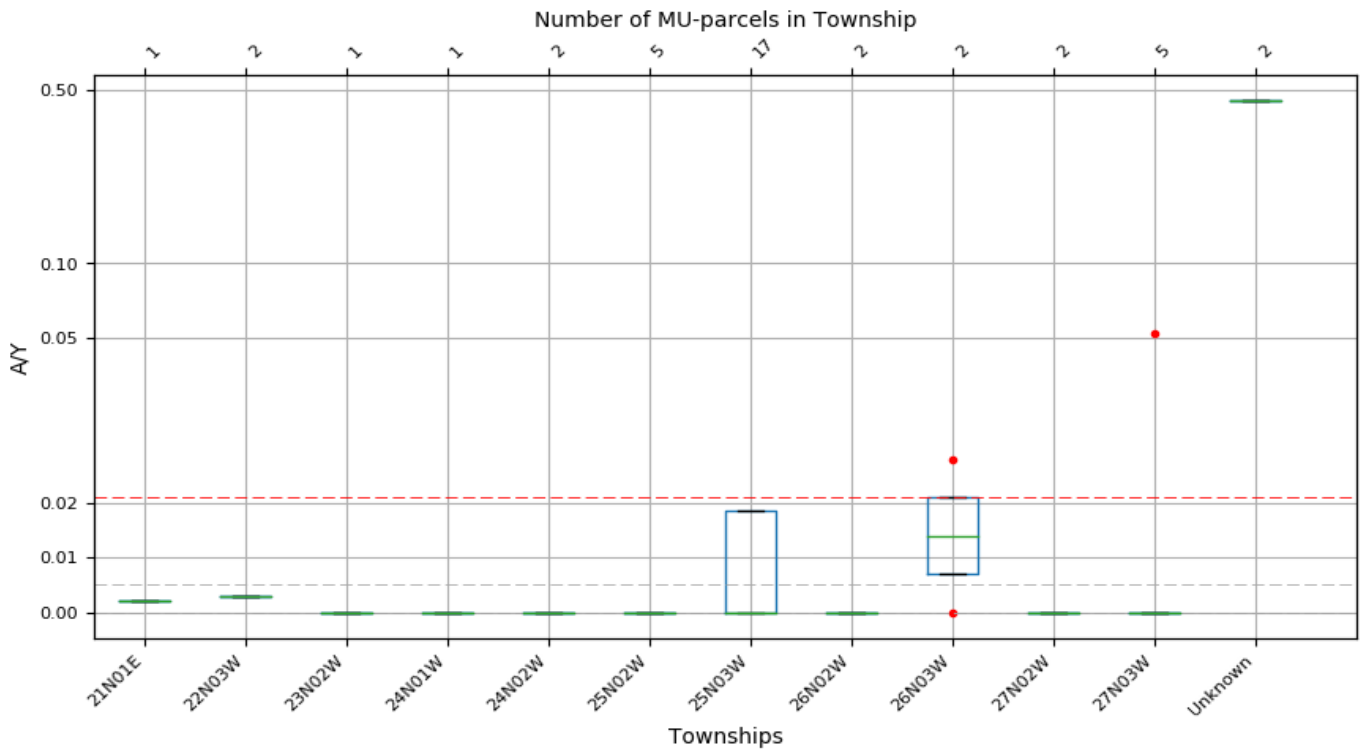
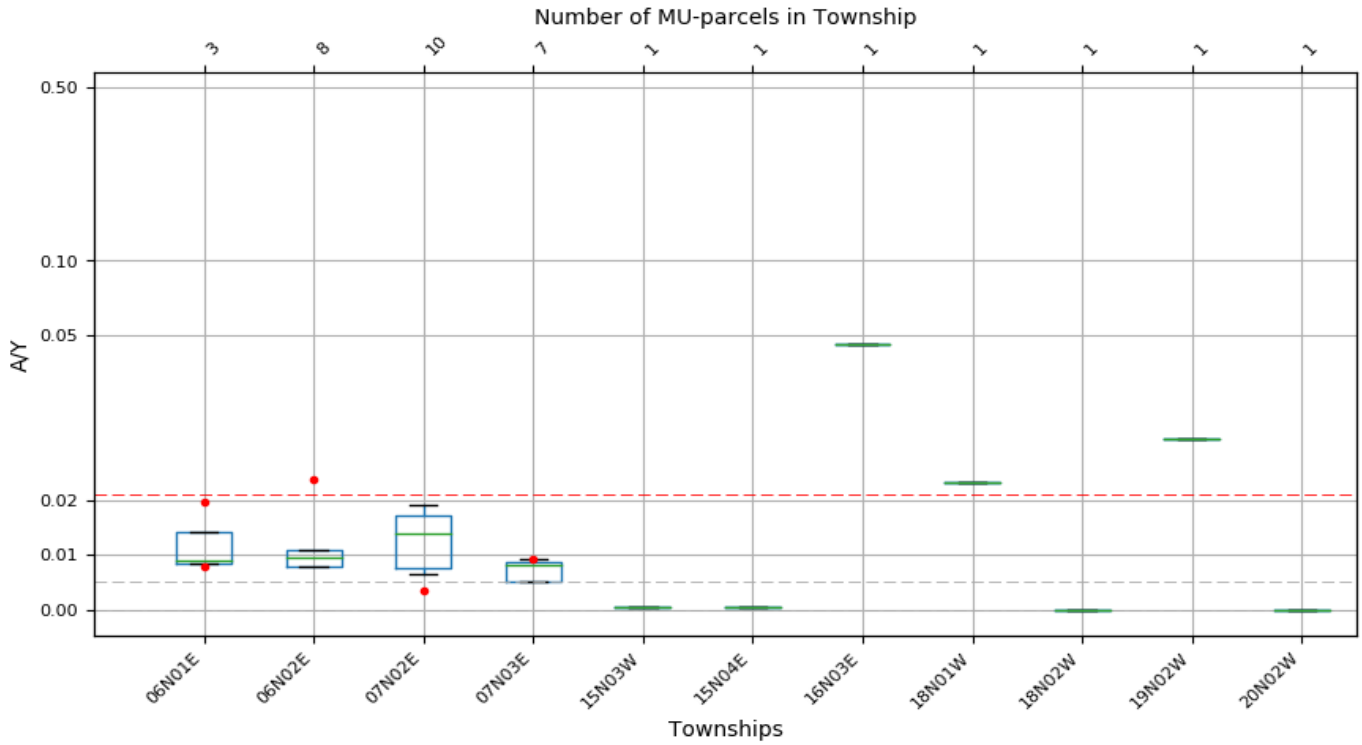


Table XII-1. A/Y Summary Statistics for PASTURE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

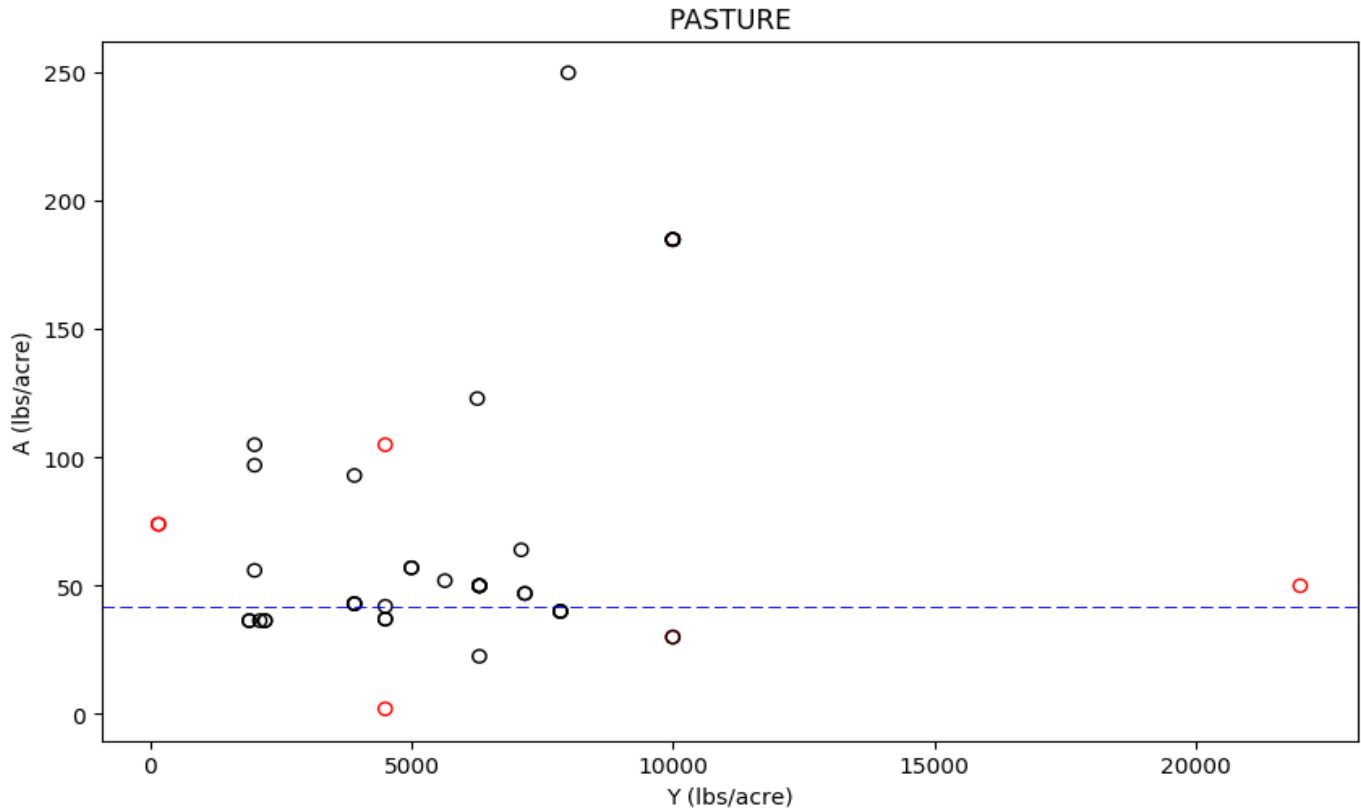
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	3	0.0079	0.0196	0.0081	0.0084	0.009	0.0143	0.0175	1
06N02E	8	0.0079	0.0238	0.0079	0.0079	0.0094	0.011	0.0148	1
07N02E	10	0.0036	0.0192	0.0063	0.0078	0.014	0.0171	0.0192	0
07N03E	7	0.0051	0.0093	0.0051	0.0051	0.0082	0.0087	0.0092	1
15N03W	1	0.0004	0.0004						
15N04E	1	0.0005	0.0005						
16N03E	1	0.0485	0.0485						
18N01W	1	0.0233	0.0233						
18N02W	1	0.0	0.0						
19N02W	1	0.0312	0.0312						
20N02W	1	0.0	0.0						
21N01E	1	0.0023	0.0023						
22N03W	2	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0
23N02W	1	0.0	0.0						
24N01W	1	0.0	0.0						
24N02W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
25N02W	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
25N03W	17	0.0	0.0185	0.0	0.0	0.0	0.0185	0.0185	0
26N02W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
26N03W	2	0.0	0.028	0.0028	0.007	0.014	0.021	0.0252	1
27N02W	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
27N03W	5	0.0	0.0525	0.0	0.0	0.0	0.0	0.0315	1
Unknown	2	0.4559	0.4559	0.4559	0.4559	0.4559	0.4559	0.4559	

Table XII-4. Summary Statistics for PASTURE management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	77	0.0	0.4559	0.0	0.0	0.0051	0.0114	0.0211	8

Figure XII-2. Scatter plot of A vs. Y for PASTURE with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



NOTE: 1.0 record(s) above Yield value of 25000 lbs/acre not shown to avoid skewing of scatter plot.

XIII. PEACH/NECTARINE

Figure XIII-1. Box and Whisker plots of A/Y for PEACH/NECTARINE management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for PEACH/NECTARINE

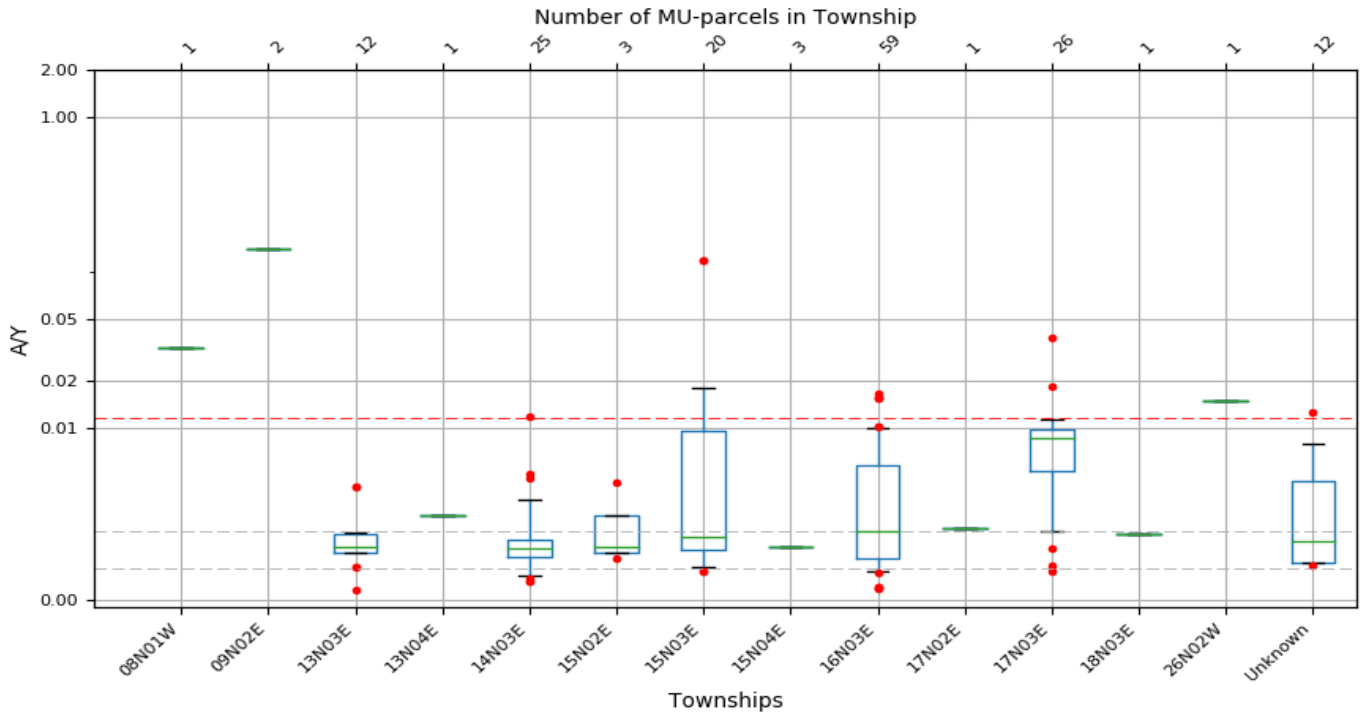


Table XIII-1. A/Y Summary Statistics for PEACH/NECTARINE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01W	1	0.0323	0.0323						
09N02E	2	0.1412	0.1412	0.1412	0.1412	0.1412	0.1412	0.1412	0
13N03E	12	0.0006	0.0066	0.0019	0.0027	0.0031	0.0038	0.0063	2
13N04E	1	0.0049	0.0049						
14N03E	25	0.0011	0.0118	0.0013	0.0025	0.003	0.0035	0.0066	3
15N02E	3	0.0024	0.0068	0.0025	0.0028	0.0031	0.0049	0.0061	1
15N03E	20	0.0017	0.119	0.0019	0.0029	0.0037	0.0098	0.028	2
15N04E	3	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0
16N03E	59	0.0007	0.0167	0.0017	0.0024	0.004	0.0078	0.01	6
17N02E	1	0.0042	0.0042						
17N03E	26	0.0017	0.0382	0.0035	0.0075	0.0094	0.0099	0.0114	2
18N03E	1	0.0038	0.0038						
26N02W	1	0.015	0.015						
Unknown	12	0.002	0.0125	0.0022	0.0022	0.0034	0.0069	0.0091	1

Table XIII-2. A/R Summary Statistics for PEACH/NECTARINE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01W	1	28.5783	28.5783						
09N02E	2	77.5585	124.9172	82.2944	89.3982	101.2378	113.0775	120.1813	1
13N03E	12	0.4916	5.8221	1.715	2.4199	2.7409	3.4015	5.5828	2
13N04E	1	4.3107	4.3107						
14N03E	25	1.0167	10.4517	1.2136	2.2124	2.6782	3.1234	5.8461	3
15N02E	3	2.1239	6.0014	2.2522	2.4447	2.7655	4.3834	5.3542	1
15N03E	20	1.4976	105.3519	1.6256	2.6095	3.3011	8.6592	24.7577	2
15N04E	3	2.7229	2.7229	2.7229	2.7229	2.7229	2.7229	2.7229	0
16N03E	59	0.6195	14.7493	1.4976	2.0886	3.5398	6.9296	8.8657	6
17N02E	1	3.6873	3.6873						
17N03E	26	1.5155	33.768	3.0974	6.6372	8.2965	8.7762	10.1063	2
18N03E	1	3.3786	3.3786						
26N02W	1	13.2743	13.2743						
Unknown	12	1.7699	11.0619	1.9514	1.9716	3.042	6.135	8.069	2

Table XIII-3. A-R Summary Statistics for PEACH/NECTARINE management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

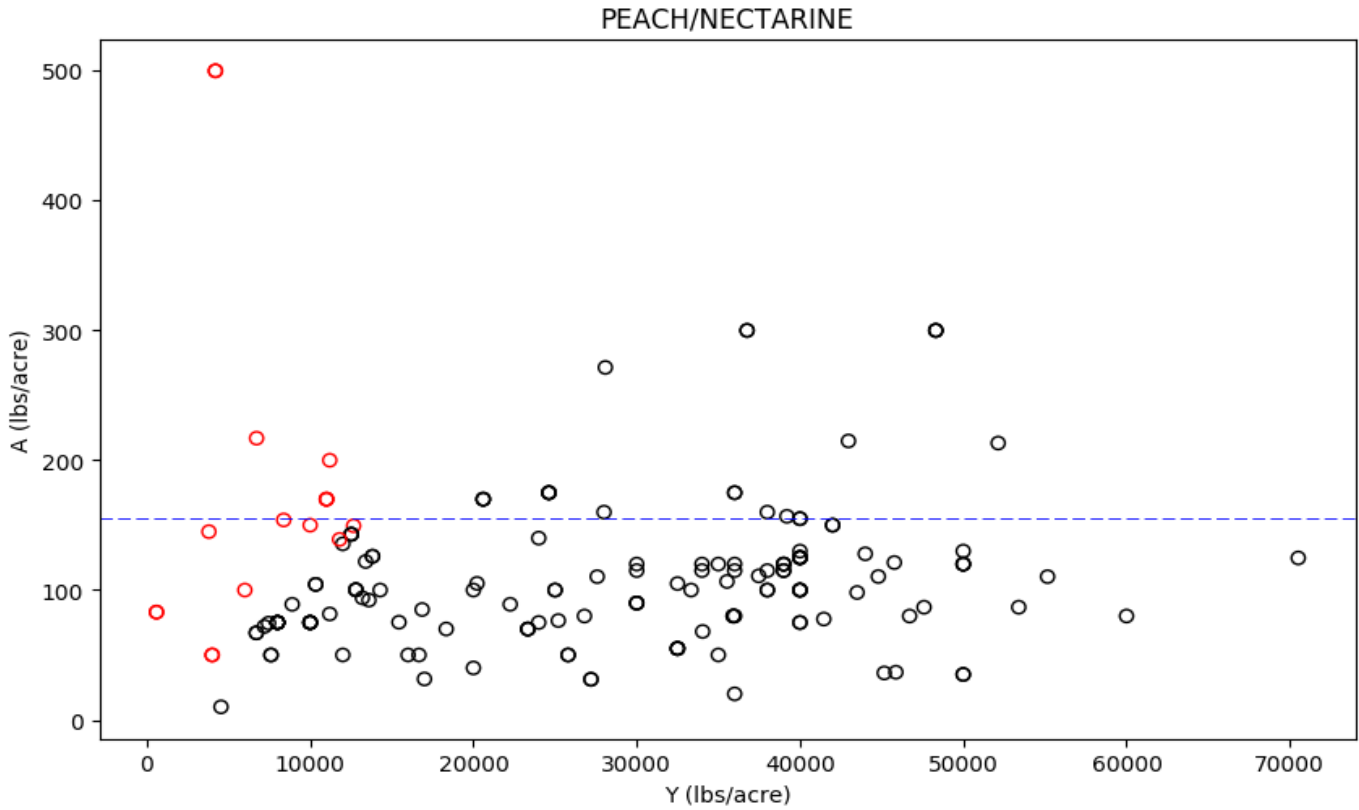
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01W	1	209.39	209.39						
09N02E	2	81.93	82.34	81.97	82.03	82.13	82.23	82.29	1
13N03E	12	-20.68	109.8	20.85	36.27	56.1	74.88	80.65	2
13N04E	1	57.76	57.76						
14N03E	25	0.51	135.21	11.15	54.8	68.92	79.8	102.17	3
15N02E	3	63.5	79.8	66.17	70.18	76.86	78.33	79.21	1
15N03E	20	12.29	495.25	18.28	61.43	78.6	119.22	218.14	2
15N04E	3	75.93	75.93	75.93	75.93	75.93	75.93	75.93	0
16N03E	59	-21.5	245.4	24.81	41.48	68.28	107.52	147.18	5
17N02E	1	36.44	36.44						
17N03E	26	17.4	258.46	63.7	64.39	65.96	128.83	197.04	3
18N03E	1	49.28	49.28						
26N02W	1	138.7	138.7						
Unknown	12	4.87	245.4	39.42	42.58	52.53	107.59	110.35	2

Table XIII-4. Summary Statistics for PEACH/NECTARINE management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	167	0.0006	0.1412	0.0019	0.0026	0.004	0.0082	0.0116	17
A/R	167	0.4916	124.9172	1.6292	2.336	3.5398	7.2626	10.2342	17
A-R	167	-21.5	495.25	20.85	48.49	69.48	104.7	147.18	15

Figure XIII-2. Scatter plot of A vs. Y for PEACH/NECTARINE with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



XIV. PISTACHIO

Figure XIV-1. Box and Whisker plots of A/Y for PISTACHIO management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for PISTACHIO

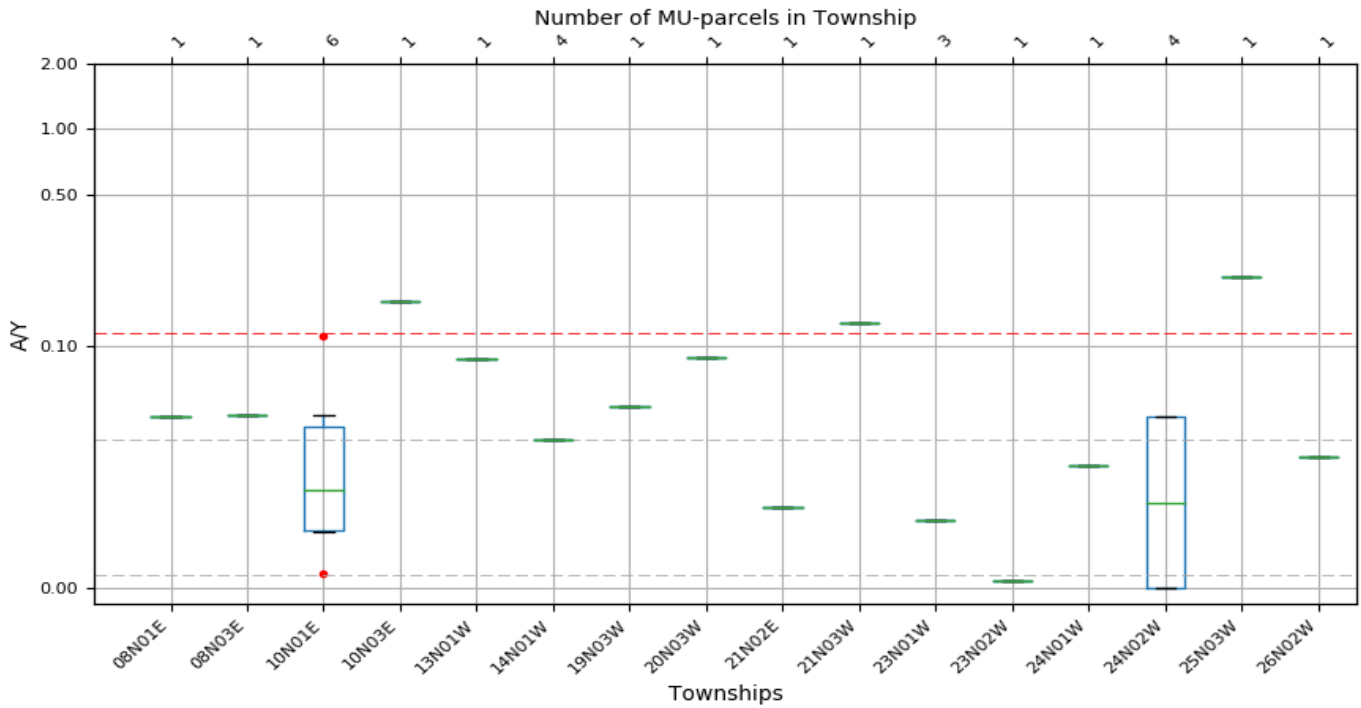


Table XIV-1. A/Y Summary Statistics for PISTACHIO management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01E	1	0.0707	0.0707						
08N03E	1	0.0716	0.0716						
10N01E	6	0.0058	0.1122	0.0144	0.024	0.0404	0.067	0.0918	1
10N03E	1	0.1603	0.1603						
13N01W	1	0.0947	0.0947						
14N01W	4	0.0615	0.0615	0.0615	0.0615	0.0615	0.0615	0.0615	0
19N03W	1	0.075	0.075						
20N03W	1	0.0955	0.0955						
21N02E	1	0.0335	0.0335						
21N03W	1	0.1286	0.1286						
23N01W	3	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0
23N02W	1	0.003	0.003						
24N01W	1	0.051	0.051						
24N02W	4	0.0	0.071	0.0	0.0	0.0355	0.071	0.071	0
25N03W	1	0.21	0.21						
26N02W	1	0.054	0.054						

Table XIV-2. A/R Summary Statistics for PISTACHIO management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01E	1	2.5201	2.5201						
08N03E	1	2.5524	2.5524						
10N01E	6	0.2059	3.9999	0.5134	0.855	1.4419	2.3907	3.2727	1
10N03E	1	5.7135	5.7135						
13N01W	1	3.3754	3.3754						
14N01W	4	2.1913	2.1913	2.1913	2.1913	2.1913	2.1913	2.1913	0
19N03W	1	2.6738	2.6738						
20N03W	1	3.4038	3.4038						
21N02E	1	1.1927	1.1927						
21N03W	1	4.5837	4.5837						
23N01W	3	0.9984	0.9984	0.9984	0.9984	0.9984	0.9984	0.9984	0
23N02W	1	0.107	0.107						
24N01W	1	1.8182	1.8182						
24N02W	4	0.0	2.5312	0.0	0.0	1.2656	2.5312	2.5312	0
25N03W	1	7.4866	7.4866						
26N02W	1	1.9251	1.9251						

Table XIV-3. A-R Summary Statistics for PISTACHIO management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

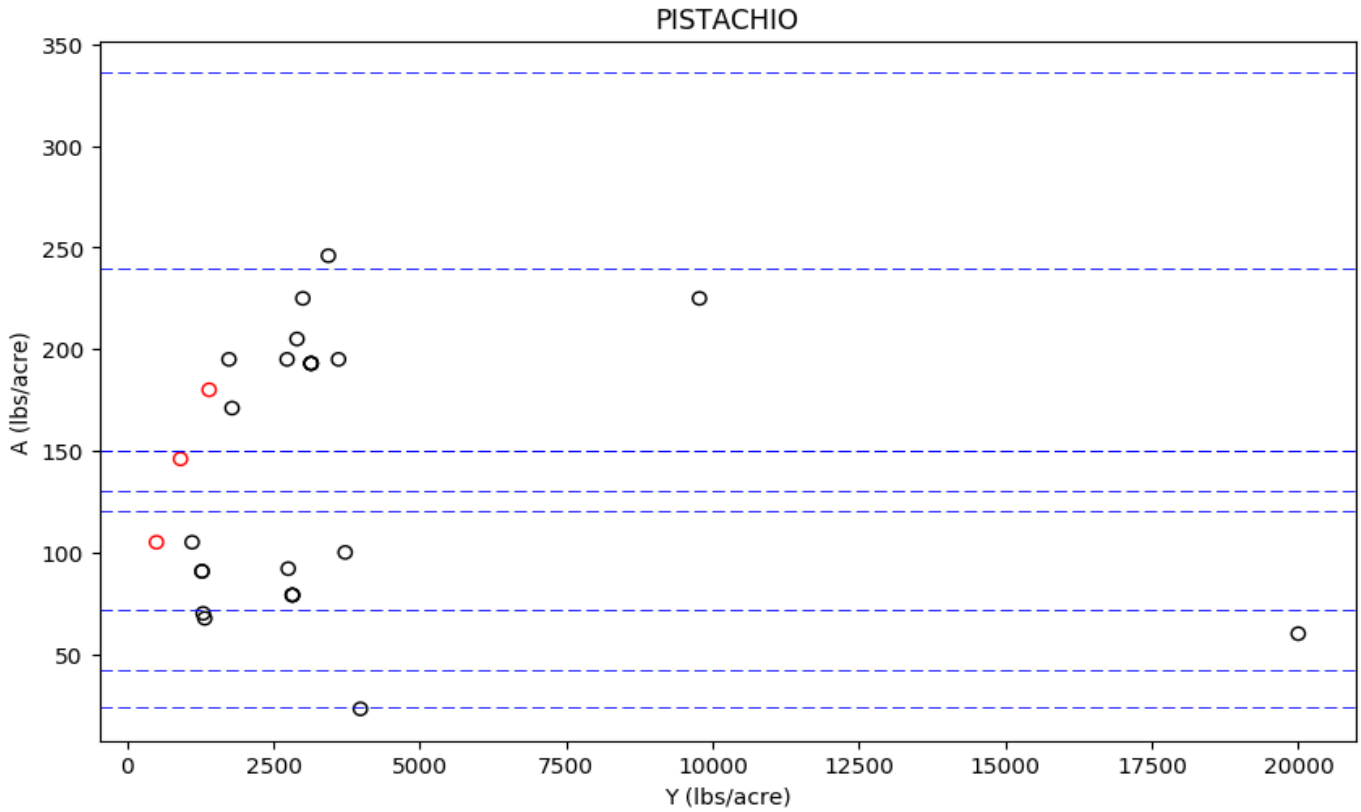
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01E	1	123.66	123.66						
08N03E	1	149.62	149.62						
10N01E	6	-88.72	146.25	-68.93	-37.96	44.67	112.24	132.32	1
10N03E	1	120.45	120.45						
13N01W	1	73.89	73.89						
14N01W	4	104.92	104.92	104.92	104.92	104.92	104.92	104.92	0
19N03W	1	140.85	140.85						
20N03W	1	120.76	120.76						
21N02E	1	14.86	14.86						
21N03W	1	140.73	140.73						
23N01W	3	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	0
23N02W	1	-501.0	-501.0						
24N01W	1	30.4	30.4						
24N02W	2	54.87	54.87	54.87	54.87	54.87	54.87	54.87	0
25N03W	1	90.98	90.98						
26N02W	1	33.64	33.64						

Table XIV-4. Summary Statistics for PISTACHIO management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	29	0.0	0.21	0.0052	0.028	0.0615	0.0716	0.1155	3
A/R	29	0.0	7.4866	0.1861	0.9984	2.1913	2.5524	4.1167	3
A-R	27	-501.0	149.62	-22.31	7.37	90.98	119.42	140.78	3

Figure XIV-2. Scatter plot of A vs. Y for PISTACHIO with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



XV. PLUM/PLUOT

Figure XV-1. Box and Whisker plots of A/Y for PLUM/PLUOT management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers (A/Y > 90% percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for PLUM/PLUOT

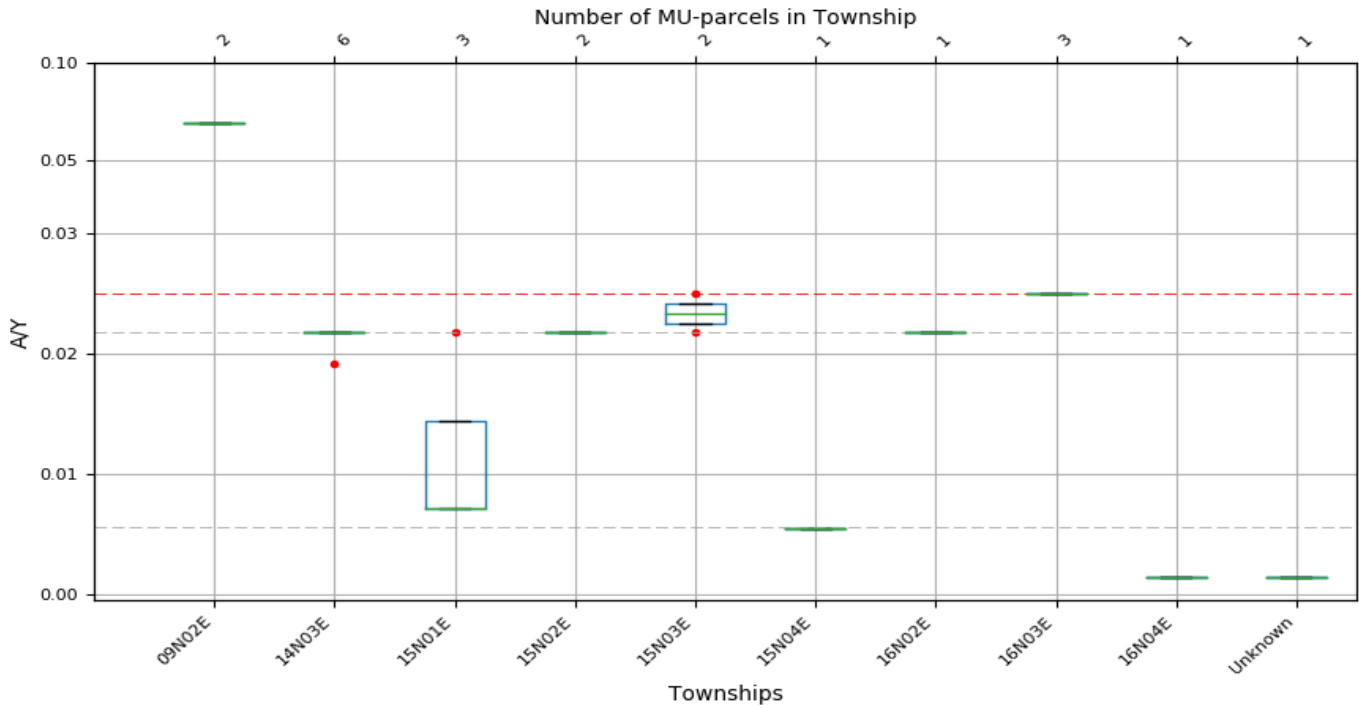


Table XV-1. A/Y Summary Statistics for PLUM/PLUOT management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
09N02E	2	0.0655	0.0655	0.0655	0.0655	0.0655	0.0655	0.0655	0
14N03E	6	0.0191	0.0217	0.0204	0.0217	0.0217	0.0217	0.0217	0
15N01E	3	0.0071	0.0217	0.0071	0.0071	0.0071	0.0144	0.0188	1
15N02E	2	0.0217	0.0217	0.0217	0.0217	0.0217	0.0217	0.0217	0
15N03E	2	0.0217	0.025	0.022	0.0225	0.0234	0.0242	0.0247	1
15N04E	1	0.0054	0.0054						
16N02E	1	0.0217	0.0217						
16N03E	3	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0
16N04E	1	0.0014	0.0014						
Unknown	1	0.0014	0.0014						

Table XV-2. A/R Summary Statistics for PLUM/PLUOT management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
09N02E	2	46.2962	46.2962	46.2962	46.2962	46.2962	46.2962	46.2962	0
14N03E	6	13.5107	15.3121	14.4114	15.3121	15.3121	15.3121	15.3121	0
15N01E	3	4.9941	15.3121	4.9941	4.9941	4.9941	10.1531	13.2485	1
15N02E	2	15.3121	15.3121	15.3121	15.3121	15.3121	15.3121	15.3121	0
15N03E	2	15.3121	17.6678	15.5477	15.901	16.49	17.0789	17.4322	1
15N04E	1	3.8284	3.8284						
16N02E	1	15.3121	15.3121						
16N03E	3	17.6678	17.6678	17.6678	17.6678	17.6678	17.6678	17.6678	0
16N04E	1	1.0096	1.0096						
Unknown	1	1.0096	1.0096						

Table XV-3. A-R Summary Statistics for PLUM/PLUOT management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

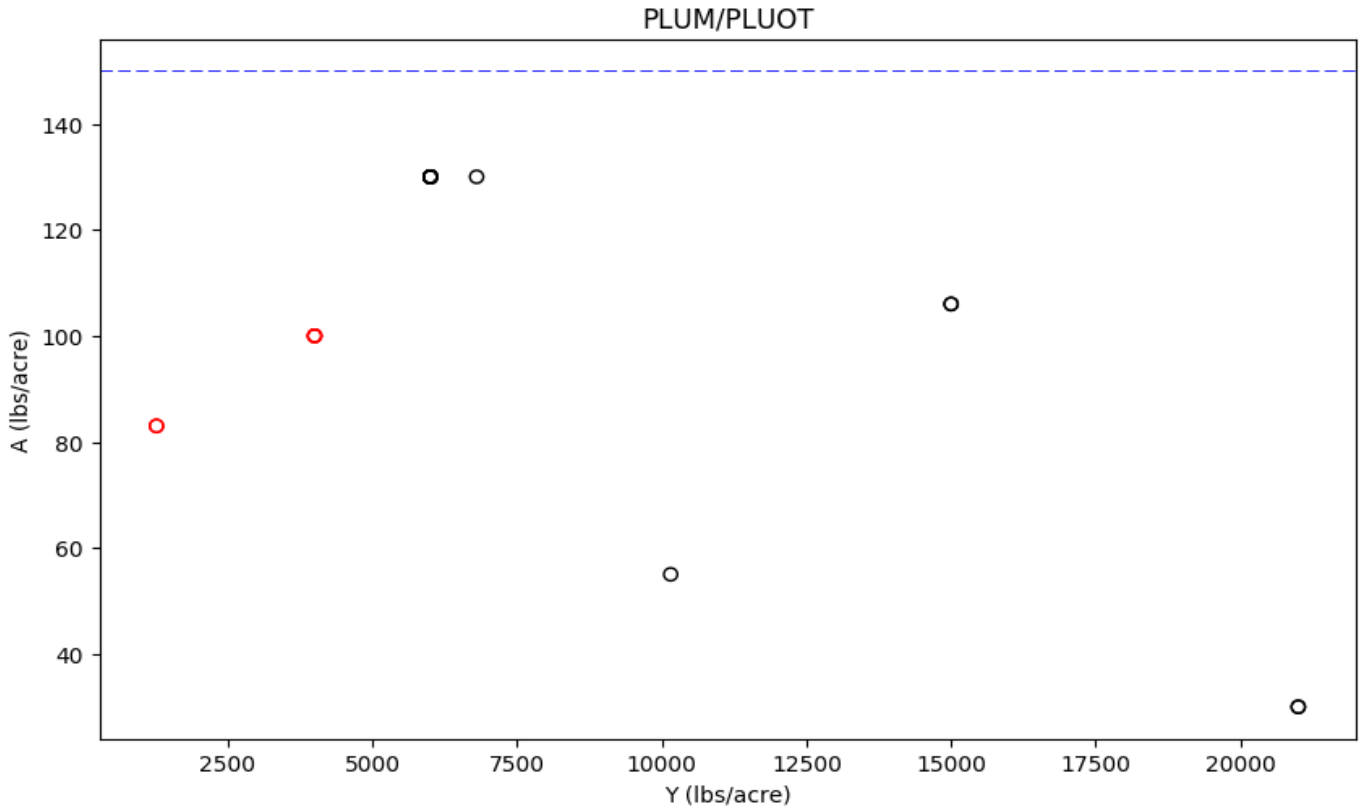
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
09N02E	2	81.21	81.21	81.21	81.21	81.21	81.21	81.21	0
14N03E	6	120.38	121.51	120.94	121.51	121.51	121.51	121.51	0
15N01E	3	84.78	121.51	84.78	84.78	84.78	103.14	114.16	1
15N02E	2	121.51	121.51	121.51	121.51	121.51	121.51	121.51	0
15N03E	2	94.34	121.51	97.06	101.13	107.93	114.72	118.79	1
15N04E	1	40.63	40.63						
16N02E	1	121.51	121.51						
16N03E	3	94.34	94.34	94.34	94.34	94.34	94.34	94.34	0
16N04E	1	0.29	0.29						
Unknown	1	0.29	0.29						

Table XV-4. Summary Statistics for PLUM/PLUOT management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	22	0.0014	0.0655	0.0056	0.0198	0.0217	0.0242	0.025	2
A/R	22	1.0096	46.2962	3.945	13.961	15.3121	17.0789	17.6678	2
A-R	22	0.29	121.51	44.69	84.78	107.36	121.51	121.51	0

Figure XV-2. Scatter plot of A vs. Y for PLUM/PLUOT with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



XVI. PRUNES

Figure XVI-1. Box and Whisker plots of A/Y for PRUNES management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for PRUNES

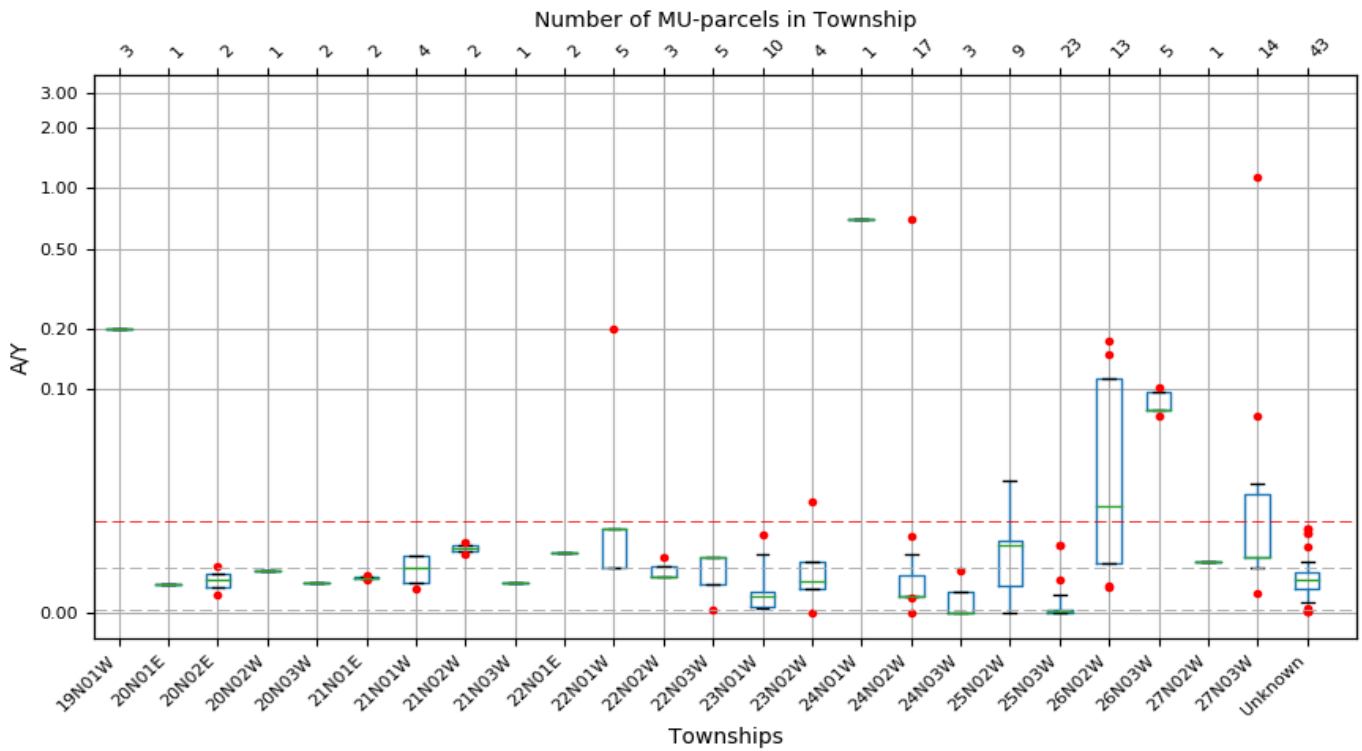
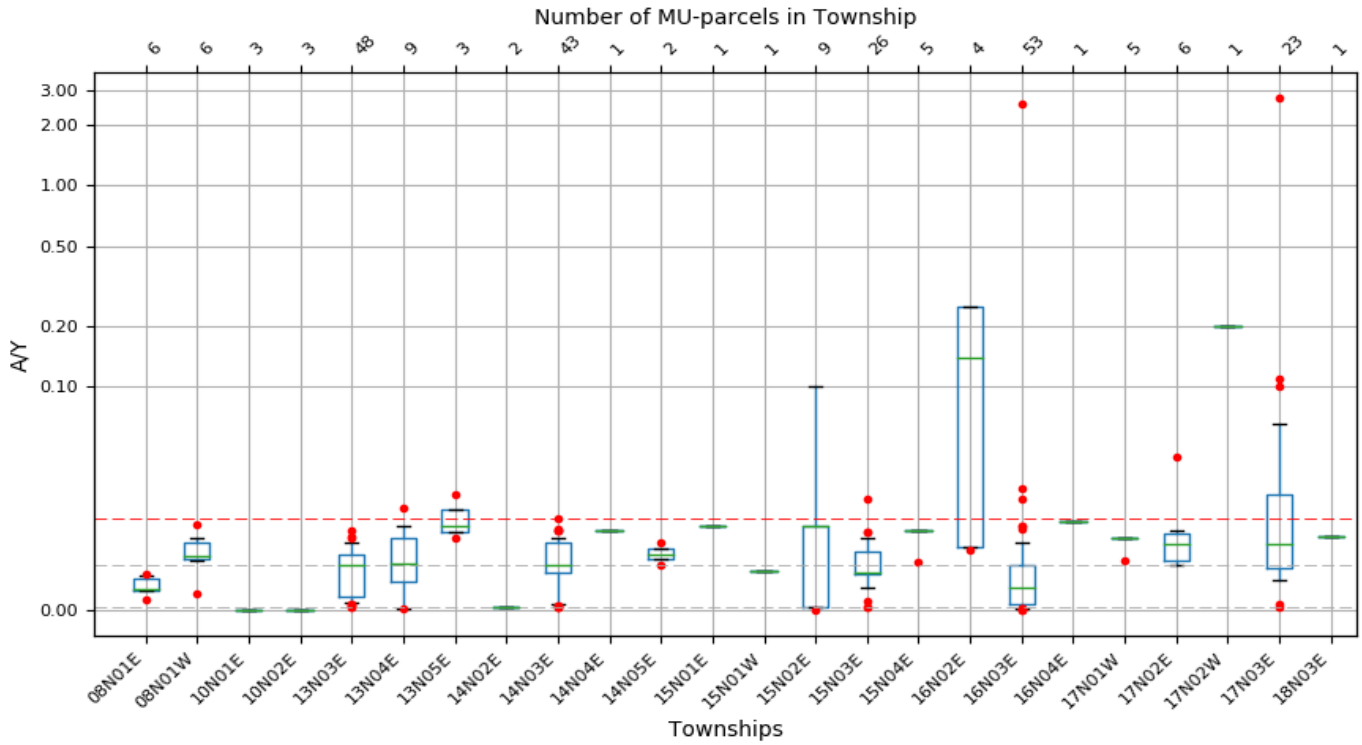


Table XVI-1. A/Y Summary Statistics for PRUNES management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01E	6	0.005	0.0161	0.0068	0.0087	0.0093	0.0138	0.0157	1
08N01W	6	0.0073	0.0385	0.0148	0.0229	0.0244	0.0305	0.0355	1
10N01E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
10N02E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
13N03E	48	0.0015	0.0357	0.0028	0.0061	0.02	0.025	0.03	3
13N04E	9	0.0008	0.0456	0.0008	0.0125	0.0208	0.0322	0.0391	1
13N05E	3	0.032	0.052	0.0331	0.0348	0.0375	0.0448	0.0491	1
14N02E	2	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0
14N03E	43	0.0013	0.0411	0.0021	0.017	0.02	0.03	0.035	5
14N04E	1	0.0357	0.0357						
14N05E	2	0.02	0.03	0.021	0.0225	0.025	0.0275	0.029	1
15N01E	1	0.0375	0.0375						
15N01W	1	0.0172	0.0172						
15N02E	9	0.0002	0.1	0.0012	0.0014	0.0375	0.0375	0.1	0
15N03E	26	0.0013	0.05	0.0069	0.016	0.017	0.026	0.0335	3
15N04E	5	0.0213	0.0353	0.0269	0.0353	0.0353	0.0353	0.0353	0
16N02E	4	0.027	0.25	0.0274	0.0279	0.1391	0.25	0.25	0
16N03E	53	0.0	2.5408	0.0006	0.0028	0.01	0.02	0.0349	6
16N04E	1	0.0397	0.0397						
17N01W	5	0.0223	0.032	0.0262	0.032	0.032	0.032	0.032	0
17N02E	6	0.02	0.0688	0.02	0.0224	0.0298	0.0342	0.0522	1
17N02W	1	0.2	0.2						
17N03E	23	0.0014	2.7295	0.0133	0.019	0.0295	0.0517	0.0967	3
18N03E	1	0.0328	0.0328						
19N01W	3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
20N01E	1	0.0125	0.0125						
20N02E	2	0.008	0.0208	0.0093	0.0112	0.0144	0.0176	0.0195	1
20N02W	1	0.0188	0.0188						
20N03W	2	0.0133	0.0133	0.0133	0.0133	0.0133	0.0133	0.0133	0
21N01E	2	0.0148	0.0167	0.015	0.0153	0.0158	0.0162	0.0165	1
21N01W	4	0.0107	0.0253	0.0119	0.0136	0.02	0.0253	0.0253	0
21N02W	2	0.0262	0.0312	0.0267	0.0274	0.0287	0.03	0.0307	1
21N03W	1	0.0133	0.0133						
22N01E	2	0.0266	0.0266	0.0266	0.0266	0.0266	0.0266	0.0266	0
22N01W	5	0.02	0.2	0.02	0.02	0.0375	0.0375	0.135	1

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
22N02W	3	0.0161	0.025	0.0161	0.0161	0.0161	0.0206	0.0232	1
22N03W	5	0.0013	0.025	0.0059	0.0127	0.025	0.025	0.025	0
23N01W	10	0.0019	0.0348	0.0019	0.003	0.0074	0.0096	0.0272	1
23N02W	4	0.0	0.05	0.0042	0.0105	0.014	0.023	0.0392	1
24N01W	1	0.7	0.7						
24N02W	17	0.0	0.7	0.0071	0.0075	0.0075	0.017	0.0294	2
24N03W	3	0.0	0.0186	0.0	0.0	0.0	0.0093	0.0149	1
25N02W	9	0.0	0.059	0.0	0.012	0.03	0.032	0.059	0
25N03W	23	0.0	0.03	0.0	0.0	0.0004	0.0014	0.0133	3
26N02W	13	0.0116	0.1728	0.014	0.0221	0.048	0.1136	0.1419	2
26N03W	5	0.0883	0.1019	0.0893	0.0909	0.0909	0.099	0.1007	1
27N02W	1	0.0225	0.0225						
27N03W	14	0.009	1.13	0.02	0.025	0.025	0.0533	0.0791	2
Unknown	43	0.0008	0.0375	0.0024	0.011	0.0147	0.0181	0.0281	5

Table XVI-2. A/R Summary Statistics for PRUNES management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01E	6	0.8894	2.8802	1.1998	1.5468	1.6567	2.4691	2.81	1
08N01W	6	1.3028	6.882	2.6552	4.0951	4.3576	5.4468	6.346	1
10N01E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
10N02E	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
13N03E	48	0.2634	6.3776	0.509	1.0966	3.5714	4.4643	5.3571	3
13N04E	9	0.1339	8.1408	0.1446	2.2321	3.7154	5.7589	6.9853	1
13N05E	3	5.7143	9.2857	5.9107	6.2053	6.6964	7.991	8.7678	1
14N02E	2	0.2447	0.2447	0.2447	0.2447	0.2447	0.2447	0.2447	0
14N03E	43	0.225	7.3342	0.3728	3.0227	3.5714	5.3571	6.2449	5
14N04E	1	6.3776	6.3776						
14N05E	2	3.5714	5.3571	3.75	4.0178	4.4642	4.9107	5.1785	1
15N01E	1	6.6964	6.6964						
15N01W	1	3.0692	3.0692						
15N02E	9	0.0372	17.8571	0.2032	0.25	6.6964	6.6964	17.8571	0
15N03E	26	0.225	8.9286	1.2341	2.8571	3.0357	4.6429	5.9822	3
15N04E	5	3.8029	6.3025	4.8027	6.3025	6.3025	6.3025	6.3025	0
16N02E	4	4.8262	44.6429	4.8868	4.9777	24.8355	44.6429	44.6429	0
16N03E	53	0.0	453.7205	0.102	0.506	1.7857	3.5714	6.2301	6
16N04E	1	7.0902	7.0902						
17N01W	5	3.9789	5.7143	4.6731	5.7143	5.7143	5.7143	5.7143	0
17N02E	6	3.5714	12.2768	3.5714	4.0077	5.3166	6.1124	9.3272	1
17N02W	1	35.7143	35.7143						
17N03E	23	0.2465	487.4103	2.3833	3.3971	5.2641	9.2262	17.2619	3
18N03E	1	5.8548	5.8548						
19N01W	3	35.7143	35.7143	35.7143	35.7143	35.7143	35.7143	35.7143	0
20N01E	1	2.2321	2.2321						
20N02E	2	1.4286	3.7202	1.6578	2.0015	2.5744	3.1473	3.491	1
20N02W	1	3.3482	3.3482						
20N03W	2	2.3834	2.3834	2.3834	2.3834	2.3834	2.3834	2.3834	0
21N01E	2	2.6342	2.9762	2.6684	2.7197	2.8052	2.8907	2.942	1
21N01W	4	1.9048	4.5179	2.1128	2.4249	3.5581	4.5179	4.5179	0
21N02W	2	4.6875	5.5749	4.7762	4.9094	5.1312	5.3531	5.4862	1
21N03W	1	2.3834	2.3834						
22N01E	2	4.7473	4.7473	4.7473	4.7473	4.7473	4.7473	4.7473	0
22N01W	5	3.5714	35.7143	3.5714	3.5714	6.6964	6.6964	24.1071	1

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
22N02W	3	2.872	4.4643	2.872	2.872	2.872	3.6682	4.1458	1
22N03W	5	0.2381	4.4643	1.0471	2.2606	4.4643	4.4643	4.4643	0
23N01W	10	0.342	6.2054	0.342	0.5305	1.3256	1.7115	4.8583	1
23N02W	4	0.0	8.9286	0.75	1.875	2.5	4.1072	7.0	1
24N01W	1	125.0	125.0						
24N02W	17	0.0	125.0	1.2656	1.3466	1.3466	3.0357	5.2557	2
24N03W	3	0.0	3.3177	0.0	0.0	0.0	1.6588	2.6542	1
25N02W	9	0.0	10.5357	0.0	2.1429	5.3571	5.7143	10.5357	0
25N03W	23	0.0	5.3571	0.0	0.0	0.0628	0.2511	2.3731	3
26N02W	13	0.0	20.2922	0.0	2.0714	3.9541	8.5714	20.2922	0
26N03W	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
27N02W	1	0.0	0.0						
27N03W	14	0.0	201.7857	0.4795	3.5714	4.4643	4.4643	10.2612	1
Unknown	43	0.1339	6.6964	0.4302	1.9643	2.625	3.2251	5.0206	5

Table XVI-3. A-R Summary Statistics for PRUNES management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
08N01E	6	-6.46	65.28	9.49	25.45	28.64	52.83	62.55	1
08N01W	6	17.43	117.26	42.4	78.07	110.18	112.8	115.47	1
10N01E	3	-11.2	-11.2	-11.2	-11.2	-11.2	-11.2	-11.2	0
10N02E	3	-11.2	-11.2	-11.2	-11.2	-11.2	-11.2	-11.2	0
13N03E	48	-436.96	168.64	-158.66	4.13	72.0	93.12	97.6	2
13N04E	9	-646.59	135.96	-471.21	27.6	94.28	106.6	124.22	1
13N05E	3	102.08	139.2	102.78	103.84	105.6	122.4	132.48	1
14N02E	2	-289.07	-289.07	-289.07	-289.07	-289.07	-289.07	-289.07	0
14N03E	43	-320.64	168.64	-175.6	70.28	84.32	105.82	118.64	4
14N04E	1	168.64	168.64						
14N05E	2	40.62	86.4	45.2	52.06	63.51	74.95	81.82	1
15N01E	1	102.08	102.08						
15N01W	1	74.16	74.16						
15N02E	9	-378.0	102.08	-306.86	-258.8	47.2	102.08	102.08	0
15N03E	26	-328.04	118.64	9.01	54.04	66.48	100.62	111.0	3
15N04E	5	84.76	100.96	91.24	100.96	100.96	100.96	100.96	0
16N02E	4	43.99	125.18	43.99	43.99	64.86	95.59	113.34	1
16N03E	53	-861.56	133.97	-306.86	-109.6	24.4	72.0	99.78	6
16N04E	1	68.21	68.21						
17N01W	5	105.6	187.17	105.6	105.6	105.6	105.6	154.54	1
17N02E	6	53.18	168.64	53.18	57.88	72.0	93.78	134.84	1
17N02W	1	116.64	116.64						
17N03E	23	-252.33	298.27	51.78	63.84	91.7	162.59	279.84	2
18N03E	1	165.84	165.84						
19N01W	3	486.0	486.0	486.0	486.0	486.0	486.0	486.0	0
20N01E	1	55.2	55.2						
20N02E	2	14.69	109.68	24.19	38.44	62.19	85.93	100.18	1
20N02W	1	105.2	105.2						
20N03W	2	37.73	37.73	37.73	37.73	37.73	37.73	37.73	0
21N01E	2	58.94	66.4	59.68	60.8	62.67	64.53	65.65	1
21N01W	4	35.63	197.0	45.24	59.65	132.33	197.0	197.0	0
21N02W	2	82.6	105.04	84.84	88.21	93.82	99.43	102.8	1
21N03W	1	37.73	37.73						
22N01E	2	71.04	71.04	71.04	71.04	71.04	71.04	71.04	0
22N01W	5	72.0	486.0	72.0	72.0	127.6	127.6	342.64	1

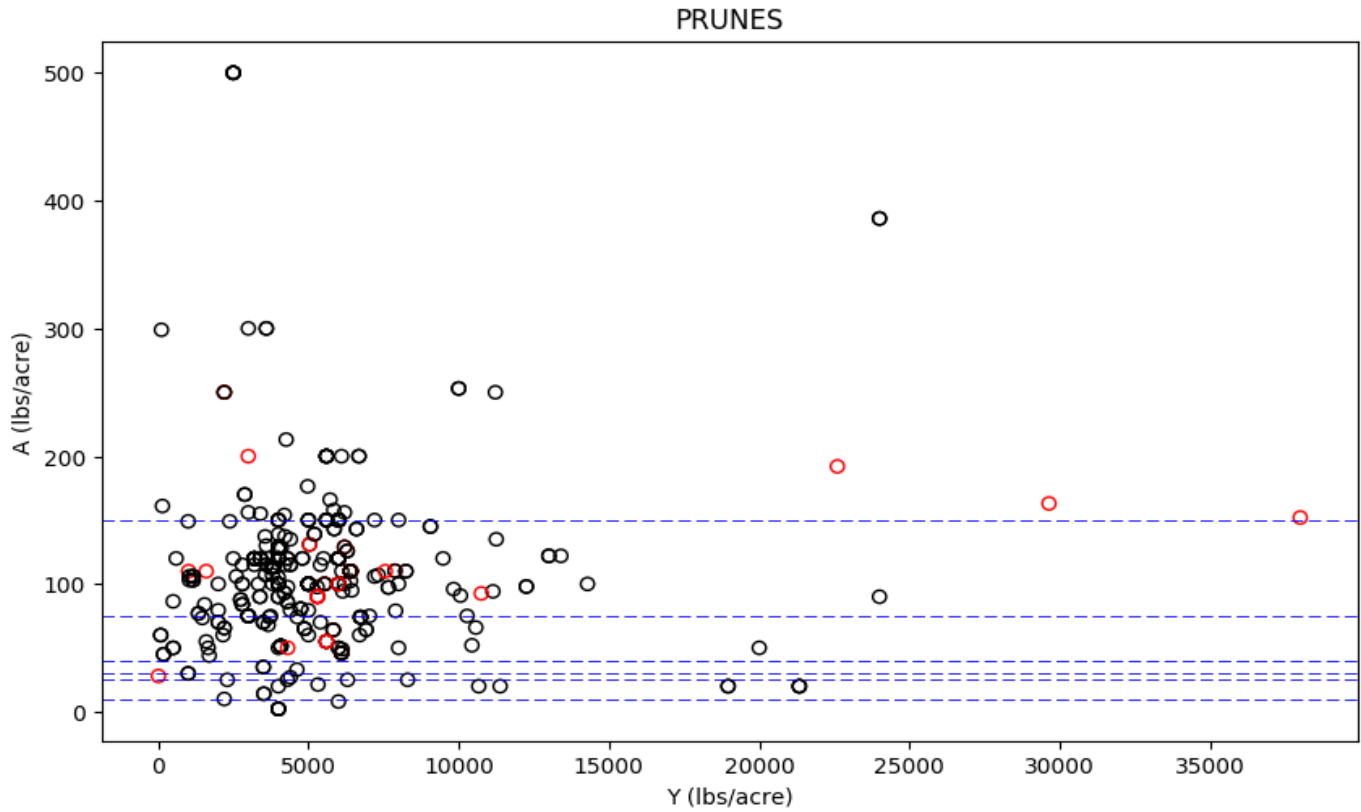
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
22N02W	3	116.4	251.6	143.44	184.0	251.6	251.6	251.6	0
22N03W	5	-25.6	116.4	11.41	66.92	116.4	116.4	116.4	0
23N01W	10	-278.92	116.6	-278.92	-208.6	19.55	39.36	82.69	1
23N02W	3	66.18	189.14	66.18	66.18	66.18	127.66	164.55	1
24N01W	1	59.52	59.52						
24N02W	16	7.14	90.36	11.84	11.84	27.24	60.42	60.42	1
24N03W	1	47.5	47.5						
25N02W	7	39.76	153.86	56.9	70.16	72.44	113.15	153.86	0
25N03W	12	-298.58	68.32	-99.47	-99.47	-64.95	38.55	68.09	2
26N02W	13	25.86	237.68	35.18	69.48	83.6	143.4	237.68	0
26N03W	5	96.47	100.18	96.75	97.18	99.47	99.47	99.89	1
27N02W	1	67.6	67.6						
27N03W	14	22.46	160.2	61.92	69.5	77.6	77.6	94.96	2
Unknown	43	-646.59	168.64	-32.25	30.02	54.4	74.16	90.64	5

Table XVI-4. Summary Statistics for PRUNES management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	438	0.0	2.7295	0.0011	0.0083	0.02	0.03	0.0409	44
A/R	438	0.0	487.4103	0.1295	1.2827	3.2251	5.3035	6.6964	37
A-R	421	-861.56	486.0	-109.6	25.86	69.48	99.32	122.0	41

Figure XVI-2. Scatter plot of A vs. Y for PRUNES with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



NOTE: 44.0 record(s) above Yield value of 40000 lbs/acre not shown to avoid skewing of scatter plot.

XVII. RYEGRASS

Figure XVII-1. Box and Whisker plots of A/Y for RYEGRASS management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for RYEGRASS

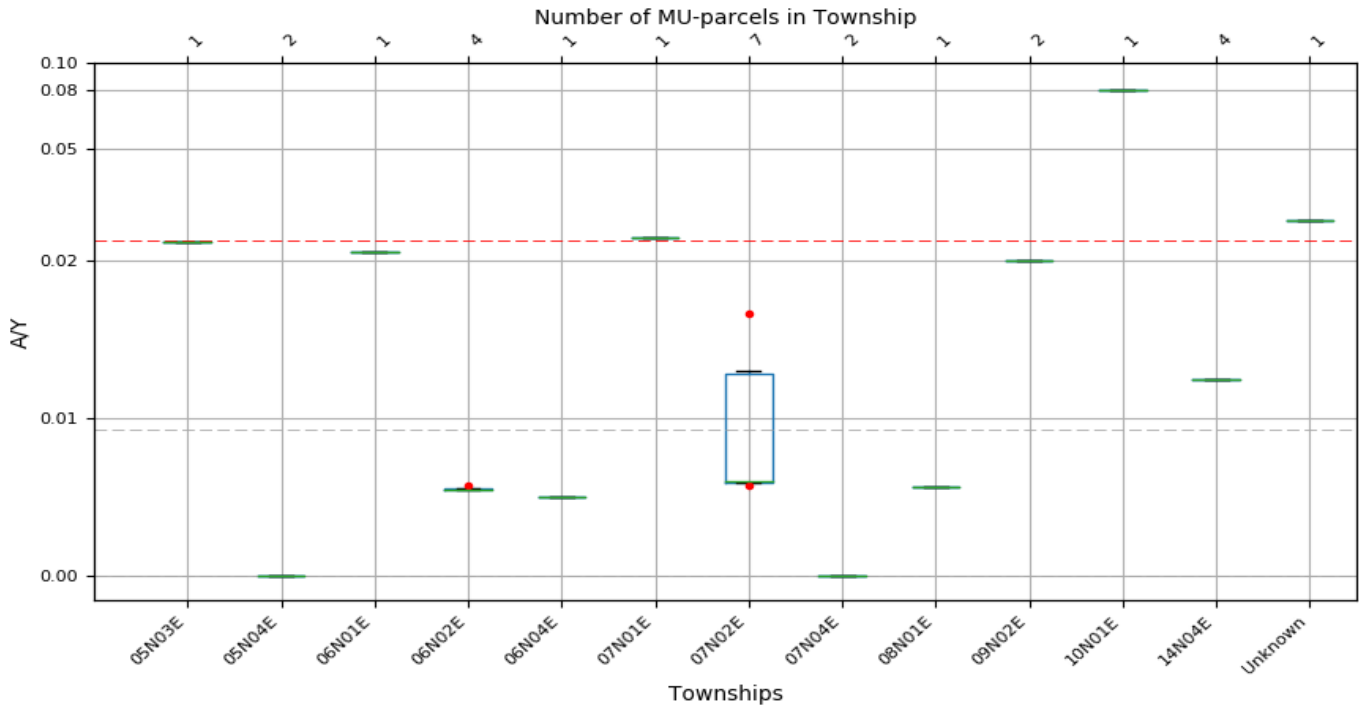


Table XVII-1. A/Y Summary Statistics for RYEGRASS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	1	0.0232	0.0232						
05N04E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
06N01E	1	0.0214	0.0214						
06N02E	4	0.0055	0.0057	0.0055	0.0055	0.0055	0.0056	0.0056	1
06N04E	1	0.005	0.005						
07N01E	1	0.0243	0.0243						
07N02E	7	0.0057	0.0167	0.0058	0.0059	0.006	0.0128	0.0145	1
07N04E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
08N01E	1	0.0056	0.0056						
09N02E	2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0
10N01E	1	0.08	0.08						
14N04E	4	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0
Unknown	1	0.0279	0.0279						

Table XVII-2. A/R Summary Statistics for RYEGRASS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	1	0.8464	0.8464						
05N04E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
06N01E	1	0.7806	0.7806						
06N02E	4	0.1995	0.2092	0.1995	0.1995	0.1995	0.2019	0.2063	1
06N04E	1	0.1821	0.1821						
07N01E	1	0.8842	0.8842						
07N02E	7	0.2092	0.61	0.2123	0.2144	0.2199	0.4662	0.5281	1
07N04E	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
08N01E	1	0.2042	0.2042						
09N02E	2	0.7286	0.7286	0.7286	0.7286	0.7286	0.7286	0.7286	
10N01E	1	2.9144	2.9144						
14N04E	4	0.4554	0.4554	0.4554	0.4554	0.4554	0.4554	0.4554	0
Unknown	1	1.0154	1.0154						

Table XVII-3. A-R Summary Statistics for RYEGRASS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

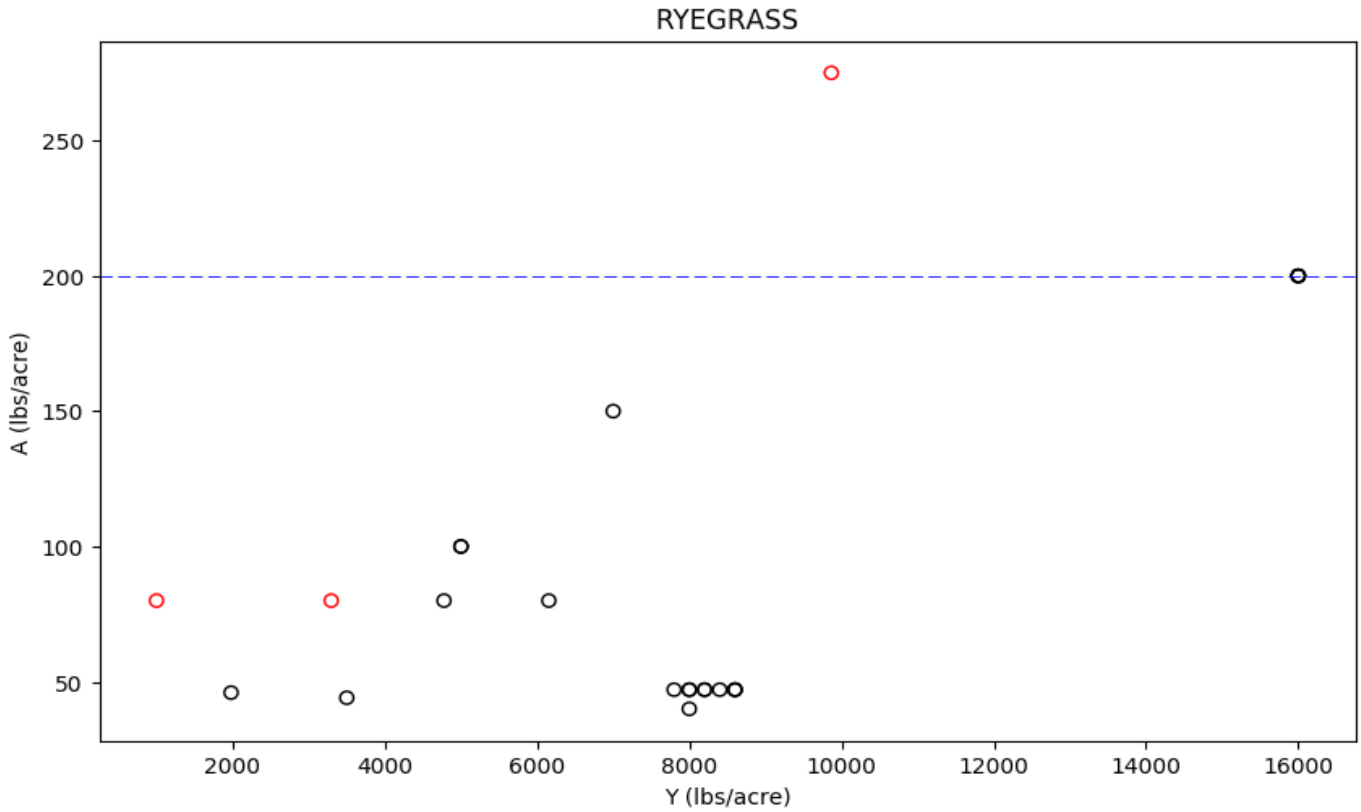
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	1	-8.35	-8.35						
05N04E	2	-164.7	-164.7	-164.7	-164.7	-164.7	-164.7	-164.7	0
06N01E	1	-42.15	-42.15						
06N02E	4	-188.98	-178.0	-188.98	-188.98	-188.98	-186.24	-181.29	1
06N04E	1	-179.6	-179.6						
07N01E	1	-10.48	-10.48						
07N02E	7	-178.0	-51.14	-174.71	-172.51	-167.02	-70.46	-51.64	1
07N04E	2	-87.29	-73.02	-85.86	-83.72	-80.15	-76.59	-74.44	1
08N01E	1	-183.49	-183.49						
09N02E	2	-37.25	-37.25	-37.25	-37.25	-37.25	-37.25	-37.25	0
10N01E	1	52.55	52.55						
14N04E	4	-239.2	-239.2	-239.2	-239.2	-239.2	-239.2	-239.2	0
Unknown	1	4.18	4.18						

Table XVII-4. Summary Statistics for RYEGRASS management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	28	0.0	0.08	0.0	0.0055	0.0093	0.0175	0.0235	3
A/R	28	0.0	2.9144	0.0	0.1995	0.3376	0.6397	0.8577	3
A-R	28	-239.2	52.55	-239.2	-184.86	-165.86	-48.89	-9.84	3

Figure XVII-2. Scatter plot of A vs. Y for RYEGRASS with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



XVIII. SAFFLOWER

Figure XVIII-1. Box and Whisker plots of A/Y for SAFFLOWER management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for SAFFLOWER

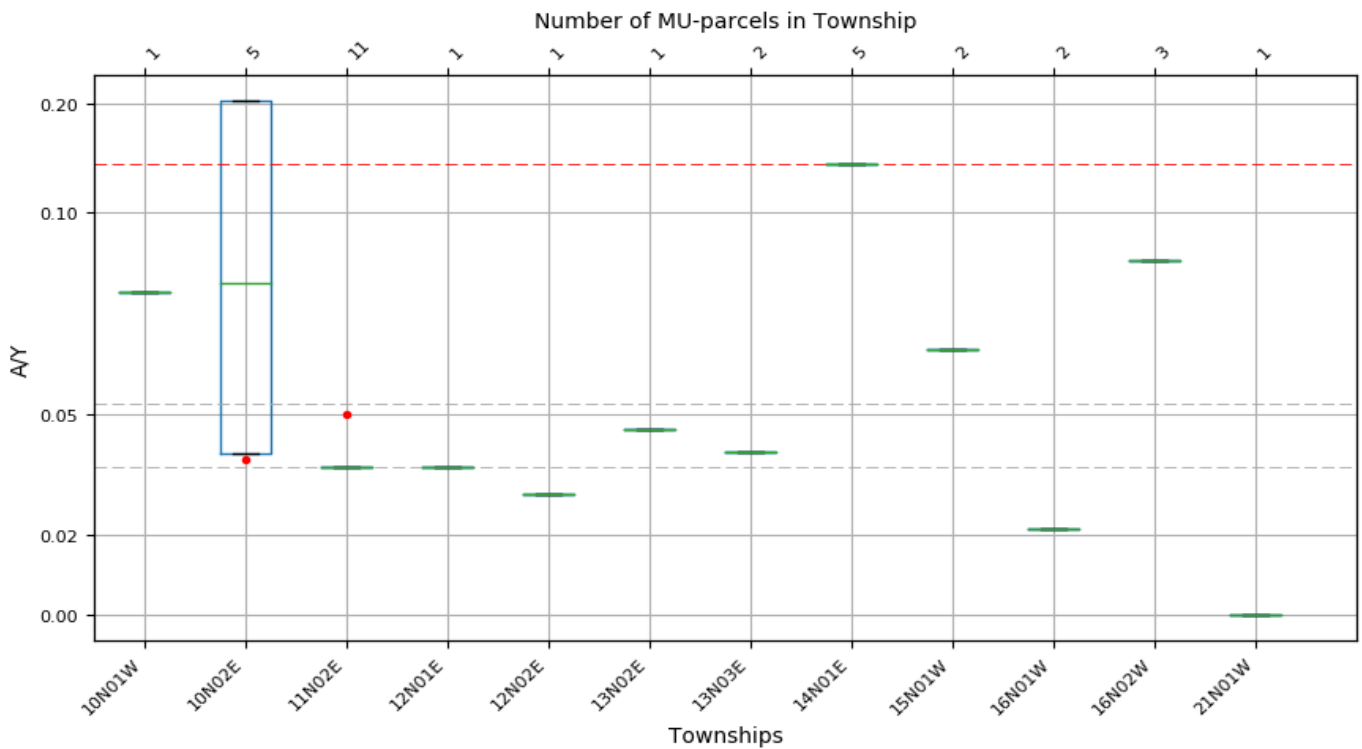
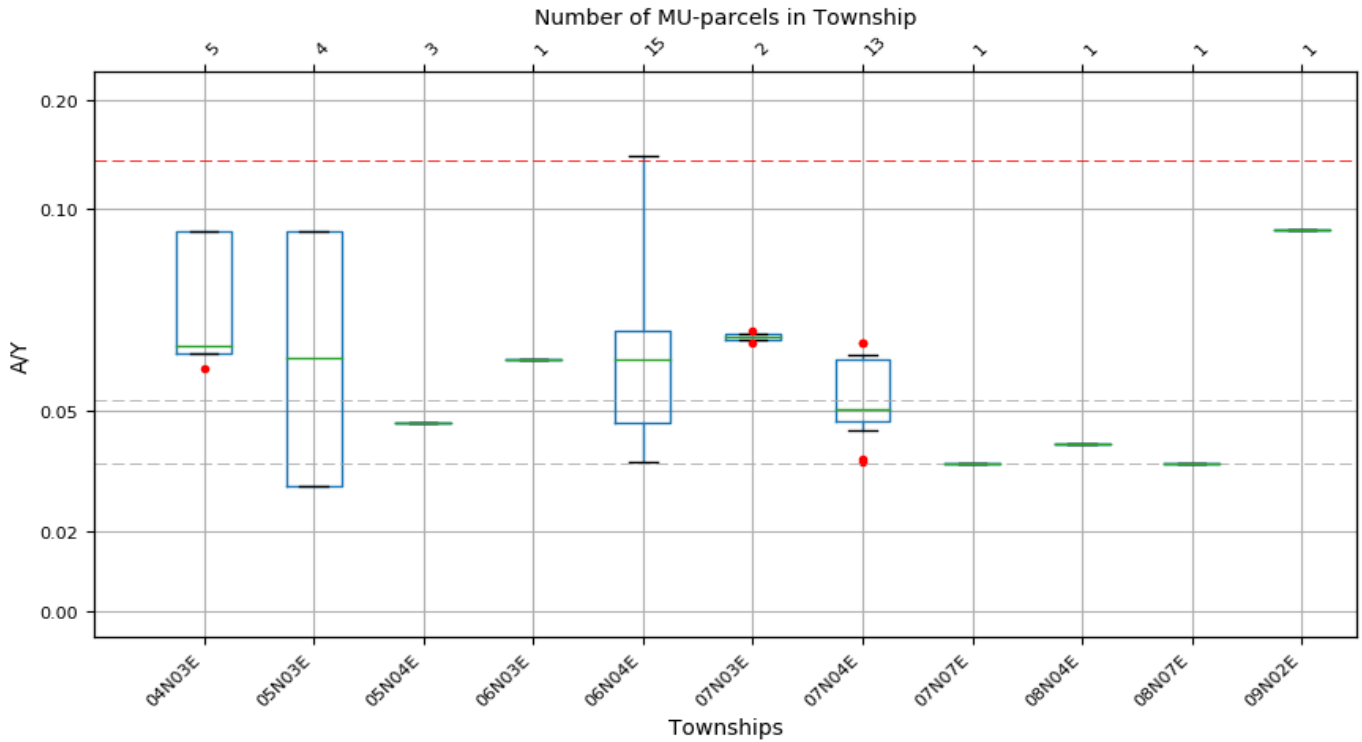


Table XVIII-1. A/Y Summary Statistics for SAFFLOWER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	5	0.0602	0.0943	0.0618	0.0641	0.0659	0.0943	0.0943	0
05N03E	4	0.0312	0.0943	0.0312	0.0312	0.0628	0.0943	0.0943	0
05N04E	3	0.0469	0.0469	0.0469	0.0469	0.0469	0.0469	0.0469	0
06N03E	1	0.0625	0.0625						
06N04E	15	0.0372	0.14	0.0372	0.047	0.0625	0.0697	0.14	0
07N03E	2	0.0667	0.0698	0.067	0.0675	0.0682	0.069	0.0695	1
07N04E	13	0.0372	0.0667	0.0392	0.0473	0.0502	0.0625	0.0661	2
07N07E	1	0.0369	0.0369						
08N04E	1	0.0417	0.0417						
08N07E	1	0.0369	0.0369						
09N02E	1	0.095	0.095						
10N01W	1	0.0801	0.0801						
10N02E	5	0.0386	0.2035	0.0392	0.04	0.0825	0.2035	0.2035	0
11N02E	11	0.0366	0.05	0.0366	0.0366	0.0366	0.0366	0.0366	1
12N01E	1	0.0366	0.0366						
12N02E	1	0.03	0.03						
13N02E	1	0.0462	0.0462						
13N03E	2	0.0404	0.0404	0.0404	0.0404	0.0404	0.0404	0.0404	0
14N01E	5	0.1362	0.1362	0.1362	0.1362	0.1362	0.1362	0.1362	0
15N01W	2	0.0659	0.0659	0.0659	0.0659	0.0659	0.0659	0.0659	0
16N01W	2	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0
16N02W	3	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0
21N01W	1	0.0	0.0						

Table XVIII-2. A/R Summary Statistics for SAFFLOWER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	5	2.1212	3.3218	2.1756	2.2571	2.3207	3.3218	3.3218	0
05N03E	4	1.1004	3.3218	1.1004	1.1004	2.2111	3.3218	3.3218	0
05N04E	3	1.6505	1.6505	1.6505	1.6505	1.6505	1.6505	1.6505	0
06N03E	1	2.2007	2.2007						
06N04E	15	1.3083	4.9296	1.3083	1.6549	2.2007	2.4532	4.9296	0
07N03E	2	2.3474	2.457	2.3584	2.3748	2.4022	2.4296	2.446	1
07N04E	13	1.3083	2.3474	1.3811	1.6644	1.7663	2.2007	2.3275	2
07N07E	1	1.3001	1.3001						
08N04E	1	1.4671	1.4671						
08N07E	1	1.3001	1.3001						
09N02E	1	3.3451	3.3451						
10N01W	1	2.8217	2.8217						
10N02E	5	1.3581	7.1651	1.3783	1.4085	2.9066	7.1651	7.1651	0
11N02E	11	1.2902	1.7606	1.2902	1.2902	1.2902	1.2902	1.2902	1
12N01E	1	1.2902	1.2902						
12N02E	1	1.0563	1.0563						
13N02E	1	1.6251	1.6251						
13N03E	2	1.422	1.422	1.422	1.422	1.422	1.422	1.422	0
14N01E	5	4.7972	4.7972	4.7972	4.7972	4.7972	4.7972	4.7972	0
15N01W	2	2.3207	2.3207	2.3207	2.3207	2.3207	2.3207	2.3207	0
16N01W	2	0.7545	0.7545	0.7545	0.7545	0.7545	0.7545	0.7545	0
16N02W	3	3.0986	3.0986	3.0986	3.0986	3.0986	3.0986	3.0986	0
21N01W	1	0.0	0.0						

Table XVIII-3. A-R Summary Statistics for SAFFLOWER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

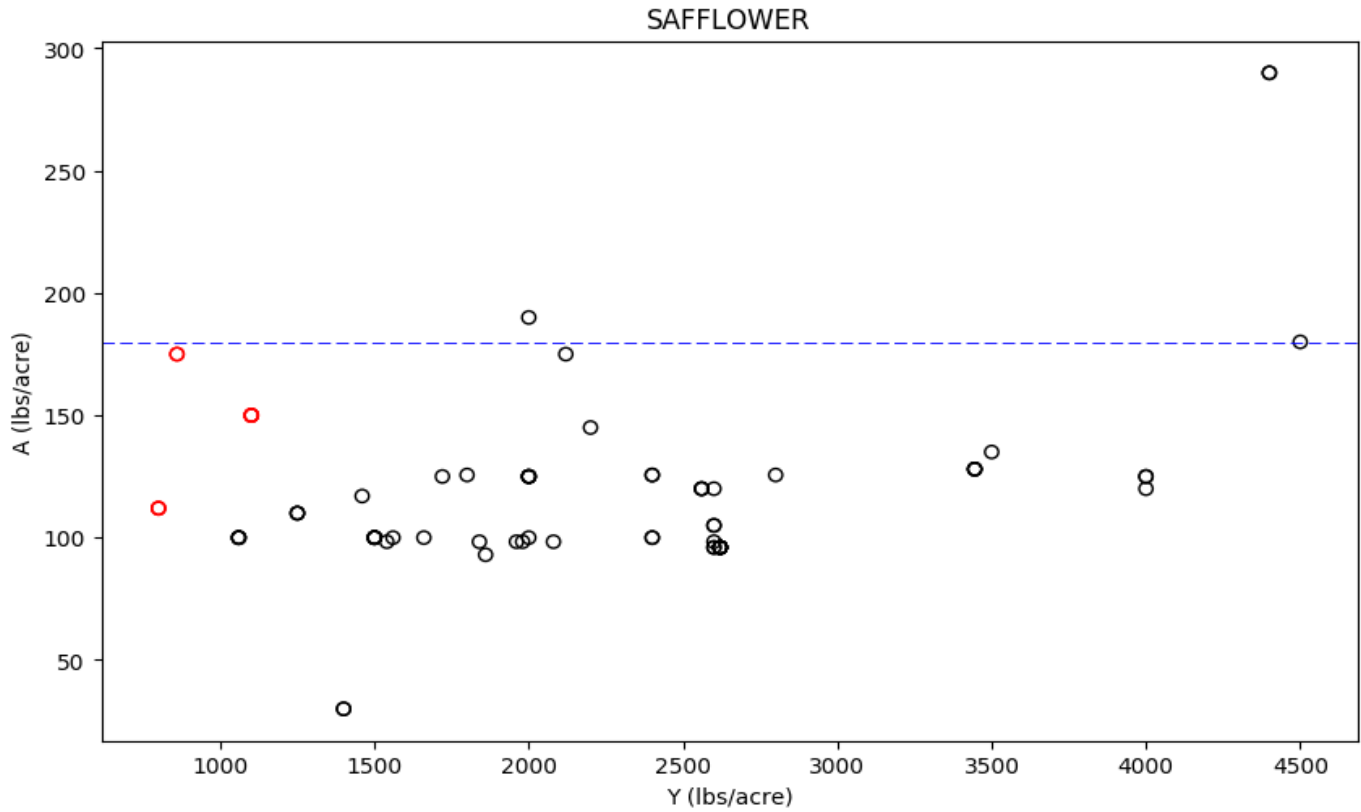
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	5	52.86	82.52	53.99	55.7	69.9	69.9	77.47	1
05N03E	4	11.4	69.9	11.4	11.4	40.65	69.9	69.9	0
05N04E	3	47.3	47.3	47.3	47.3	47.3	47.3	47.3	0
06N03E	1	68.2	68.2						
06N04E	15	30.16	89.28	30.16	44.62	57.44	72.18	89.28	0
07N03E	2	57.4	74.48	59.11	61.67	65.94	70.21	72.77	1
07N04E	13	24.48	68.2	31.98	42.09	46.06	57.4	66.04	2
07N07E	1	22.16	22.16						
08N04E	1	31.84	31.84						
08N07E	1	22.16	22.16						
09N02E	1	133.2	133.2						
10N01W	1	75.54	75.54						
10N02E	5	35.6	150.58	42.24	52.2	114.79	150.58	150.58	0
11N02E	11	21.59	40.18	21.59	21.59	21.59	21.59	21.59	1
12N01E	1	21.59	21.59						
12N02E	1	6.4	6.4						
13N02E	1	46.16	46.16						
13N03E	2	31.16	31.16	31.16	31.16	31.16	31.16	31.16	0
14N01E	5	118.73	118.73	118.73	118.73	118.73	118.73	118.73	
15N01W	2	165.04	165.04	165.04	165.04	165.04	165.04	165.04	0
16N01W	2	-9.76	-9.76	-9.76	-9.76	-9.76	-9.76	-9.76	0
16N02W	3	74.5	74.5	74.5	74.5	74.5	74.5	74.5	0
21N01W	1	-102.24	-102.24						

Table XVIII-4. Summary Statistics for SAFFLOWER management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	82	0.0	0.2035	0.0366	0.0372	0.0523	0.072	0.1362	5
A/R	82	0.0	7.1651	1.2902	1.3083	1.8427	2.5335	4.7972	5
A-R	82	-102.24	165.04	21.59	30.16	52.53	73.33	118.73	5

Figure XVIII-2. Scatter plot of A vs. Y for SAFFLOWER with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



XIX. SORGHUM/MILO - GRAIN

Figure XIX-1. Box and Whisker plots of A/Y for SORGHUM/MILO - GRAIN management units grouped by T-R. Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for SORGHUM/MILO - GRAIN

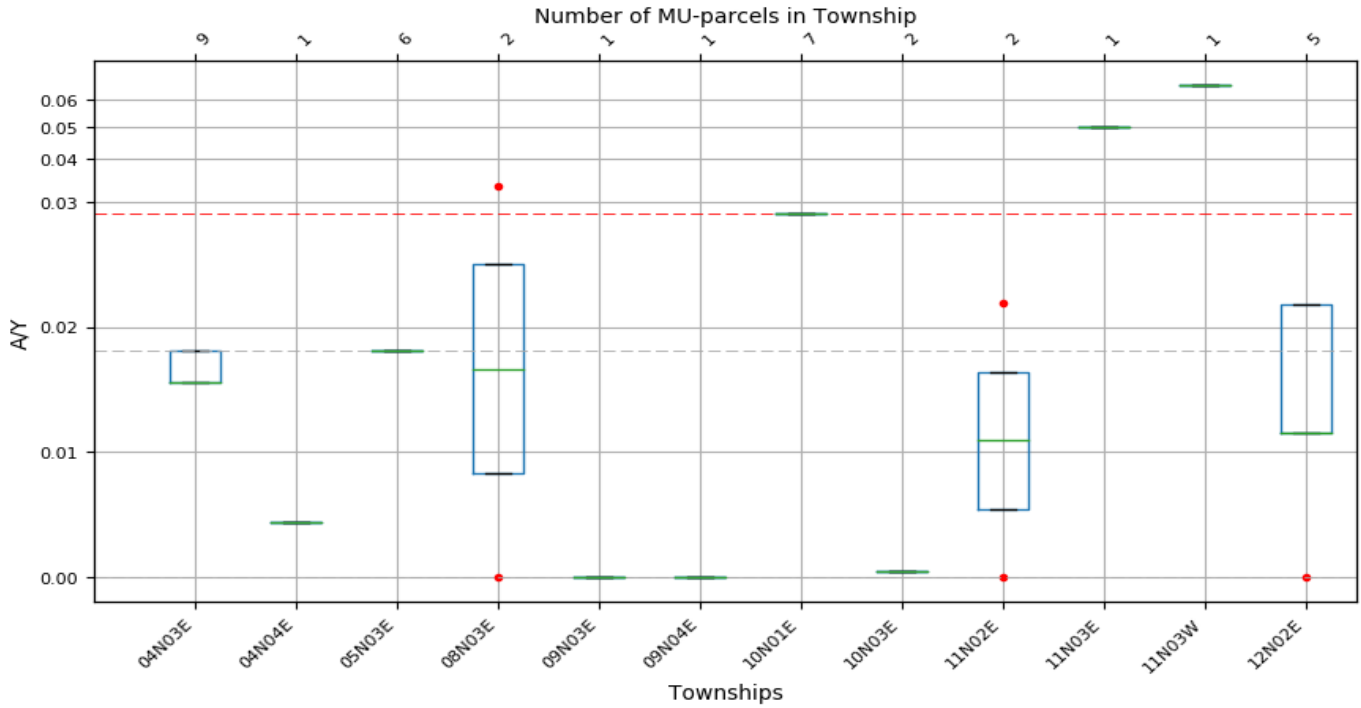


Table XIX-1. A/Y Summary Statistics for SORGHUM/MILO - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	9	0.0156	0.0181	0.0156	0.0156	0.0156	0.0181	0.0181	0
04N04E	1	0.0044	0.0044						
05N03E	6	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0.0181	0
08N03E	2	0.0	0.0333	0.0033	0.0083	0.0167	0.025	0.03	1
09N03E	1	0.0	0.0						
09N04E	1	0.0	0.0						
10N01E	7	0.0291	0.0291	0.0291	0.0291	0.0291	0.0291	0.0291	0
10N03E	2	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0
11N02E	2	0.0	0.0219	0.0022	0.0055	0.011	0.0164	0.0197	1
11N03E	1	0.05	0.05						
11N03W	1	0.0662	0.0662						
12N02E	5	0.0	0.0218	0.0046	0.0115	0.0115	0.0218	0.0218	0

Table XIX-2. A/R Summary Statistics for SORGHUM/MILO - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	9	0.947	1.094	0.947	0.947	0.947	1.094	1.094	0
04N04E	1	0.2652	0.2652						
05N03E	6	1.094	1.094	1.094	1.094	1.094	1.094	1.094	0
08N03E	2	0.0	2.0206	0.2021	0.5052	1.0103	1.5154	1.8185	1
09N03E	1	0.0	0.0						
09N04E	1	0.0	0.0						
10N01E	7	1.7617	1.7617	1.7617	1.7617	1.7617	1.7617	1.7617	0
10N03E	2	0.0296	0.0296	0.0296	0.0296	0.0296	0.0296	0.0296	0
11N02E	2	0.0	1.3274	0.1327	0.3318	0.6637	0.9956	1.1947	1
11N03E	1	3.0303	3.0303						
11N03W	1	4.0152	4.0152						
12N02E	5	0.0	1.3196	0.2778	0.6944	0.6944	1.3196	1.3196	0

Table XIX-3. A-R Summary Statistics for SORGHUM/MILO - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

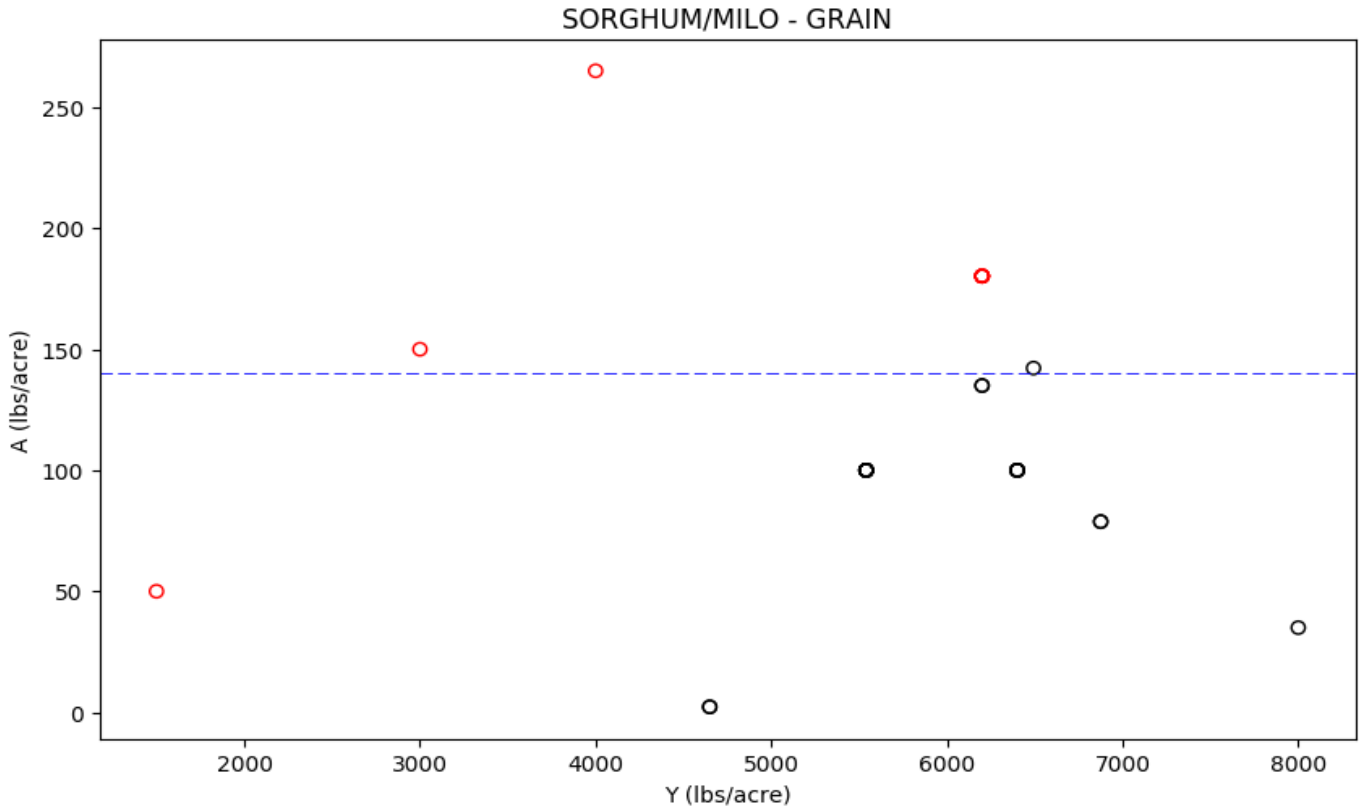
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	9	-5.6	8.59	-5.6	-5.6	-5.6	8.59	8.59	0
04N04E	1	-97.0	-97.0						
05N03E	6	8.59	8.59	8.59	8.59	8.59	8.59	8.59	0
08N03E	2	-64.68	25.26	-55.69	-42.2	-19.71	2.77	16.27	1
09N03E	1	-66.0	-66.0						
09N04E	1	-102.3	-102.3						
10N01E	7	77.92	77.92	77.92	77.92	77.92	77.92	77.92	0
10N03E	2	-74.45	-74.45	-74.45	-74.45	-74.45	-74.45	-74.45	0
11N02E	2	-48.84	35.07	-40.45	-27.86	-6.89	14.09	26.68	1
11N03E	1	100.5	100.5						
11N03W	1	199.0	199.0						
12N02E	5	-48.84	32.7	-43.17	-34.66	-34.66	32.7	32.7	0

Table XIX-4. Summary Statistics for SORGHUM/MILO - GRAIN management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	38	0.0	0.0662	0.0	0.0125	0.0181	0.0273	0.0291	3
A/R	38	0.0	4.0152	0.0	0.7576	1.094	1.6531	1.7617	10
A-R	38	-102.3	199.0	-68.54	-27.4	8.59	34.48	77.92	2

Figure XIX-2. Scatter plot of A vs. Y for SORGHUM/MILO - GRAIN with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



XX. SUDAN GRASS

Figure XX-1. Box and Whisker plots of A/Y for SUDAN GRASS management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for SUDAN GRASS

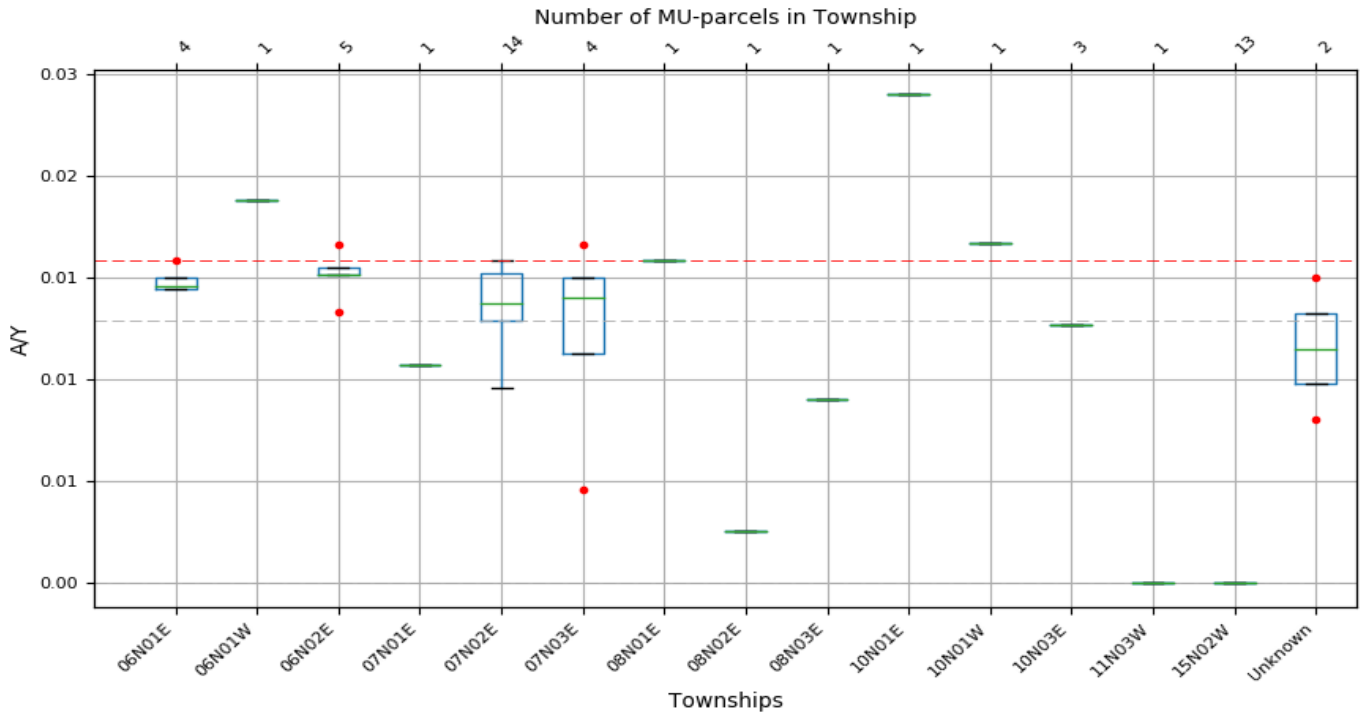


Table XX-1. A/Y Summary Statistics for SUDAN GRASS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

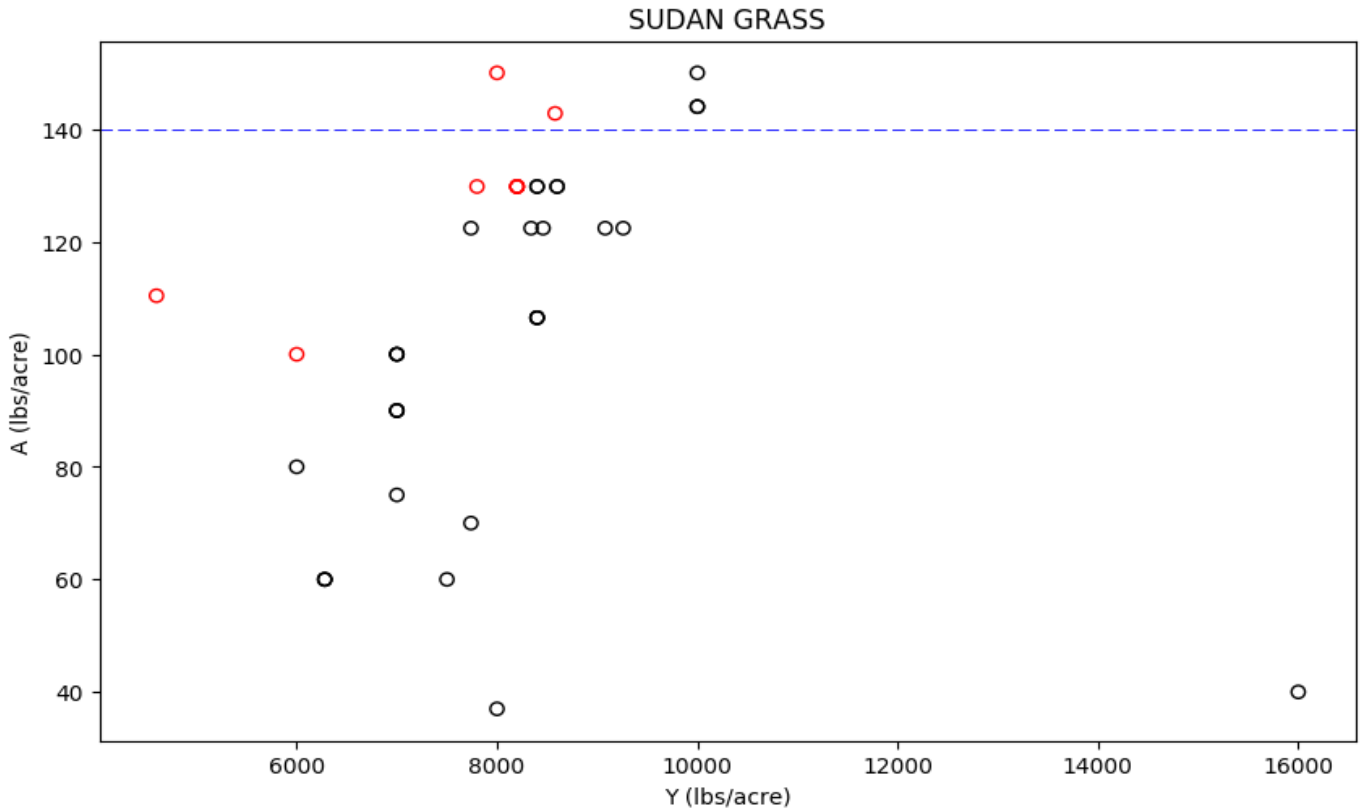
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	4	0.0144	0.0158	0.0144	0.0144	0.0146	0.015	0.0155	1
06N01W	1	0.0188	0.0188						
06N02E	5	0.0133	0.0166	0.014	0.0151	0.0151	0.0155	0.0162	1
07N01E	1	0.0107	0.0107						
07N02E	14	0.0096	0.0158	0.0096	0.0129	0.0138	0.0152	0.0158	0
07N03E	4	0.0046	0.0166	0.0073	0.0113	0.014	0.015	0.016	1
08N01E	1	0.0158	0.0158						
08N02E	1	0.0025	0.0025						
08N03E	1	0.009	0.009						
10N01E	1	0.024	0.024						
10N01W	1	0.0167	0.0167						
10N03E	3	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0
11N03W	1	0.0	0.0						
15N02W	13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Unknown	2	0.008	0.015	0.0087	0.0098	0.0115	0.0132	0.0143	1

Table XX-4. Summary Statistics for SUDAN GRASS management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	53	0.0	0.024	0.0	0.0	0.0129	0.0151	0.0158	5

Figure XX-2. Scatter plot of A vs. Y for SUDAN GRASS with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.

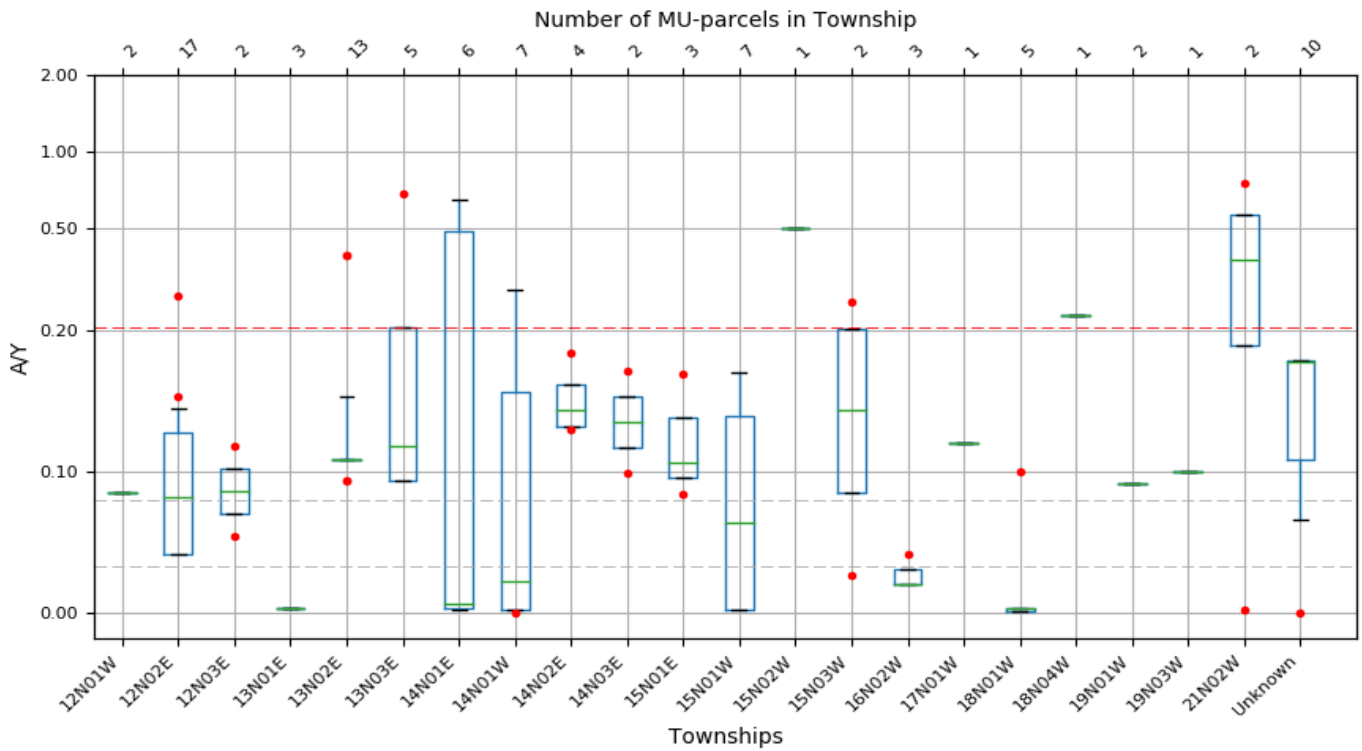
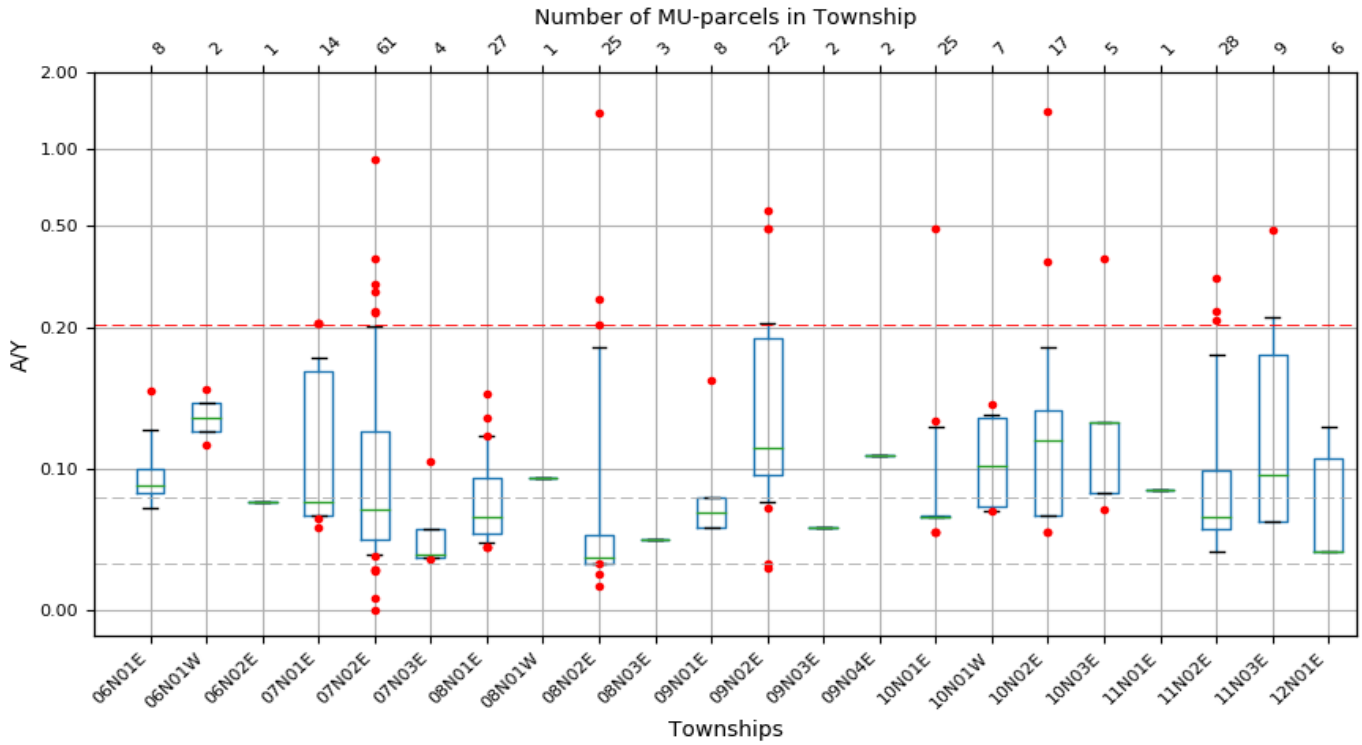


XXI. SUNFLOWER

Figure XXI-1. Box and Whisker plots of A/Y for SUNFLOWER management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for SUNFLOWER



NOTE: 1 record(s) with A/Y value > 10 lbs/acre not shown to avoid skewing of box plot.

Table XXI-1. A/Y Summary Statistics for SUNFLOWER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	8	0.0726	0.1556	0.0726	0.083	0.0886	0.0998	0.1358	1
06N01W	2	0.1167	0.1562	0.1206	0.1266	0.1365	0.1463	0.1522	1
06N02E	1	0.0765	0.0765						
07N01E	14	0.0585	0.2083	0.0654	0.0674	0.0769	0.169	0.2083	3
07N02E	61	0.0	0.9124	0.0392	0.0503	0.0715	0.127	0.2013	6
07N03E	4	0.0369	0.1052	0.037	0.0372	0.0398	0.058	0.0863	1
08N01E	27	0.0446	0.1532	0.0465	0.0547	0.0658	0.0935	0.1237	2
08N01W	1	0.0939	0.0939						
08N02E	25	0.0179	1.392	0.033	0.0335	0.038	0.0538	0.1972	3
08N03E	3	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0
09N01E	8	0.0583	0.1624	0.0583	0.0583	0.0696	0.0802	0.1049	1
09N02E	22	0.0303	0.5714	0.0726	0.0958	0.1154	0.1924	0.4598	3
09N03E	2	0.0583	0.0583	0.0583	0.0583	0.0583	0.0583	0.0583	
09N04E	2	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0
10N01E	25	0.0552	0.4878	0.0597	0.0664	0.0664	0.0667	0.1293	2
10N01W	7	0.0701	0.1456	0.0703	0.0737	0.1025	0.1363	0.141	1
10N02E	17	0.0552	1.4	0.0621	0.0667	0.1207	0.1414	0.2573	2
10N03E	5	0.0714	0.3718	0.0761	0.0831	0.1333	0.1333	0.2764	1
11N01E	1	0.0849	0.0849						
11N02E	28	0.0422	0.3102	0.0422	0.0574	0.0664	0.0994	0.1901	3
11N03E	9	0.0625	0.4805	0.0625	0.0625	0.0958	0.1803	0.2723	1
12N01E	6	0.0422	0.1293	0.0422	0.0422	0.0422	0.1075	0.1293	0
12N01W	2	0.0849	0.0849	0.0849	0.0849	0.0849	0.0849	0.0849	0
12N02E	17	0.0422	0.272	0.0422	0.0422	0.0824	0.1279	0.1479	2
12N03E	2	0.0542	0.118	0.0606	0.0701	0.0861	0.102	0.1116	1
13N01E	3	0.0034	0.0034	0.0034	0.0034	0.0034	0.0034	0.0034	0
13N02E	13	0.0933	0.3906	0.0963	0.1083	0.1083	0.1083	0.3432	2
13N03E	5	0.0933	0.6881	0.0933	0.0933	0.118	0.2041	0.4945	1
14N01E	6	0.002	0.6479	0.002	0.0032	0.0069	0.4876	0.6479	0
14N01W	7	0.0	0.2875	0.0015	0.0025	0.0226	0.1568	0.2875	0
14N02E	4	0.13	0.1838	0.1308	0.132	0.1437	0.162	0.1751	1
14N03E	2	0.0993	0.1714	0.1065	0.1173	0.1354	0.1534	0.1642	1
15N01E	3	0.0843	0.1692	0.0887	0.0954	0.1065	0.1378	0.1567	1
15N01W	7	0.0023	0.1701	0.0023	0.0023	0.0635	0.1397	0.1701	0
15N02W	1	0.5	0.5						

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
15N03W	2	0.027	0.2592	0.0502	0.085	0.1431	0.2012	0.236	1
16N02W	3	0.0211	0.0421	0.0211	0.0211	0.0211	0.0316	0.0379	1
17N01W	1	0.12	0.12						
18N01W	5	0.0016	0.1	0.0016	0.0016	0.0034	0.0034	0.0614	1
18N04W	1	0.2296	0.2296						
19N01W	2	0.0917	0.0917	0.0917	0.0917	0.0917	0.0917	0.0917	0
19N03W	1	0.1	0.1						
21N02W	2	0.0022	0.75	0.077	0.1892	0.3761	0.5631	0.6752	1
Unknown	10	0.0007	0.1786	0.0592	0.1083	0.1778	0.1786	0.1786	0

Table XXI-2. A/R Summary Statistics for SUNFLOWER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	8	2.683	5.7507	2.683	3.0662	3.2738	3.6916	5.0188	1
06N01W	2	4.313	5.7763	4.4593	4.6788	5.0446	5.4105	5.63	1
06N02E	1	2.8294	2.8294						
07N01E	14	2.1637	7.7018	2.418	2.4925	2.8429	6.245	7.7018	0
07N02E	61	0.0	33.7305	1.4486	1.8591	2.645	4.694	7.4407	6
07N03E	4	1.3635	3.8886	1.3682	1.3751	1.4688	2.1411	3.1896	1
08N01E	27	1.6492	5.6634	1.7194	2.0205	2.4341	3.4577	4.5737	3
08N01W	1	3.4707	3.4707						
08N02E	25	0.6604	51.4596	1.2188	1.2398	1.4035	1.9906	7.2912	3
08N03E	3	1.8484	1.8484	1.8484	1.8484	1.8484	1.8484	1.8484	0
09N01E	8	2.1565	6.0028	2.1565	2.1565	2.5712	2.9662	3.8772	1
09N02E	22	1.1189	21.1249	2.6833	3.5428	4.2641	7.1122	16.9971	3
09N03E	2	2.1565	2.1565	2.1565	2.1565	2.1565	2.1565	2.1565	0
09N04E	2	4.067	4.067	4.067	4.067	4.067	4.067	4.067	0
10N01E	25	2.0396	18.0335	2.2061	2.4558	2.4558	2.4646	4.7785	2
10N01W	7	2.5912	5.3827	2.5994	2.7243	3.7885	5.0379	5.2109	1
10N02E	17	2.0396	51.756	2.2946	2.4646	4.4617	5.2256	9.5112	2
10N03E	5	2.6406	13.7448	2.8134	3.0727	4.9291	4.9291	10.2185	1
11N01E	1	3.137	3.137						
11N02E	28	1.5614	11.4668	1.5614	2.1232	2.4558	3.675	7.0277	3
11N03E	9	2.3105	17.7618	2.3105	2.3105	3.5428	6.6645	10.0668	1
12N01E	6	1.5614	4.7785	1.5614	1.5614	1.5614	3.9742	4.7785	0
12N01W	2	3.137	3.137	3.137	3.137	3.137	3.137	3.137	0
12N02E	17	1.5614	10.0548	1.5614	1.5614	3.0448	4.7272	5.4669	2
12N03E	2	2.0019	4.3623	2.2379	2.592	3.1821	3.7722	4.1263	1
13N01E	3	0.1264	0.1264	0.1264	0.1264	0.1264	0.1264	0.1264	0
13N02E	13	3.4486	14.4397	3.5599	4.0049	4.0049	4.0049	12.6866	2
13N03E	5	3.4486	25.4391	3.4486	3.4486	4.3623	7.5441	18.2811	1
14N01E	6	0.0736	23.9537	0.0736	0.1186	0.2535	18.0287	23.9537	0
14N01W	7	0.0	10.6285	0.0554	0.0924	0.837	5.7945	10.6285	0
14N02E	4	4.8059	6.7957	4.8353	4.8795	5.3106	5.9868	6.4722	1
14N03E	2	3.6702	6.3375	3.9369	4.337	5.0038	5.6707	6.0708	1
15N01E	3	3.1175	6.2537	3.2812	3.5268	3.9362	5.095	5.7902	1
15N01W	7	0.0843	6.2883	0.0843	0.0843	2.3486	5.1651	6.2883	0
15N02W	1	18.4843	18.4843						

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
15N03W	2	0.9969	9.5821	1.8554	3.1432	5.2895	7.4358	8.7236	1
16N02W	3	0.7783	1.5566	0.7783	0.7783	0.7783	1.1675	1.4009	1
17N01W	1	4.4362	4.4362						
18N01W	5	0.0603	3.6969	0.0603	0.0603	0.1245	0.1245	2.2679	1
18N04W	1	8.4868	8.4868						
19N01W	2	3.3888	3.3888	3.3888	3.3888	3.3888	3.3888	3.3888	0
19N03W	1	3.6969	3.6969						
21N02W	2	0.0832	27.7264	2.8475	6.994	13.9048	20.8156	24.9621	1
Unknown	10	0.0272	6.6015	2.1894	4.0049	6.5742	6.6015	6.6015	0

Table XXI-3. A-R Summary Statistics for SUNFLOWER management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
06N01E	8	50.18	115.66	50.18	53.76	55.55	69.67	111.87	1
06N01W	2	103.36	107.54	103.78	104.4	105.45	106.5	107.12	1
06N02E	1	55.61	55.61						
07N01E	14	43.03	132.71	48.72	68.26	90.71	108.77	111.7	2
07N02E	61	-31.8	166.02	20.75	43.04	65.44	97.04	146.07	4
07N03E	4	23.73	72.06	23.95	24.28	28.18	41.94	60.01	1
08N01E	27	20.08	112.24	21.31	33.34	79.68	89.65	104.56	3
08N01W	1	63.36	63.36						
08N02E	25	-26.23	86.78	16.0	18.39	26.16	52.37	72.88	3
08N03E	3	29.84	29.84	29.84	29.84	29.84	29.84	29.84	0
09N01E	8	37.54	68.34	37.54	37.54	48.8	54.35	58.55	1
09N02E	22	4.57	132.24	53.26	65.51	82.54	96.35	123.31	3
09N03E	2	37.54	37.54	37.54	37.54	37.54	37.54	37.54	0
09N04E	2	75.41	75.41	75.41	75.41	75.41	75.41	75.41	0
10N01E	25	40.78	132.24	43.48	55.13	55.13	55.13	96.44	3
10N01W	7	49.13	81.42	49.22	54.09	63.93	64.57	71.47	1
10N02E	17	40.78	123.96	51.97	59.42	82.54	102.0	117.25	3
10N03E	5	21.59	95.66	37.8	62.13	92.72	95.66	95.66	0
11N01E	1	60.15	60.15						
11N02E	28	34.52	94.29	34.52	43.37	55.92	82.54	83.24	3
11N03E	9	56.72	118.42	68.06	70.9	79.05	82.54	93.9	1
12N01E	6	34.52	102.0	34.52	34.52	34.52	85.13	102.0	0
12N01W	2	60.15	60.15	60.15	60.15	60.15	60.15	60.15	0
12N02E	17	34.52	119.77	34.52	34.52	62.64	78.94	102.3	2
12N03E	2	38.79	90.95	44.0	51.83	64.87	77.91	85.73	1
13N01E	3	-1748.7	-1748.7	-1748.7	-1748.7	-1748.7	-1748.7	-1748.7	0
13N02E	13	71.0	108.74	74.11	86.56	97.54	97.54	97.54	1
13N03E	5	67.9	95.59	69.14	71.0	71.0	90.95	93.73	1
14N01E	6	-1536.71	72.65	-1536.71	-1244.57	-368.18	-37.56	72.65	0
14N01W	7	-1964.0	104.18	-1964.0	-1009.05	-23.37	46.63	104.18	0
14N02E	4	102.95	109.74	103.11	103.36	105.05	107.39	108.8	1
14N03E	2	101.06	121.72	103.13	106.23	111.39	116.55	119.65	1
15N01E	3	65.28	81.51	67.15	69.94	74.59	78.05	80.13	1
15N01W	7	-2477.0	126.15	-2477.0	-2477.0	61.71	94.08	126.15	0
15N02W	1	118.24	118.24						

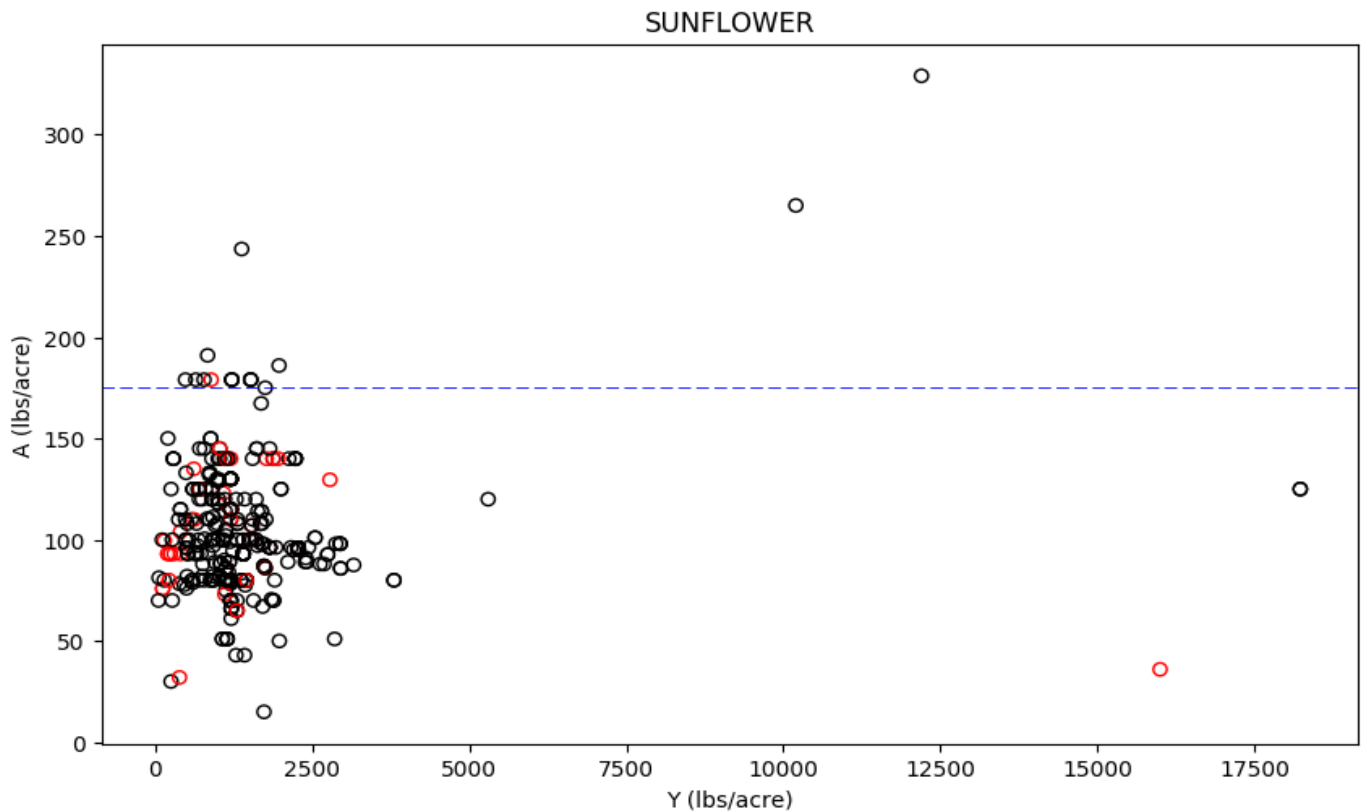
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
15N03W	2	-1.01	93.15	8.41	22.53	46.07	69.61	83.73	1
16N02W	3	-22.79	28.6	-22.79	-22.79	-22.79	2.91	18.33	1
17N01W	1	23.24	23.24						
18N01W	5	-2542.0	72.95	-2542.0	-2542.0	-1610.4	-1610.4	-600.39	1
18N04W	1	168.49	168.49						
19N01W	2	77.54	77.54	77.54	77.54	77.54	77.54	77.54	0
19N03W	1	127.66	127.66						
21N02W	2	-396.8	144.59	-342.66	-261.45	-126.1	9.24	90.45	1
Unknown	10	-4473.5	206.31	-405.89	97.54	106.06	106.06	116.09	1

Table XXI-4. Summary Statistics for SUNFLOWER management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	379	0.0	1.4	0.0335	0.0529	0.0802	0.1293	0.2042	38
A/R	379	0.0	51.756	1.2368	1.9541	2.9662	4.7785	7.5478	38
A-R	379	-4473.5	206.31	18.39	37.54	64.3	92.76	108.77	40

Figure XXI-2. Scatter plot of A vs. Y for SUNFLOWER with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers (A/Y > 90% for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



NOTE: 17.0 record(s) above Yield value of 20000 lbs/acre not shown to avoid skewing of scatter plot.

XXII. TOMATO - PROCESSING

Figure XXII-1. Box and Whisker plots of A/Y for TOMATO - PROCESSING management units grouped by T-R.
 Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers (A/Y > 90% percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for TOMATO - PROCESSING

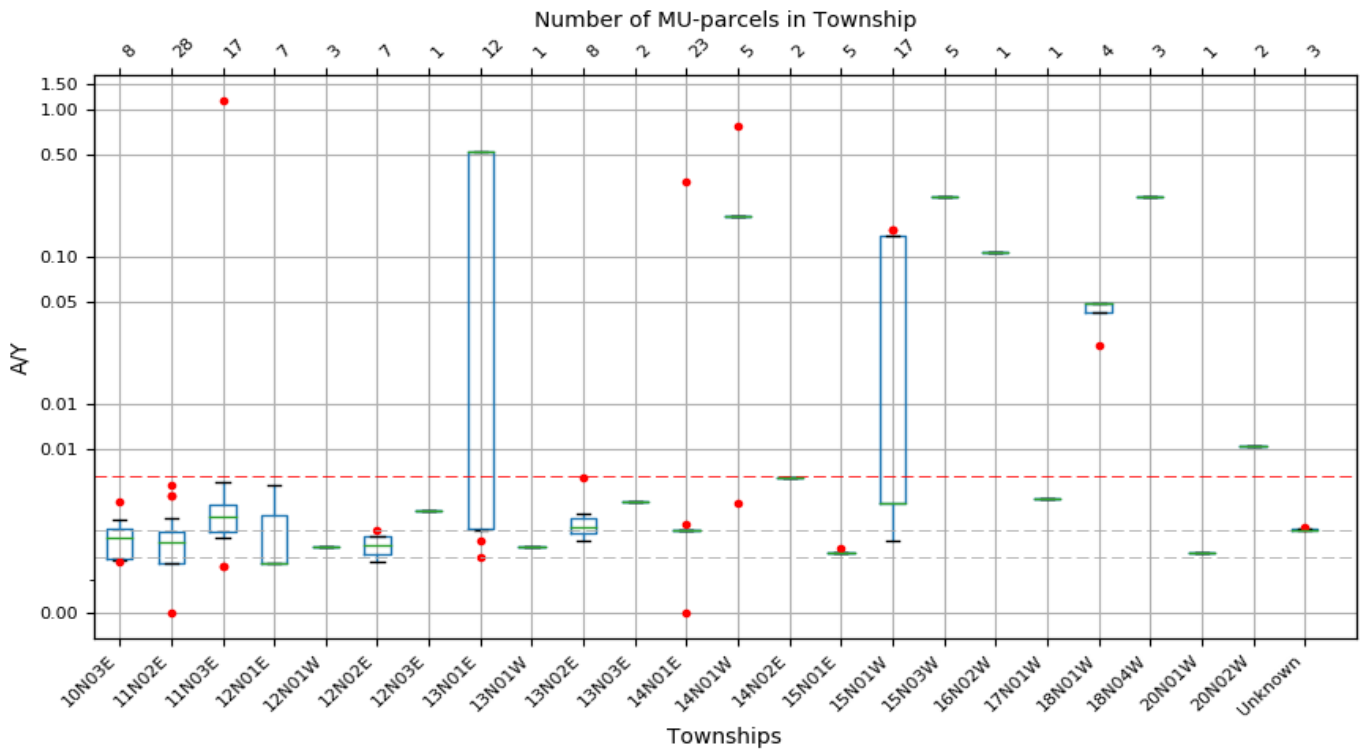
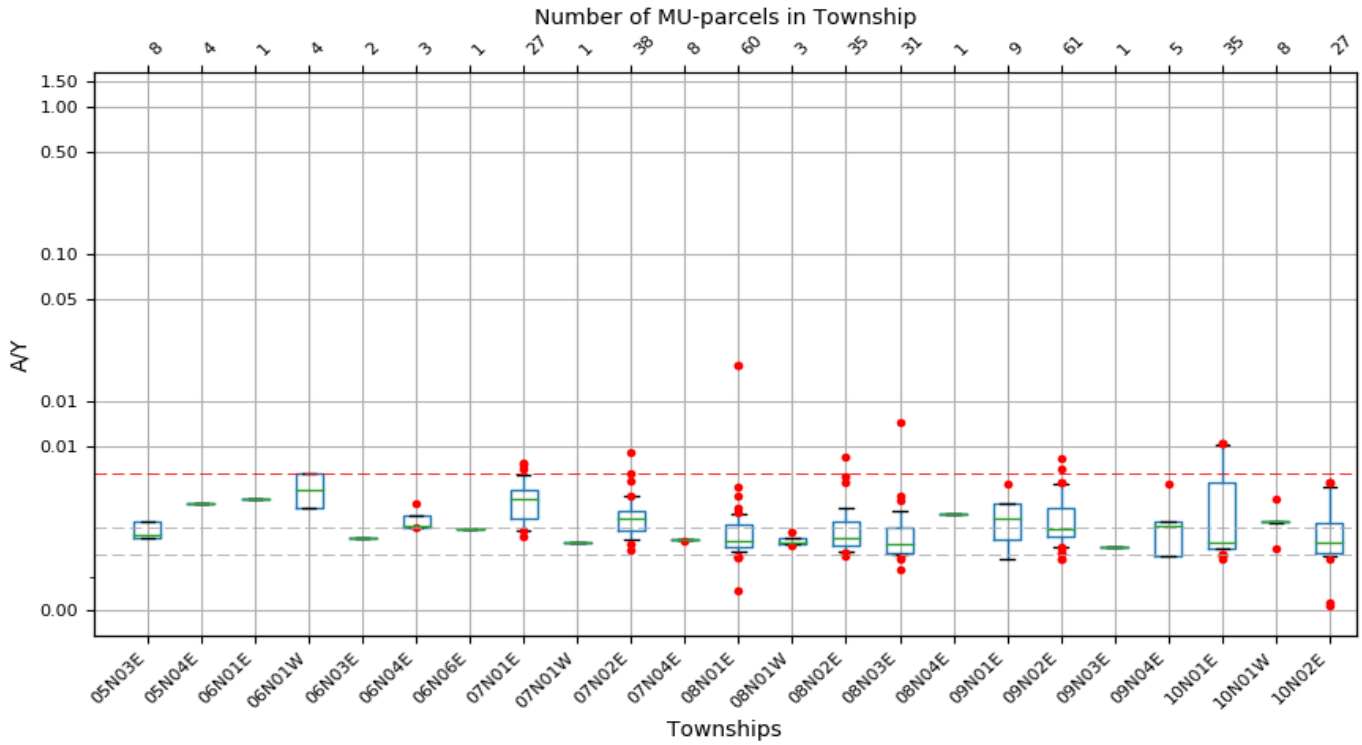


Table XXII-1. A/Y Summary Statistics for TOMATO - PROCESSING management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	8	0.0022	0.0027	0.0022	0.0022	0.0023	0.0027	0.0027	0
05N04E	4	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0
06N01E	1	0.0034	0.0034						
06N01W	4	0.0031	0.0042	0.0031	0.0031	0.0036	0.0042	0.0042	0
06N03E	2	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0
06N04E	3	0.0025	0.0032	0.0025	0.0026	0.0026	0.0029	0.0031	1
06N06E	1	0.0025	0.0025						
07N01E	27	0.0022	0.0045	0.0024	0.0028	0.0034	0.0037	0.0042	3
07N01W	1	0.002	0.002						
07N02E	38	0.0018	0.0048	0.0021	0.0024	0.0028	0.003	0.0035	3
07N04E	8	0.0021	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0
08N01E	60	0.0006	0.0178	0.0018	0.0019	0.0021	0.0026	0.0029	6
08N01W	3	0.002	0.0024	0.002	0.002	0.002	0.0022	0.0023	1
08N02E	35	0.0016	0.0047	0.0017	0.0019	0.0022	0.0027	0.0031	3
08N03E	31	0.0012	0.0073	0.0017	0.0017	0.002	0.0026	0.003	3
08N04E	1	0.0029	0.0029						
09N01E	9	0.0016	0.0038	0.0016	0.0021	0.0028	0.0032	0.0033	1
09N02E	61	0.0016	0.0046	0.0019	0.0023	0.0024	0.0031	0.0038	4
09N03E	1	0.0019	0.0019						
09N04E	5	0.0017	0.0038	0.0017	0.0017	0.0026	0.0027	0.0034	1
10N01E	35	0.0016	0.0052	0.0017	0.0019	0.002	0.0039	0.0051	3
10N01W	8	0.0019	0.0034	0.0025	0.0027	0.0027	0.0027	0.0029	1
10N02E	27	0.0001	0.0039	0.0016	0.0017	0.002	0.0027	0.0038	3
10N03E	8	0.0016	0.0034	0.0016	0.0017	0.0023	0.0026	0.003	1
11N02E	28	0.0	0.0039	0.0015	0.0015	0.0022	0.0024	0.0031	3
11N03E	17	0.0014	1.15	0.0019	0.0024	0.0029	0.0033	0.004	1
12N01E	7	0.0015	0.0039	0.0015	0.0015	0.0015	0.003	0.0039	0
12N01W	3	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0
12N02E	7	0.0016	0.0025	0.0016	0.0018	0.0021	0.0023	0.0024	1
12N03E	1	0.0031	0.0031						
13N01E	12	0.0017	0.5164	0.0022	0.0026	0.5164	0.5164	0.5164	0
13N01W	1	0.002	0.002						
13N02E	8	0.0022	0.0041	0.0022	0.0024	0.0026	0.0028	0.0033	1
13N03E	2	0.0034	0.0034	0.0034	0.0034	0.0034	0.0034	0.0034	0
14N01E	23	0.0	0.3267	0.0025	0.0025	0.0025	0.0025	0.0025	2

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
14N01W	5	0.0033	0.7744	0.0771	0.1879	0.1879	0.1879	0.5398	1
14N02E	2	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0
15N01E	5	0.0018	0.002	0.0018	0.0018	0.0018	0.0018	0.0019	1
15N01W	17	0.0022	0.152	0.0022	0.0033	0.0033	0.1391	0.1443	2
15N03W	5	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0
16N02W	1	0.1079	0.1079						
17N01W	1	0.0035	0.0035						
18N01W	4	0.025	0.048	0.0319	0.0422	0.048	0.048	0.048	0
18N04W	3	0.2583	0.2583	0.2583	0.2583	0.2583	0.2583	0.2583	0
20N01W	1	0.0018	0.0018						
20N02W	2	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0
Unknown	3	0.0025	0.0026	0.0025	0.0025	0.0025	0.0026	0.0026	1

Table XXII-2. A/R Summary Statistics for TOMATO - PROCESSING management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	8	1.6026	1.9689	1.6026	1.6026	1.6789	1.9689	1.9689	0
05N04E	4	2.3702	2.3702	2.3702	2.3702	2.3702	2.3702	2.3702	0
06N01E	1	2.4856	2.4856						
06N01W	4	2.2894	3.0525	2.2894	2.2894	2.671	3.0525	3.0525	0
06N03E	2	1.6026	1.6026	1.6026	1.6026	1.6026	1.6026	1.6026	
06N04E	3	1.8315	2.3702	1.8409	1.855	1.8785	2.1244	2.2719	1
06N06E	1	1.7974	1.7974						
07N01E	27	1.6273	3.287	1.7893	2.0324	2.4948	2.6776	3.0856	3
07N01W	1	1.4985	1.4985						
07N02E	38	1.3336	3.5297	1.5653	1.7623	2.0296	2.2064	2.5435	4
07N04E	8	1.5263	1.5926	1.5727	1.5926	1.5926	1.5926	1.5926	0
08N01E	60	0.4396	13.0647	1.3228	1.4144	1.545	1.9026	2.1544	6
08N01W	3	1.4412	1.7351	1.4514	1.4666	1.4921	1.6136	1.6865	1
08N02E	35	1.1948	3.4127	1.2879	1.4284	1.5992	1.9674	2.2894	3
08N03E	31	0.8876	5.3407	1.2234	1.2652	1.4599	1.8549	2.2142	3
08N04E	1	2.1368	2.1368						
09N01E	9	1.1396	2.8038	1.1396	1.5699	2.0453	2.3709	2.4584	1
09N02E	61	1.1396	3.3917	1.405	1.6507	1.7949	2.2966	2.8069	4
09N03E	1	1.4066	1.4066						
09N04E	5	1.221	2.8177	1.221	1.221	1.8785	1.98	2.4826	1
10N01E	35	1.1405	3.7977	1.244	1.361	1.4951	2.8388	3.7216	6
10N01W	8	1.361	2.4975	1.7788	1.9825	1.9908	1.9908	2.1428	1
10N02E	27	0.0851	2.8388	1.1818	1.2658	1.4951	1.9492	2.7839	3
10N03E	8	1.1374	2.4685	1.1583	1.199	1.6832	1.8925	2.1933	1
11N02E	28	0.0	2.8554	1.11	1.11	1.5707	1.8258	2.268	3
11N03E	17	1.0379	842.4908	1.4298	1.7949	2.1368	2.4267	2.9304	1
12N01E	7	1.11	2.8388	1.11	1.11	1.11	2.1703	2.8388	0
12N01W	3	1.4741	1.4741	1.4741	1.4741	1.4741	1.4741	1.4741	0
12N02E	7	1.14	1.8315	1.14	1.3116	1.5164	1.7118	1.7678	1
12N03E	1	2.2894	2.2894						
13N01E	12	1.2471	378.3102	1.6319	1.8848	378.3102	378.3102	378.3102	0
13N01W	1	1.4835	1.4835						
13N02E	8	1.6097	3.0131	1.6097	1.776	1.8969	2.1124	2.4424	1
13N03E	2	2.4918	2.4918	2.4918	2.4918	2.4918	2.4918	2.4918	0
14N01E	23	0.0	239.3284	1.8315	1.8315	1.8315	1.8315	1.8315	2

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
14N01W	5	2.442	567.3189	56.54	137.6871	137.6871	137.6871	395.4662	1
14N02E	2	3.0131	3.0131	3.0131	3.0131	3.0131	3.0131	3.0131	0
15N01E	5	1.3552	1.4569	1.3552	1.3552	1.3552	1.3552	1.4162	1
15N01W	17	1.599	111.3213	1.599	2.442	2.442	101.9061	105.6722	2
15N03W	5	189.8871	189.8871	189.8871	189.8871	189.8871	189.8871	189.8871	0
16N02W	1	79.078	79.078						
17N01W	1	2.5533	2.5533						
18N01W	4	18.315	35.1648	23.3699	30.9524	35.1648	35.1648	35.1648	0
18N04W	3	189.2148	189.2148	189.2148	189.2148	189.2148	189.2148	189.2148	
20N01W	1	1.3355	1.3355						
20N02W	2	3.8295	3.8295	3.8295	3.8295	3.8295	3.8295	3.8295	
Unknown	3	1.8315	1.9194	1.8315	1.8315	1.8315	1.8754	1.9018	1

Table XXII-3. A-R Summary Statistics for TOMATO - PROCESSING management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	8	65.8	98.96	65.8	65.8	75.22	84.64	88.94	1
05N04E	4	127.18	127.18	127.18	127.18	127.18	127.18	127.18	0
06N01E	1	113.56	113.56						
06N01W	4	140.8	168.1	140.8	140.8	154.45	168.1	168.1	0
06N03E	2	65.8	65.8	65.8	65.8	65.8	65.8	65.8	0
06N04E	3	90.8	127.18	91.35	92.17	93.53	110.36	120.45	1
06N06E	1	93.61	93.61						
07N01E	27	65.37	246.85	81.35	107.19	154.45	175.26	194.4	3
07N01W	1	59.88	59.88						
07N02E	38	49.28	230.76	71.15	83.6	116.72	142.31	175.34	4
07N04E	8	68.96	74.42	72.78	74.42	74.42	74.42	74.42	0
08N01E	60	-76.5	216.06	32.68	53.05	63.72	90.69	107.69	4
08N01W	3	51.43	76.26	53.02	55.4	59.36	67.81	72.88	1
08N02E	35	27.22	212.09	38.02	51.42	79.19	115.62	130.63	4
08N03E	31	-15.95	121.11	22.28	33.5	40.96	73.29	86.65	3
08N04E	1	18.62	18.62						
09N01E	9	17.15	159.55	17.15	70.79	112.44	115.64	136.49	1
09N02E	61	17.15	351.2	55.5	82.78	108.5	119.19	128.75	6
09N03E	1	55.5	55.5						
09N04E	5	36.2	129.02	36.2	36.2	93.53	98.99	117.01	1
10N01E	35	16.88	301.2	35.31	46.42	66.23	296.45	300.17	4
10N01W	8	46.42	151.66	76.88	115.8	124.42	124.42	132.59	1
10N02E	27	-113.77	301.2	26.8	30.11	66.23	125.73	224.58	3
10N03E	8	17.76	184.42	20.07	24.36	71.02	98.41	140.2	1
11N02E	28	-72.07	170.24	7.93	7.93	77.59	108.5	138.28	3
11N03E	17	5.37	155.8	43.03	81.75	108.5	131.75	142.7	2
12N01E	7	7.93	301.2	7.93	7.93	7.93	184.85	301.2	0
12N01W	3	65.93	65.93	65.93	65.93	65.93	65.93	65.93	0
12N02E	7	23.46	104.85	23.46	37.38	53.43	66.82	82.8	1
12N03E	1	140.8	140.8						
13N01E	12	44.74	125.67	60.74	107.58	125.67	125.67	125.67	0
13N01W	1	79.2	79.2						
13N02E	8	59.92	170.37	59.92	66.06	83.1	116.82	146.5	1
13N03E	2	119.74	119.74	119.74	119.74	119.74	119.74	119.74	0
14N01E	23	-16.38	130.45	68.1	68.1	68.1	68.1	68.1	2

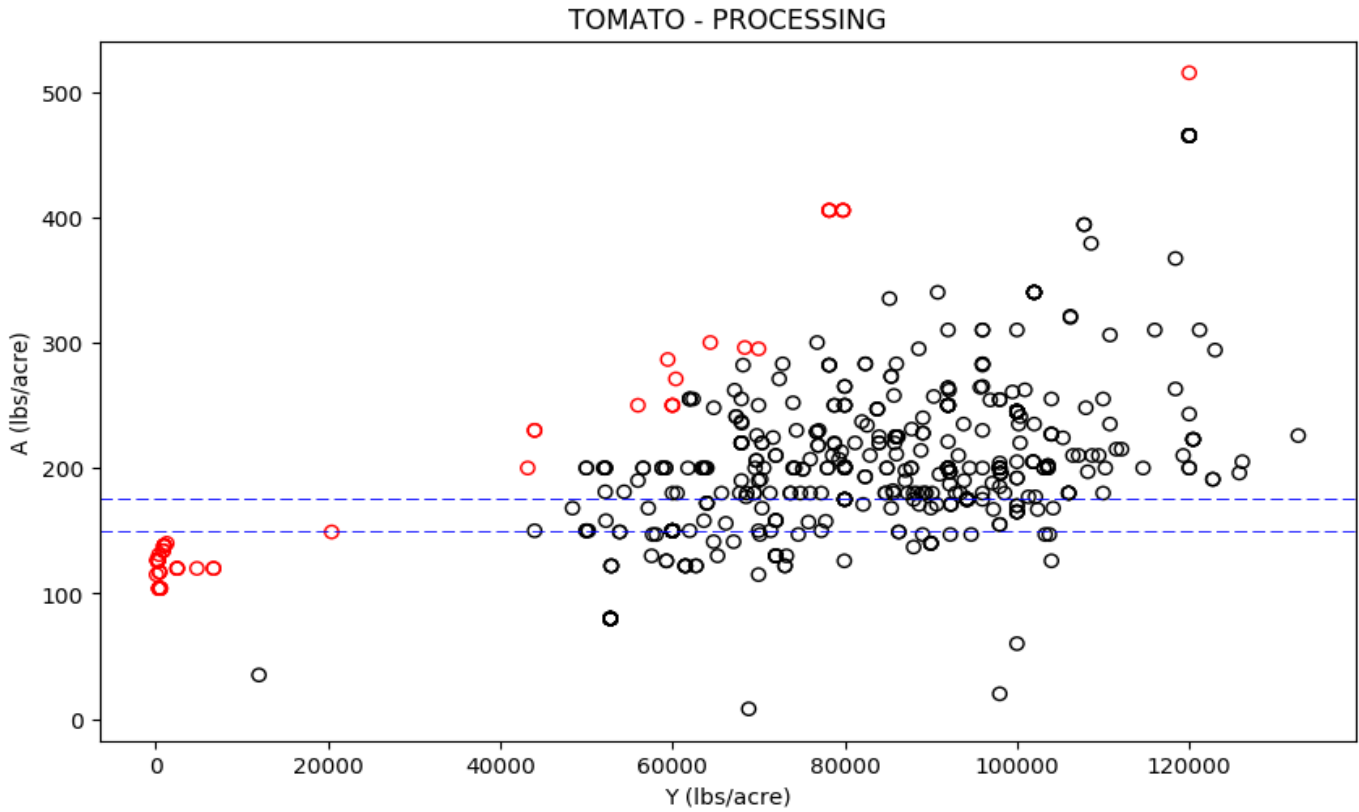
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
14N01W	5	103.24	200.77	103.24	103.24	103.24	126.78	171.17	1
14N02E	2	170.37	170.37	170.37	170.37	170.37	170.37	170.37	0
15N01E	5	54.88	58.4	56.29	58.4	58.4	58.4	58.4	0
15N01W	17	85.04	200.77	85.04	132.8	136.65	200.77	200.77	0
15N03W	5	103.45	103.45	103.45	103.45	103.45	103.45	103.45	0
16N02W	1	138.23	138.23						
17N01W	1	144.18	144.18						
18N01W	4	113.45	116.59	114.39	115.8	116.59	116.59	116.59	0
18N04W	3	116.38	116.38	116.38	116.38	116.38	116.38	116.38	0
20N01W	1	43.96	43.96						
20N02W	2	169.94	169.94	169.94	169.94	169.94	169.94	169.94	0
Unknown	3	68.1	124.85	68.1	68.1	68.1	96.47	113.5	1

Table XXII-4. Summary Statistics for TOMATO - PROCESSING management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	539	0.0	1.15	0.0017	0.002	0.0025	0.0032	0.0042	52
A/R	539	0.0	842.4908	1.244	1.4756	1.8315	2.3242	3.0525	53
A-R	539	-113.77	351.2	31.72	59.05	91.8	124.48	170.37	53

Figure XXII-2. Scatter plot of A vs. Y for TOMATO - PROCESSING with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.

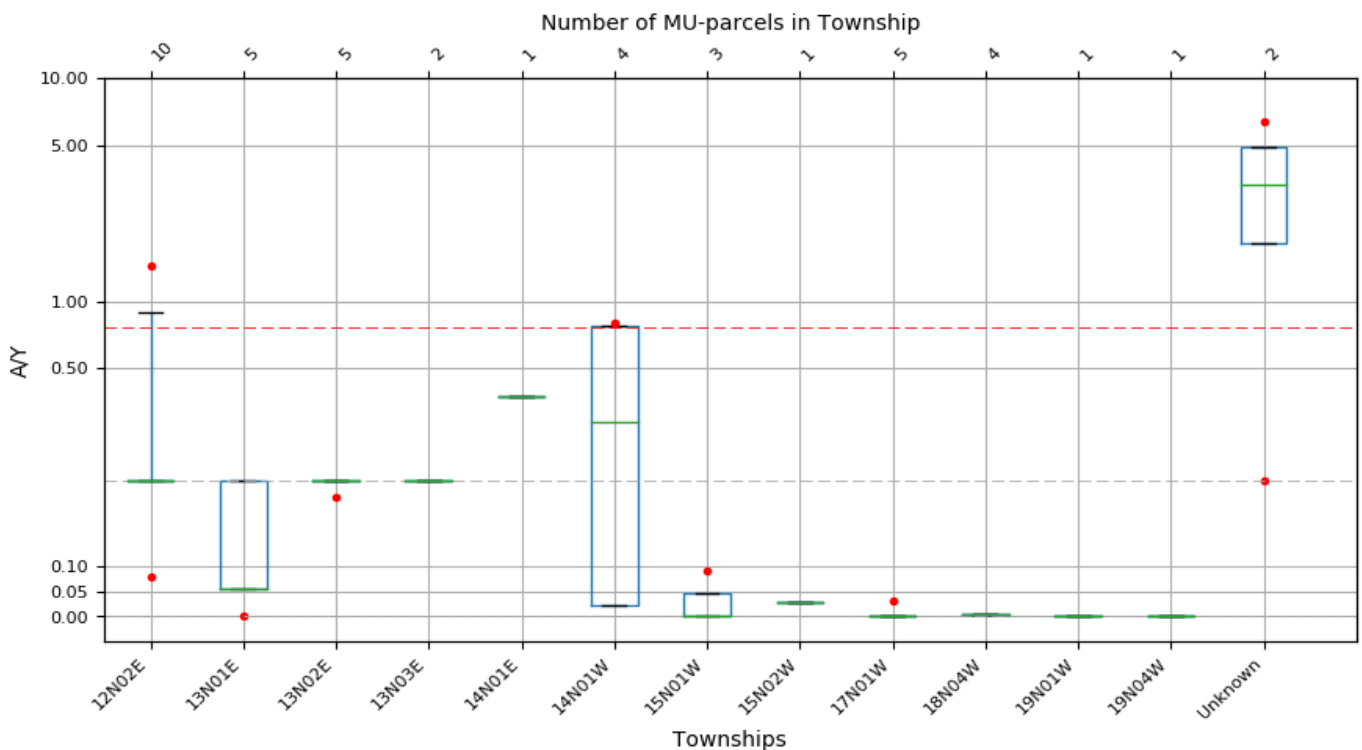
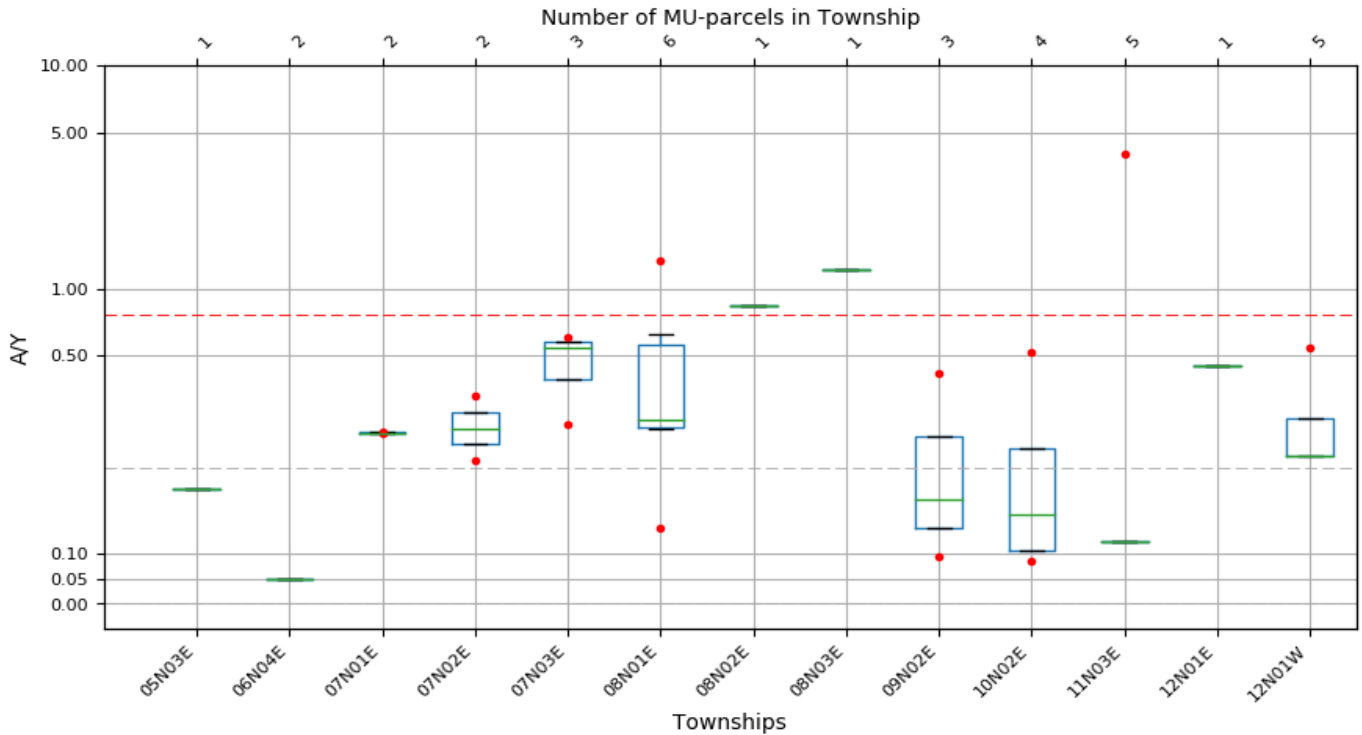


XXIII. VINE SEED

Figure XXIII-1. Box and Whisker plots of A/Y for VINE SEED management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for VINE SEED



NOTE: 2 record(s) with A/Y value > 10 lbs/acre not shown to avoid skewing of box plot.

Table XXIII-1. A/Y Summary Statistics for VINE SEED management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

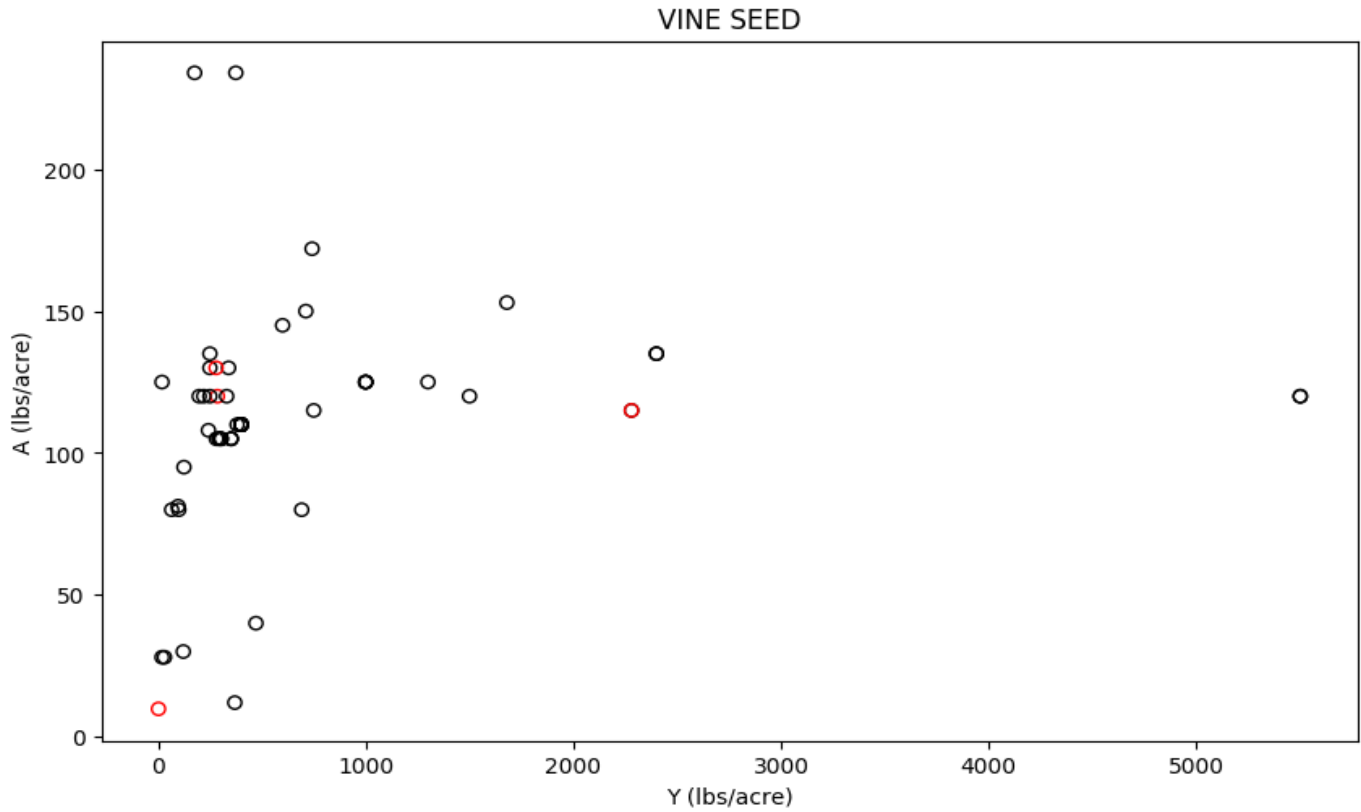
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N03E	1	0.2318	0.2318						
06N04E	2	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0
07N01E	2	0.3443	0.3454	0.3444	0.3446	0.3448	0.3451	0.3453	1
07N02E	2	0.2887	0.4196	0.3018	0.3214	0.3541	0.3869	0.4065	1
07N03E	3	0.3629	0.6048	0.3992	0.4536	0.5443	0.5746	0.5927	1
08N01E	6	0.1533	1.3268	0.2532	0.3544	0.3706	0.5639	0.9756	1
08N02E	1	0.8376	0.8376						
08N03E	1	1.2121	1.2121						
09N02E	3	0.0962	0.4643	0.1191	0.1534	0.2107	0.3375	0.4136	1
10N02E	4	0.0848	0.52	0.094	0.1079	0.1808	0.3144	0.4378	1
11N03E	5	0.125	4.0047	0.125	0.125	0.125	0.125	2.4528	1
12N01E	1	0.48	0.48						
12N01W	5	0.2983	0.54	0.2983	0.2983	0.2983	0.3737	0.4735	1
12N02E	10	0.08	1.4433	0.2555	0.275	0.275	0.275	0.9437	1
13N01E	5	0.0	0.275	0.0225	0.0562	0.0562	0.275	0.275	0
13N02E	5	0.2417	0.275	0.255	0.275	0.275	0.275	0.275	0
13N03E	2	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0
14N01E	1	0.4444	0.4444						
14N01W	4	0.0218	0.8	0.0218	0.0218	0.3909	0.77	0.788	1
15N01W	3	0.0023	0.0911	0.0023	0.0023	0.0023	0.0467	0.0733	1
15N02W	1	0.0283	0.0283						
17N01W	5	0.0	0.0324	0.0	0.0	0.0	0.0	0.0194	1
18N04W	4	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0
19N01W	1	0.0	0.0						
19N04W	1	0.0026	0.0026						
Unknown	2	0.275	6.4103	0.8885	1.8088	3.3426	4.8765	5.7968	1

Table XXIII-4. Summary Statistics for VINE SEED management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	80	0.0	6.4103	0.0026	0.0562	0.275	0.3656	0.764	8

Figure XXIII-2. Scatter plot of A vs. Y for VINE SEED with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



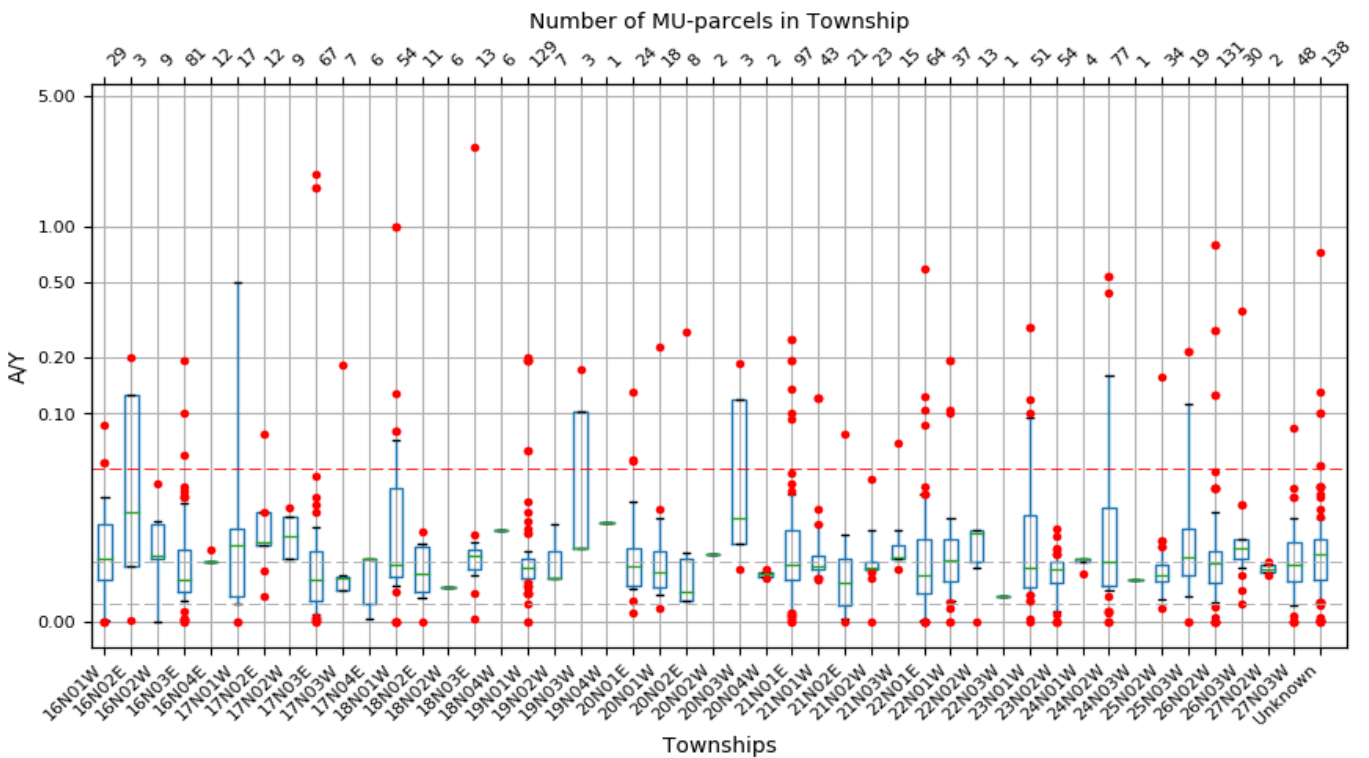
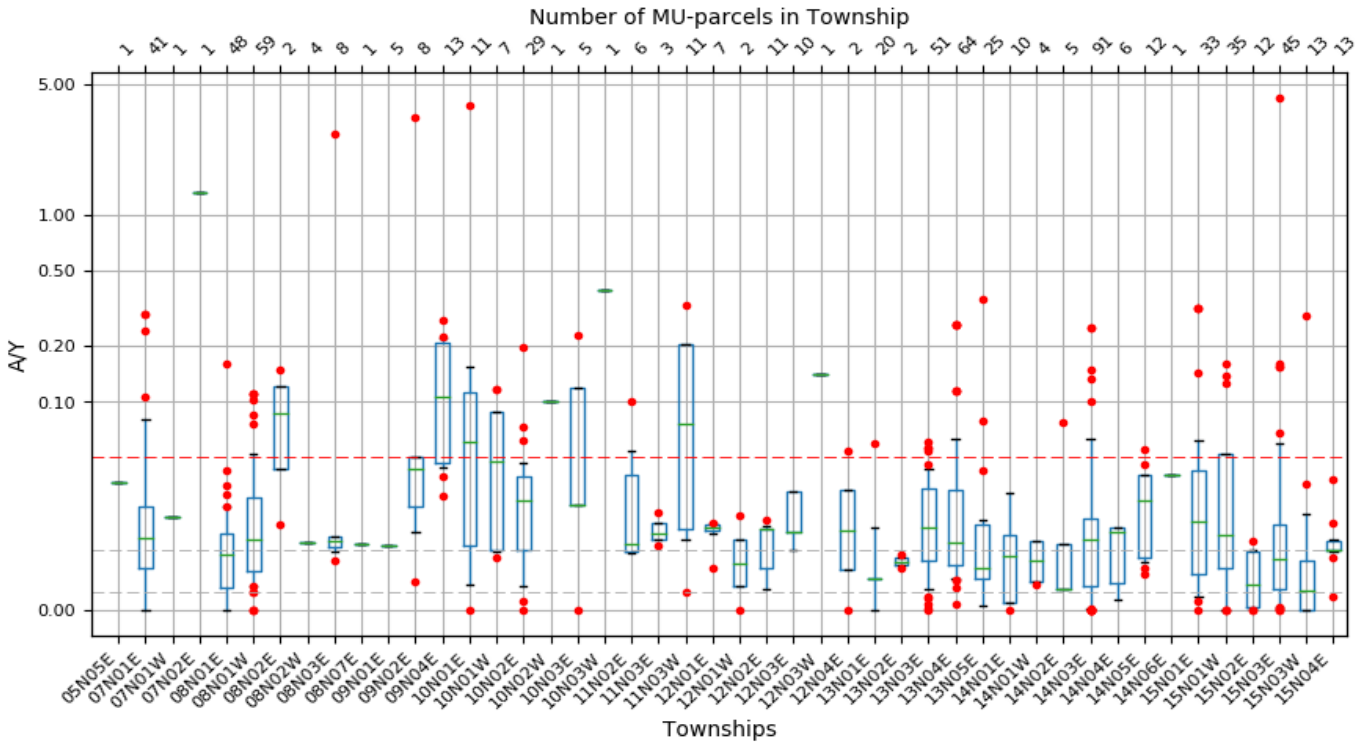
NOTE: 8.0 record(s) above Yield value of 10000 lbs/acre not shown to avoid skewing of scatter plot.

XXIV. WALNUTS

Figure XXIV-1. Box and Whisker plots of A/Y for WALNUTS management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for WALNUTS



NOTE: 1 record(s) with A/Y value > 10 lbs/acre not shown to avoid skewing of box plot.

Table XXIV-1. A/Y Summary Statistics for WALNUTS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N05E	1	0.0611	0.0611						
07N01E	41	0.0	0.2929	0.0	0.0203	0.0347	0.05	0.0915	4
07N01W	1	0.0446	0.0446						
07N02E	1	1.3117	1.3117						
08N01E	48	0.0	0.16	0.0	0.0108	0.0267	0.0371	0.0497	5
08N01W	59	0.0	0.1106	0.0117	0.0186	0.0338	0.054	0.0783	6
08N02E	2	0.041	0.1479	0.0517	0.0677	0.0945	0.1212	0.1372	1
08N02W	4	0.0325	0.0325	0.0325	0.0325	0.0325	0.0325	0.0325	0
08N03E	8	0.0241	2.7	0.0268	0.0301	0.0335	0.035	0.8345	1
08N07E	1	0.0321	0.0321						
09N01E	5	0.0312	0.0312	0.0312	0.0312	0.0312	0.0312	0.0312	0
09N02E	8	0.0139	3.32	0.0307	0.0501	0.0678	0.0737	1.0476	1
09N04E	13	0.0545	0.2747	0.0653	0.0707	0.1064	0.2073	0.224	2
10N01E	11	0.0	3.825	0.0119	0.0308	0.081	0.1124	0.1548	1
10N01W	7	0.025	0.1164	0.0267	0.0286	0.0714	0.095	0.1164	0
10N02E	29	0.0	0.1962	0.0117	0.0288	0.0525	0.0646	0.073	3
10N02W	1	0.1	0.1						
10N03E	5	0.0	0.229	0.0203	0.0508	0.0508	0.1185	0.1848	1
10N03W	1	0.3958	0.3958						
11N02E	6	0.0273	0.1	0.0273	0.0283	0.0318	0.0653	0.0882	1
11N03E	3	0.0312	0.0467	0.0324	0.0341	0.037	0.0418	0.0448	1
11N03W	11	0.0086	0.3267	0.034	0.0388	0.0892	0.2054	0.2054	1
12N01E	7	0.02	0.042	0.0298	0.0382	0.04	0.041	0.0419	1
12N01W	2	0.0	0.0451	0.0045	0.0113	0.0226	0.0338	0.0406	1
12N02E	11	0.01	0.0431	0.01	0.02	0.0388	0.0389	0.0402	1
12N03E	10	0.0292	0.0573	0.0292	0.0375	0.0375	0.0573	0.0573	0
12N03W	1	0.14	0.14						
12N04E	2	0.0	0.0765	0.0076	0.0191	0.0382	0.0574	0.0688	1
13N01E	20	0.0	0.08	0.0	0.0152	0.0152	0.0152	0.04	1
13N02E	2	0.02	0.0266	0.0207	0.0216	0.0233	0.025	0.0259	1
13N03E	51	0.0	0.0808	0.01	0.0234	0.04	0.0584	0.0682	5
13N04E	64	0.0028	0.2604	0.0154	0.0214	0.0321	0.0578	0.1053	7
13N05E	25	0.002	0.3543	0.002	0.0154	0.0202	0.0411	0.0577	3
14N01E	10	0.0	0.0564	0.0031	0.0037	0.026	0.036	0.0564	0
14N01W	4	0.0125	0.0332	0.0129	0.0135	0.0235	0.0332	0.0332	0

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
14N02E	5	0.01	0.09	0.01	0.01	0.01	0.0319	0.0668	1
14N03E	91	0.0	0.25	0.0006	0.0114	0.0336	0.0442	0.082	5
14N04E	6	0.005	0.0395	0.005	0.0127	0.0376	0.0395	0.0395	0
14N05E	12	0.017	0.0769	0.0203	0.0254	0.0526	0.065	0.0695	2
14N06E	1	0.065	0.065						
15N01E	33	0.0	0.32	0.0062	0.0171	0.0428	0.0673	0.1306	4
15N01W	35	0.0	0.16	0.0002	0.02	0.0358	0.0748	0.0748	3
15N02E	12	0.0	0.033	0.0001	0.0011	0.012	0.0283	0.0286	1
15N03E	45	0.0	4.2181	0.0011	0.01	0.0242	0.0412	0.0832	5
15N03W	13	0.0	0.2917	0.0	0.0	0.0095	0.0234	0.0576	2
15N04E	13	0.0067	0.0625	0.0256	0.0286	0.0286	0.0333	0.0402	2
16N01W	29	0.0	0.0947	0.0007	0.0202	0.03	0.047	0.0633	3
16N02E	3	0.0008	0.1999	0.0112	0.0268	0.0529	0.1264	0.1705	1
16N02W	9	0.0	0.0665	0.0	0.03	0.0318	0.0467	0.052	1
16N03E	81	0.0003	0.191	0.01	0.0146	0.0202	0.0349	0.0573	8
16N04E	12	0.0286	0.0345	0.0286	0.0286	0.0286	0.0286	0.0286	1
17N01W	17	0.0	0.5	0.005	0.0125	0.0368	0.045	0.5	0
17N02E	12	0.012	0.09	0.0256	0.0368	0.0381	0.0529	0.053	2
17N02W	9	0.03	0.0548	0.03	0.03	0.0411	0.0506	0.0514	1
17N03E	67	0.0	1.9022	0.0033	0.01	0.02	0.0342	0.0485	7
17N03W	7	0.015	0.1818	0.015	0.015	0.0209	0.0216	0.0861	1
17N04E	6	0.0012	0.03	0.0012	0.0084	0.03	0.03	0.03	0
18N01W	54	0.0	1.0	0.0153	0.0218	0.0275	0.0641	0.087	5
18N02E	11	0.0	0.0433	0.0114	0.0142	0.0231	0.0359	0.0372	1
18N02W	6	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0
18N03E	13	0.0012	2.6786	0.0153	0.025	0.0319	0.0345	0.0409	2
18N04W	6	0.0442	0.0442	0.0442	0.0442	0.0442	0.0442	0.0442	0
19N01W	129	0.0	0.2	0.0191	0.021	0.0257	0.0304	0.0357	13
19N02W	7	0.021	0.0466	0.021	0.021	0.021	0.0338	0.0466	0
19N03W	3	0.0351	0.1719	0.0351	0.0351	0.0351	0.1035	0.1445	1
19N04W	1	0.0478	0.0478						
20N01E	24	0.0042	0.1318	0.0158	0.0173	0.0268	0.0352	0.0712	3
20N01W	18	0.0063	0.2273	0.0128	0.0167	0.0241	0.0336	0.0512	2
20N02E	8	0.01	0.2743	0.01	0.0102	0.0144	0.03	0.1057	1
20N02W	2	0.0323	0.0323	0.0323	0.0323	0.0323	0.0323	0.0323	0
20N03W	3	0.025	0.1866	0.03	0.0375	0.05	0.1183	0.1593	1
20N04W	2	0.0206	0.0253	0.0211	0.0218	0.0229	0.0241	0.0248	1
21N01E	97	0.0	0.25	0.0047	0.0205	0.0273	0.0438	0.062	10
21N01W	43	0.02	0.1206	0.0214	0.0251	0.0267	0.0318	0.047	5

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
21N02E	21	0.0	0.0904	0.0013	0.0081	0.0188	0.03	0.0416	1
21N02W	23	0.0	0.0686	0.0237	0.0251	0.0259	0.0291	0.0438	1
21N03W	15	0.0253	0.086	0.0303	0.0303	0.0307	0.037	0.0438	1
22N01E	64	0.0	0.6	0.001	0.0134	0.0225	0.04	0.0614	7
22N01W	37	0.0	0.1923	0.01	0.0194	0.0296	0.04	0.07	4
22N02W	13	0.0	0.0438	0.026	0.0286	0.0423	0.0438	0.0438	0
22N03W	1	0.012	0.012						
23N01W	51	0.0	0.2897	0.0132	0.0165	0.0257	0.051	0.0979	4
23N02W	54	0.0	0.045	0.005	0.0186	0.025	0.0288	0.0324	6
24N01W	4	0.0233	0.0306	0.0255	0.0288	0.0306	0.0306	0.0306	0
24N02W	77	0.0	0.54	0.0138	0.0175	0.0288	0.055	0.1601	3
24N03W	1	0.02	0.02						
25N02W	34	0.0067	0.157	0.0105	0.0194	0.0225	0.0275	0.0361	4
25N03W	19	0.0	0.215	0.01	0.0226	0.0307	0.045	0.1325	2
26N02W	131	0.0	0.8	0.0093	0.0187	0.0283	0.034	0.053	12
26N03W	30	0.0083	0.357	0.0256	0.0301	0.035	0.04	0.0416	3
27N02W	2	0.0225	0.0286	0.0231	0.024	0.0256	0.0271	0.028	1
27N03W	48	0.0	0.0935	0.0063	0.0192	0.0274	0.038	0.05	4
Unknown	138	0.0	0.732	0.0098	0.02	0.0324	0.04	0.0502	14

Table XXIV-2. A/R Summary Statistics for WALNUTS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N05E	1	3.8278	3.8278						
07N01E	41	0.0	18.3632	0.0	1.2736	2.1748	3.1348	5.7396	4
07N01W	1	2.7938	2.7938						
07N02E	1	82.2375	82.2375						
08N01E	48	0.0	10.0313	0.0	0.6778	1.6719	2.327	3.1114	5
08N01W	59	0.0	6.9373	0.7338	1.1684	2.1167	3.3872	4.9051	6
08N02E	2	2.573	9.274	3.2431	4.2482	5.9235	7.5987	8.6039	1
08N02W	4	2.0369	2.0369	2.0369	2.0369	2.0369	2.0369	2.0369	0
08N03E	8	1.5086	169.279	1.6814	1.8871	2.099	2.1944	52.3198	1
08N07E	1	2.0111	2.0111						
09N01E	5	1.9592	1.9592	1.9592	1.9592	1.9592	1.9592	1.9592	0
09N02E	8	0.8742	208.1505	1.9235	3.1414	4.2473	4.6213	65.6801	1
09N04E	13	3.4198	17.2242	4.0932	4.4355	6.6733	12.994	14.0411	2
10N01E	11	0.0	239.8119	0.7488	1.9312	5.0754	7.0507	9.7029	1
10N01W	7	1.5674	7.2982	1.678	1.7974	4.4783	5.9532	7.2982	0
10N02E	29	0.0	12.2984	0.7309	1.8078	3.2915	4.0491	4.5747	3
10N02W	1	6.2696	6.2696						
10N03E	5	0.0	14.3578	1.2738	3.1846	3.1846	7.4284	11.586	1
10N03W	1	24.8171	24.8171						
11N02E	6	1.7146	6.2696	1.7146	1.7758	1.9926	4.0929	5.5258	1
11N03E	3	1.9592	2.9258	2.0318	2.1406	2.3221	2.6239	2.8051	1
11N03W	11	0.5363	20.4807	2.1327	2.4295	5.5954	12.8768	12.8768	1
12N01E	7	1.2539	2.6332	1.8719	2.3959	2.5078	2.5702	2.6289	1
12N01W	2	0.0	2.8303	0.283	0.7076	1.4151	2.1227	2.5473	1
12N02E	11	0.627	2.7024	0.627	1.2539	2.4295	2.4369	2.5179	1
12N03E	10	1.8286	3.5928	1.8286	2.3511	2.3511	3.5928	3.5928	0
12N03W	1	8.7748	8.7748						
12N04E	2	0.0	4.7982	0.4798	1.1995	2.3991	3.5986	4.3184	1
13N01E	20	0.0	5.0157	0.0	0.9502	0.9502	0.9502	2.5078	3
13N02E	2	1.2539	1.667	1.2952	1.3572	1.4604	1.5637	1.6257	1
13N03E	51	0.0	5.0639	0.627	1.4694	2.5078	3.662	4.2747	5
13N04E	64	0.1752	16.3263	0.9635	1.3386	2.0152	3.6244	6.6002	7
13N05E	25	0.127	22.214	0.127	0.9635	1.2661	2.5792	3.6206	3
14N01E	10	0.0	3.5366	0.1936	0.2327	1.6266	2.2556	3.5366	0
14N01W	4	0.7824	2.0835	0.8081	0.8467	1.4758	2.0835	2.0835	0

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
14N02E	5	0.627	5.6432	0.627	0.627	0.627	2.0027	4.187	1
14N03E	91	0.0	15.674	0.0364	0.7138	2.1086	2.7691	5.139	5
14N04E	6	0.3135	2.4748	0.3135	0.7942	2.3555	2.4748	2.4748	0
14N05E	12	1.0658	4.8228	1.2722	1.5966	3.2991	4.0752	4.3574	2
14N06E	1	4.0752	4.0752						
15N01E	33	0.0	20.0632	0.3918	1.0719	2.6834	4.2172	8.1847	4
15N01W	35	0.0	10.0335	0.0125	1.2539	2.2448	4.6878	4.6878	3
15N02E	12	0.0	2.069	0.006	0.0676	0.7524	1.773	1.7913	1
15N03E	45	0.0	264.4601	0.07	0.627	1.5152	2.5862	5.2158	5
15N03W	13	0.0	18.2863	0.0	0.0	0.5956	1.4694	3.6124	2
15N04E	13	0.418	3.9185	1.607	1.7913	1.7913	2.0899	2.5173	2
16N01W	29	0.0	5.9396	0.0448	1.2666	1.8809	2.9461	3.9717	3
16N02E	3	0.0508	12.5312	0.7038	1.6832	3.3156	7.9234	10.6881	1
16N02W	9	0.0	4.1712	0.0	1.8809	1.9949	2.9258	3.2637	1
16N03E	81	0.0178	11.9724	0.627	0.9149	1.2686	2.1871	3.59	8
16N04E	12	1.7913	2.1619	1.7913	1.7913	1.7913	1.7913	1.7913	1
17N01W	17	0.0	31.348	0.3135	0.7837	2.3084	2.8213	31.348	0
17N02E	12	0.7524	5.6432	1.6	2.3088	2.3869	3.3156	3.3222	2
17N02W	9	1.8809	3.4382	1.8809	1.8809	2.5795	3.174	3.2268	1
17N03E	67	0.0	119.2586	0.2064	0.627	1.2539	2.1422	3.0361	7
17N03W	7	0.9404	11.3993	0.9404	0.9404	1.3122	1.3555	5.399	1
17N04E	6	0.0752	1.8809	0.0752	0.5266	1.8809	1.8809	1.8809	0
18N01W	54	0.0	62.6959	0.9548	1.3645	1.7213	4.0186	5.4545	5
18N02E	11	0.0	2.7171	0.7177	0.8918	1.45	2.2535	2.3302	1
18N02W	6	1.0175	1.0175	1.0175	1.0175	1.0175	1.0175	1.0175	0
18N03E	13	0.0743	167.9355	0.9574	1.5674	2.0009	2.16	2.562	2
18N04W	6	2.7691	2.7691	2.7691	2.7691	2.7691	2.7691	2.7691	0
19N01W	129	0.0	12.5392	1.1986	1.3153	1.6122	1.9081	2.2376	13
19N02W	7	1.3153	2.9226	1.3153	1.3153	1.3153	2.119	2.9226	0
19N03W	3	2.1999	10.7767	2.1999	2.1999	2.1999	6.4883	9.0613	1
19N04W	1	2.9955	2.9955						
20N01E	24	0.2615	8.2604	0.9877	1.0822	1.679	2.205	4.465	3
20N01W	18	0.3934	14.2491	0.8038	1.0449	1.5099	2.1087	3.2076	2
20N02E	8	0.627	17.1998	0.627	0.6349	0.9043	1.8786	6.6297	1
20N02W	2	2.0261	2.0261	2.0261	2.0261	2.0261	2.0261	2.0261	0
20N03W	3	1.5674	11.697	1.8809	2.3511	3.1348	7.4159	9.9846	1
20N04W	2	1.2931	1.5872	1.3225	1.3666	1.4402	1.5137	1.5578	1
21N01E	97	0.0	15.674	0.2954	1.2832	1.7116	2.7429	3.8871	10
21N01W	43	1.2539	7.5583	1.3435	1.5762	1.6737	1.9926	2.9493	5

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
21N02E	21	0.0	5.6667	0.0815	0.5089	1.1785	1.8809	2.6103	1
21N02W	23	0.0	4.3038	1.4886	1.572	1.6211	1.8253	2.7429	1
21N03W	15	1.5872	5.3918	1.8988	1.8988	1.9257	2.3221	2.7429	1
22N01E	64	0.0	37.6176	0.0627	0.8434	1.4107	2.5047	3.8481	7
22N01W	37	0.0	12.0569	0.623	1.2155	1.8577	2.5092	4.3887	4
22N02W	13	0.0	2.7429	1.6277	1.7913	2.6525	2.7429	2.7429	0
22N03W	1	0.7536	0.7536						
23N01W	51	0.0	18.1641	0.8276	1.0325	1.6131	3.1998	6.1352	4
23N02W	54	0.0	2.8213	0.3135	1.1633	1.5674	1.8018	2.0328	6
24N01W	4	1.4629	1.9185	1.5996	1.8046	1.9185	1.9185	1.9185	3
24N02W	77	0.0	33.8558	0.8677	1.0972	1.8056	3.4483	10.0392	3
24N03W	1	1.2539	1.2539						
25N02W	34	0.0	9.8433	0.0	0.6583	1.2539	1.7242	2.2619	4
25N03W	19	0.0	3.1348	0.0	0.0	1.3375	1.9973	2.6332	2
26N02W	131	0.0	50.1567	0.0	0.9404	1.7743	2.1317	3.3229	12
26N03W	30	0.0	3.511	0.8985	1.8871	2.163	2.5078	2.5078	12
27N02W	2	0.0	1.7931	0.1793	0.4483	0.8966	1.3448	1.6138	1
27N03W	48	0.0	5.8594	0.0	0.0	1.721	2.3824	3.1348	7
Unknown	138	0.0	45.8934	0.5742	1.2539	2.0027	2.4948	3.1348	13

Table XXIV-3. A-R Summary Statistics for WALNUTS management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
05N05E	1	42.85	42.85						
07N01E	41	-79.75	276.52	-11.16	17.72	46.64	98.31	165.33	3
07N01W	1	136.76	136.76						
07N02E	1	99.77	99.77						
08N01E	48	-79.75	146.03	-31.9	-15.95	22.08	70.18	117.08	5
08N01W	59	-43.79	182.3	-16.19	11.64	65.35	124.36	154.07	6
08N02E	2	73.36	107.06	76.73	81.79	90.21	98.64	103.69	1
08N02W	4	43.99	43.99	43.99	43.99	43.99	43.99	43.99	0
08N03E	8	6.02	83.82	38.15	53.24	77.44	81.43	83.82	0
08N07E	1	80.44	80.44						
09N01E	5	61.2	61.2	61.2	61.2	61.2	61.2	61.2	0
09N02E	8	-14.24	111.27	28.64	47.02	64.81	100.39	107.48	1
09N04E	13	56.43	188.39	99.67	138.21	162.39	170.03	182.56	2
10N01E	11	-79.75	395.37	-20.13	45.73	99.54	183.0	194.94	1
10N01W	7	34.39	128.58	38.22	42.57	90.87	121.84	128.58	0
10N02E	29	-31.9	347.26	-6.63	33.51	109.73	123.03	146.2	1
10N02W	1	336.2	336.2						
10N03E	5	-159.5	111.64	-65.87	74.57	74.57	86.54	101.6	1
10N03W	1	45.59	45.59						
11N02E	6	43.31	151.29	43.31	47.78	68.58	125.76	146.82	1
11N03E	3	56.94	92.15	57.79	59.07	61.2	76.68	85.96	1
11N03W	11	-11.0	415.05	29.42	58.79	136.33	390.05	415.05	0
12N01E	7	13.71	198.14	39.89	76.77	130.25	156.48	187.67	1
12N01W	2	-43.88	102.18	-29.27	-7.37	29.15	65.66	87.57	1
12N02E	11	-37.82	129.72	-37.82	13.1	120.57	128.7	129.72	0
12N03E	10	79.3	135.67	79.3	86.2	86.2	135.67	135.67	0
12N03W	1	177.21	177.21						
12N04E	2	-3.19	118.74	9.0	27.29	57.77	88.26	106.55	1
13N01E	20	-12.76	120.25	-6.38	-3.36	-3.36	-3.36	39.88	2
13N02E	2	12.13	44.01	15.32	20.1	28.07	36.04	40.83	1
13N03E	51	-2432.0	199.4	-31.04	39.0	68.1	102.95	145.25	3
13N04E	64	-513.05	142.06	-1.8	19.99	57.54	90.68	128.91	6
13N05E	25	-27.29	561.68	-27.29	-1.8	18.39	82.46	89.39	2
14N01E	10	-510.76	129.1	-510.76	-245.22	30.67	78.36	129.1	0
14N01W	4	-27.35	171.1	-24.9	-21.23	75.95	171.1	171.1	0

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
14N02E	5	-37.82	80.11	-37.82	-37.82	-37.82	41.14	64.52	1
14N03E	91	-3374.01	169.3	-1959.03	-6.62	59.15	87.95	103.01	9
14N04E	6	-21.9	118.3	-21.9	5.92	89.39	89.39	103.84	1
14N05E	12	5.25	162.15	9.33	48.08	117.72	121.34	155.9	2
14N06E	1	117.72	117.72						
15N01E	33	-765.6	228.86	-54.32	7.11	67.12	129.1	223.28	4
15N01W	35	-86.13	221.31	-48.93	6.48	66.43	126.57	153.4	2
15N02E	12	-2347.01	67.28	-2185.34	-636.05	-16.95	52.0	53.01	1
15N03E	45	-2185.34	165.52	-250.95	-26.12	49.3	74.18	119.02	5
15N03W	13	-175.91	165.43	-151.59	-31.9	-24.28	47.92	108.24	2
15N04E	13	-69.62	111.72	44.18	44.18	55.4	78.23	90.03	2
16N01W	29	-63.76	154.43	-50.79	3.85	70.25	97.2	138.72	2
16N02E	3	-84.78	406.84	-29.41	53.64	192.06	299.45	363.88	1
16N02W	9	-27.51	230.38	-17.19	52.36	70.25	174.1	230.38	0
16N03E	81	-2313.09	192.06	-21.5	-7.9	27.47	54.16	88.82	8
16N04E	12	44.18	53.74	44.18	44.18	44.18	44.18	44.18	1
17N01W	17	-51.5	145.25	-36.9	-13.8	48.4	92.39	120.62	2
17N02E	12	-7.9	192.06	41.31	76.07	96.03	173.29	191.38	2
17N02W	9	70.25	180.83	70.25	70.25	110.22	110.96	124.93	1
17N03E	67	-2037.3	220.25	-203.05	-17.78	20.25	72.71	95.25	6
17N03W	7	-4.75	364.91	-4.75	-4.75	21.42	26.67	165.12	1
17N04E	6	-2212.5	39.89	-2212.5	-1649.4	39.89	39.89	39.89	0
18N01W	54	-90.92	295.21	-2.79	19.81	63.28	71.05	109.78	6
18N02E	11	-34.29	156.99	-33.04	-14.98	26.07	135.16	156.99	0
18N02W	6	1.12	1.12	1.12	1.12	1.12	1.12	1.12	0
18N03E	13	-1868.95	123.28	-4.53	63.35	75.04	106.35	109.47	2
18N04W	6	169.3	169.3	169.3	169.3	169.3	169.3	169.3	0
19N01W	129	-1595.0	458.53	18.23	26.32	54.3	83.29	101.47	12
19N02W	7	28.77	96.04	28.77	28.77	28.77	62.41	96.04	0
19N03W	3	54.54	163.3	54.54	54.54	54.54	108.92	141.55	1
19N04W	1	143.22	143.22						
20N01E	24	-81.92	203.68	-2.25	12.3	49.86	120.99	155.56	3
20N01W	18	-49.34	232.46	-24.41	5.38	45.53	72.4	112.01	2
20N02E	8	-34.1	145.99	-32.57	-31.91	-7.94	42.37	109.05	1
20N02W	2	91.16	91.16	91.16	91.16	91.16	91.16	91.16	0
20N03W	3	43.44	91.45	44.29	45.56	47.67	69.56	82.69	1
20N04W	2	37.0	74.8	40.78	46.45	55.9	65.35	71.02	1
21N01E	97	-2465.59	146.2	-38.05	23.12	44.21	76.91	113.24	10
21N01W	43	27.55	188.29	33.93	49.32	64.62	122.4	122.64	5

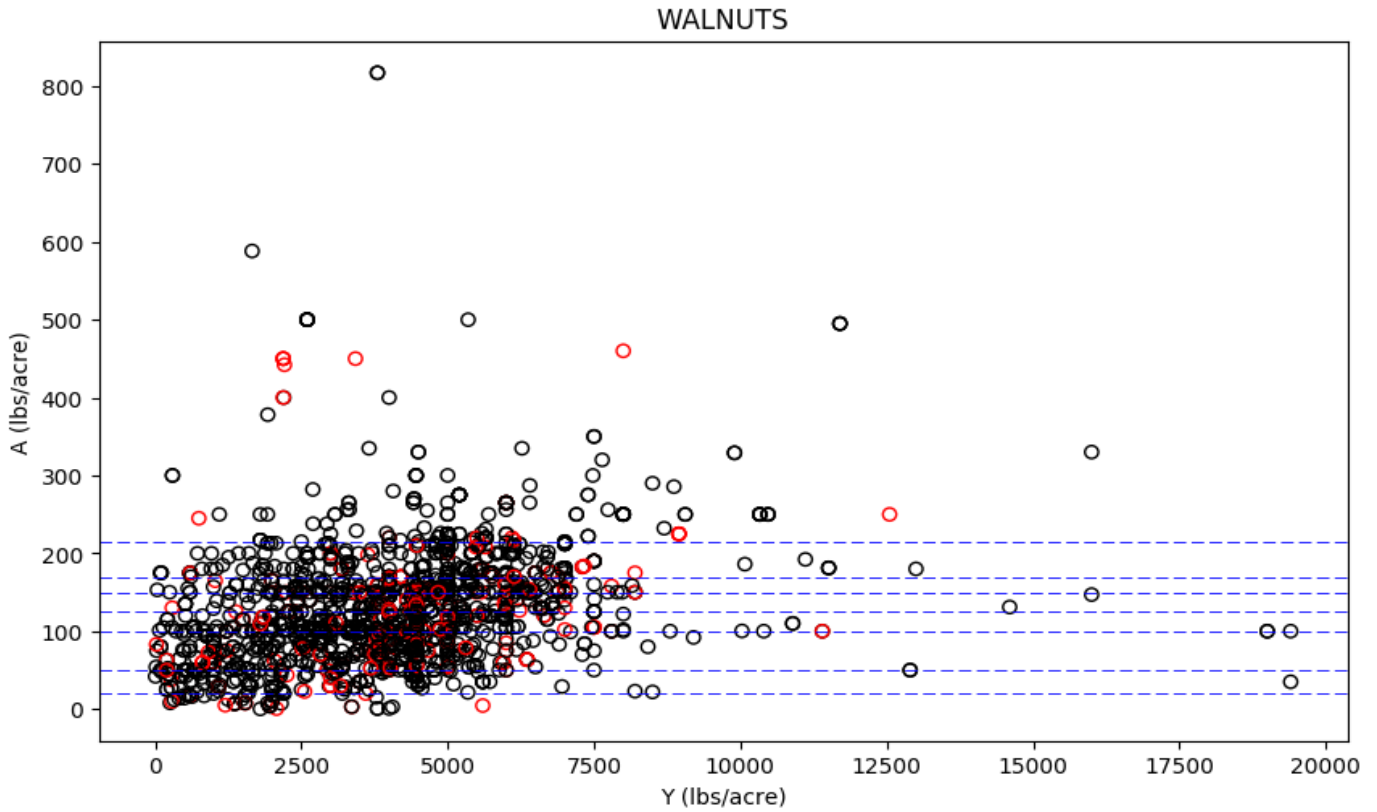
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
21N02E	21	-651.36	102.94	-282.8	-26.63	12.34	39.85	97.47	1
21N02W	23	-143.55	133.44	47.94	53.27	69.35	88.17	131.23	3
21N03W	15	37.0	175.12	72.26	100.35	103.35	113.87	133.44	1
22N01E	64	-1569.75	238.98	-41.8	-9.68	26.2	60.65	109.28	7
22N01W	37	-58.38	458.53	-27.39	7.43	64.16	102.73	148.79	4
22N02W	13	-23.92	308.38	44.74	56.96	133.44	133.44	308.38	0
22N03W	1	-27.13	-27.13						
23N01W	51	-1390.45	212.17	-11.92	1.66	35.74	82.22	165.08	4
23N02W	50	-27.1	144.2	-6.41	19.76	44.41	67.19	93.55	5
24N01W	4	31.01	65.45	41.34	56.84	65.45	65.45	65.45	0
24N02W	75	-28.47	125.29	-1.14	7.75	44.53	79.96	94.54	3
24N03W	1	13.16	13.16						
25N02W	34	-41.56	141.05	-25.95	15.44	26.2	52.36	75.3	4
25N03W	17	-27.6	756.39	18.64	43.04	64.2	136.2	399.03	2
26N02W	125	-2534.58	160.21	-19.0	21.81	55.2	79.63	97.87	10
26N03W	30	-49.68	134.45	42.55	63.14	65.71	88.17	91.39	3
27N02W	2	26.2	56.62	29.24	33.8	41.41	49.01	53.57	1
27N03W	44	-107.79	414.67	-4.25	22.41	49.33	86.81	121.86	9
Unknown	136	-1838.85	219.33	-20.12	12.13	64.24	91.78	125.07	13

Table XXIV-4. Summary Statistics for WALNUTS management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	2187	0.0	4.2181	0.0083	0.0197	0.0291	0.0416	0.0737	217
A/R	2187	0.0	264.4601	0.3135	1.1766	1.8119	2.5911	4.5868	219
A-R	2167	-3374.01	756.39	-25.95	13.95	52.88	89.39	133.44	214

Figure XXIV-2. Scatter plot of A vs. Y for WALNUTS with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers ($A/Y > 90\%$ for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



NOTE: 62.0 record(s) above Yield value of 20000 lbs/acre not shown to avoid skewing of scatter plot.

XXV. WHEAT - GRAIN

Figure XXV-1. Box and Whisker plots of A/Y for WHEAT - GRAIN management units grouped by T-R.

Numbers at the top indicate the number of MU-parcels within each T-R. Red dots above boxplot are local outliers ($A/Y > 90\%$ percentile) within each T-R. Red dots below the boxplot are below the 10% percentile. Horizontal dashed lines represent the 10% and 50% percentiles (grey lines), and 90% percentiles (red line) for all records in the Coalition.

Grouped Boxplots by Township for WHEAT - GRAIN

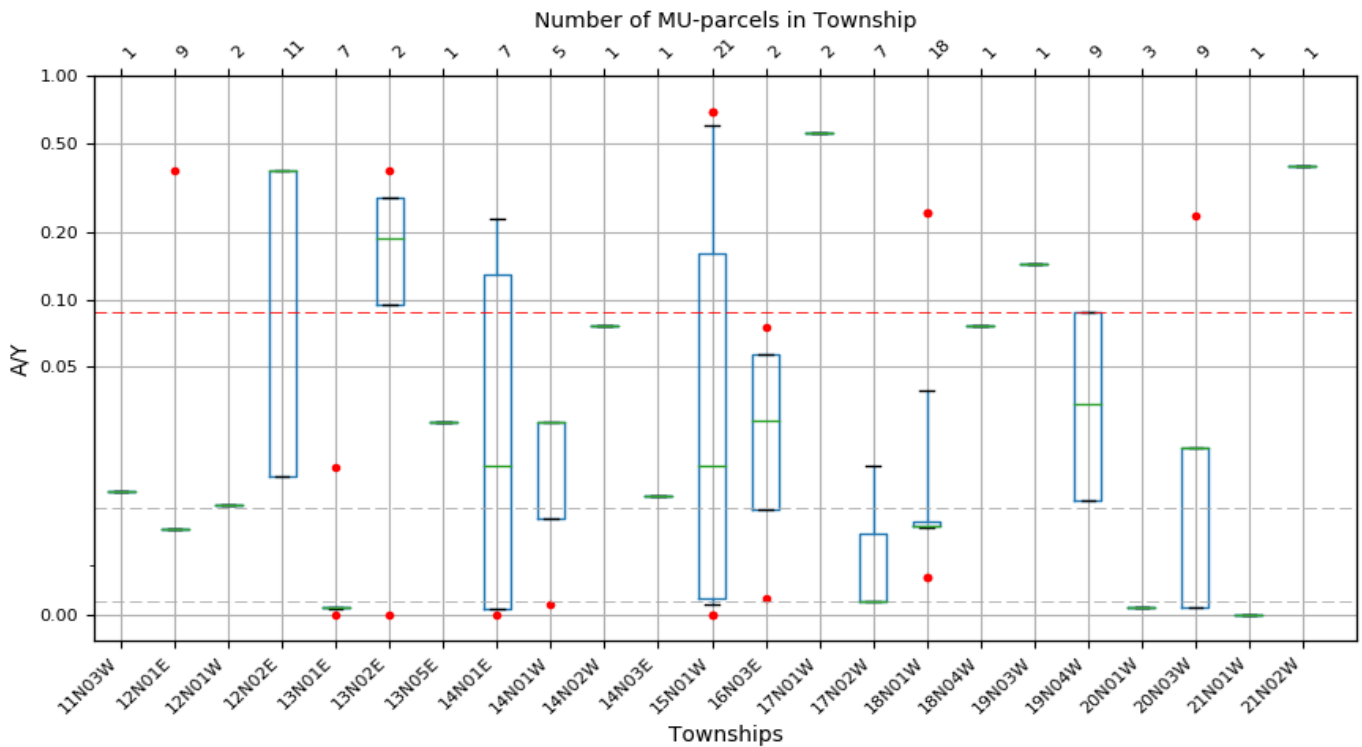
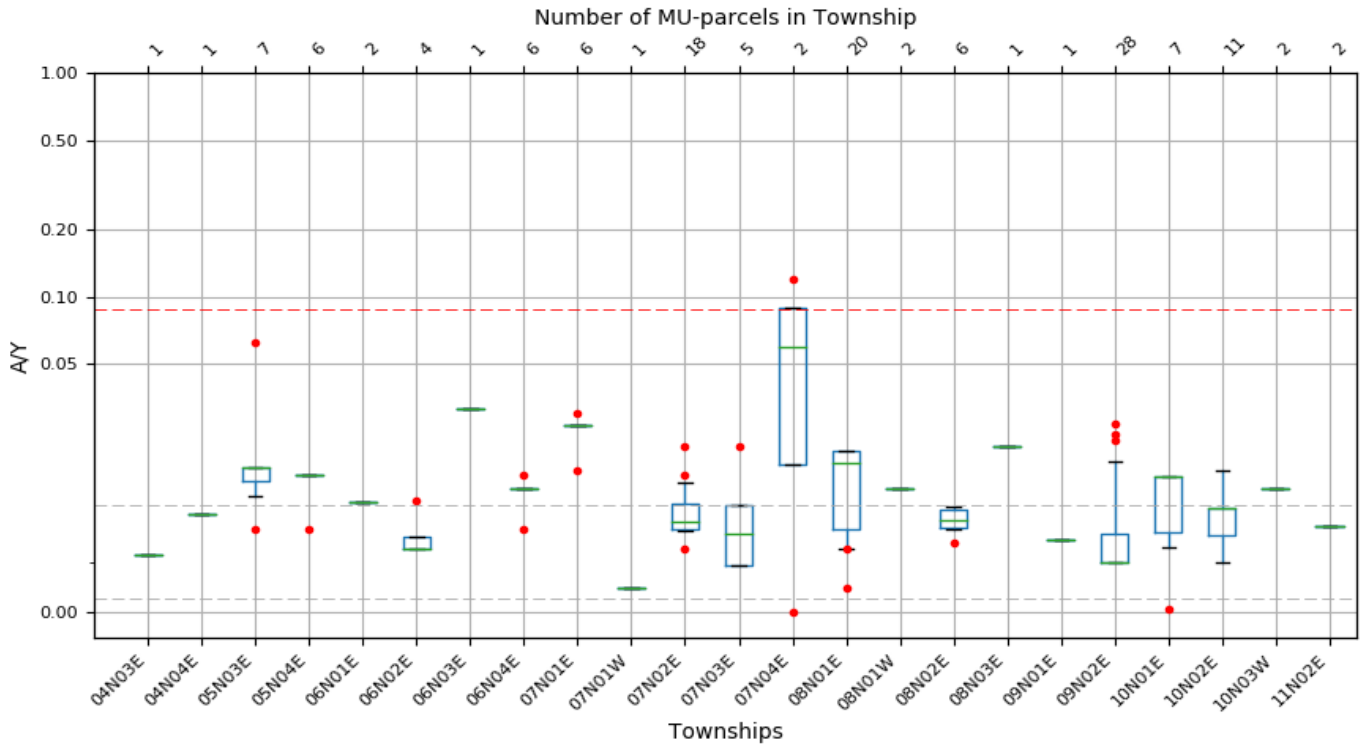


Table XXV-1. A/Y Summary Statistics for WHEAT - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	1	0.0116	0.0116						
04N04E	1	0.0198	0.0198						
05N03E	7	0.0167	0.0625	0.0207	0.0262	0.0292	0.0292	0.0425	1
05N04E	6	0.0167	0.0277	0.0222	0.0277	0.0277	0.0277	0.0277	0
06N01E	2	0.0221	0.0221	0.0221	0.0221	0.0221	0.0221	0.0221	0
06N02E	4	0.0129	0.0225	0.0129	0.0129	0.0129	0.0153	0.0196	1
06N03E	1	0.0409	0.0409						
06N04E	6	0.0167	0.0277	0.0208	0.025	0.025	0.025	0.0264	1
07N01E	6	0.0286	0.04	0.033	0.0375	0.0375	0.0375	0.0388	1
07N01W	1	0.005	0.005						
07N02E	18	0.0129	0.0333	0.0164	0.0167	0.0182	0.0218	0.0266	2
07N03E	5	0.0095	0.0333	0.0095	0.0095	0.016	0.0216	0.0286	1
07N04E	2	0.0	0.119	0.0119	0.0298	0.0595	0.0892	0.1071	1
08N01E	20	0.0048	0.0324	0.0129	0.0168	0.0301	0.0324	0.0324	0
08N01W	2	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0
08N02E	6	0.0142	0.0214	0.0154	0.0172	0.0187	0.0207	0.0214	0
08N03E	1	0.0333	0.0333						
09N01E	1	0.0147	0.0147						
09N02E	28	0.01	0.0381	0.01	0.01	0.01	0.0158	0.0318	3
10N01E	7	0.0005	0.0273	0.0081	0.0161	0.0273	0.0273	0.0273	0
10N02E	11	0.01	0.0286	0.01	0.0154	0.0209	0.021	0.0286	0
10N03W	2	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0
11N02E	2	0.0173	0.0173	0.0173	0.0173	0.0173	0.0173	0.0173	0
11N03W	1	0.025	0.025						
12N01E	9	0.0173	0.3774	0.0173	0.0173	0.0173	0.0173	0.0893	1
12N01W	2	0.0223	0.0223	0.0223	0.0223	0.0223	0.0223	0.0223	0
12N02E	11	0.0278	0.3774	0.0278	0.0278	0.3774	0.3774	0.3774	0
13N01E	7	0.0	0.0297	0.0008	0.0015	0.0016	0.0016	0.0128	1
13N02E	2	0.0	0.3774	0.0377	0.0944	0.1887	0.2831	0.3397	1
13N05E	1	0.0388	0.0388						
14N01E	7	0.0	0.2286	0.0008	0.0014	0.03	0.1293	0.2286	0
14N01W	5	0.0022	0.0388	0.0091	0.0195	0.0388	0.0388	0.0388	0
14N02W	1	0.0767	0.0767						
14N03E	1	0.024	0.024						
15N01W	21	0.0	0.6904	0.0022	0.0033	0.03	0.1603	0.6	2

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
16N03E	2	0.0034	0.075	0.0106	0.0213	0.0392	0.0571	0.0678	1
17N01W	2	0.555	0.555	0.555	0.555	0.555	0.555	0.555	0
17N02W	7	0.0028	0.03	0.0028	0.0028	0.0028	0.0164	0.03	0
18N01W	18	0.0077	0.2425	0.0146	0.018	0.018	0.0189	0.1045	2
18N04W	1	0.0767	0.0767						
19N03W	1	0.1445	0.1445						
19N04W	9	0.0231	0.0882	0.0231	0.0231	0.0425	0.0882	0.0882	0
20N01W	3	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0
20N03W	9	0.0016	0.236	0.0016	0.0016	0.0338	0.0338	0.0742	1
21N01W	1	0.0	0.0						
21N02W	1	0.3914	0.3914						

Table XXV-2. A/R Summary Statistics for WHEAT - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	1	0.539	0.539						
04N04E	1	0.9225	0.9225						
05N03E	7	0.7752	2.907	0.9613	1.2226	1.36	1.36	1.9788	1
05N04E	6	0.7752	1.2863	1.0308	1.2863	1.2863	1.2863	1.2863	0
06N01E	2	1.0289	1.0289	1.0289	1.0289	1.0289	1.0289	1.0289	0
06N02E	4	0.5995	1.0465	0.5995	0.5995	0.5995	0.7113	0.9124	1
06N03E	1	1.9007	1.9007						
06N04E	6	0.7752	1.2863	0.969	1.1628	1.1628	1.1628	1.2246	1
07N01E	6	1.3319	1.8605	1.5381	1.7442	1.7442	1.7442	1.8024	1
07N01W	1	0.2326	0.2326						
07N02E	18	0.598	1.5504	0.7611	0.7768	0.8457	1.0147	1.2346	2
07N03E	5	0.4406	1.5504	0.4406	0.4406	0.742	1.0024	1.3312	1
07N04E	2	0.0	5.5349	0.5535	1.3837	2.7675	4.1512	4.9814	1
08N01E	20	0.2247	1.5064	0.5998	0.7843	1.3981	1.5064	1.5064	0
08N01W	2	1.1628	1.1628	1.1628	1.1628	1.1628	1.1628	1.1628	0
08N02E	6	0.6582	0.9938	0.7167	0.7988	0.8696	0.9628	0.9938	0
08N03E	1	1.5504	1.5504						
09N01E	1	0.6818	0.6818						
09N02E	28	0.4651	1.7707	0.4651	0.4651	0.4651	0.7319	1.4771	3
10N01E	7	0.0252	1.2677	0.3773	0.751	1.2677	1.2677	1.2677	0
10N02E	11	0.4651	1.3314	0.4651	0.7198	0.9744	0.9772	1.3314	0
10N03W	2	1.1628	1.1628	1.1628	1.1628	1.1628	1.1628	1.1628	0
11N02E	2	0.806	0.806	0.806	0.806	0.806	0.806	0.806	0
11N03W	1	1.1628	1.1628						
12N01E	9	0.806	17.5524	0.806	0.806	0.806	0.806	4.1553	1
12N01W	2	1.0371	1.0371	1.0371	1.0371	1.0371	1.0371	1.0371	0
12N02E	11	1.2939	17.5524	1.2939	1.2939	17.5524	17.5524	17.5524	0
13N01E	7	0.0	1.3817	0.0401	0.0702	0.0734	0.0734	0.5967	1
13N02E	2	0.0	17.5524	1.7552	4.3881	8.7762	13.1643	15.7972	1
13N05E	1	1.8057	1.8057						
14N01E	7	0.0	10.6312	0.0401	0.0669	1.3953	6.0132	10.6312	0
14N01W	5	0.1042	1.8057	0.4255	0.9075	1.8057	1.8057	1.8057	0
14N02W	1	3.5659	3.5659						
14N03E	1	1.1163	1.1163						
15N01W	21	0.0	32.1096	0.1042	0.1523	1.3953	7.4576	27.907	2

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
16N03E	2	0.1581	3.4884	0.4911	0.9907	1.8232	2.6558	3.1554	1
17N01W	2	25.814	25.814	25.814	25.814	25.814	25.814	25.814	0
17N02W	7	0.1292	1.3953	0.1292	0.1292	0.1292	0.7622	1.3953	0
18N01W	18	0.3578	11.2791	0.6771	0.8372	0.8372	0.8802	4.8597	2
18N04W	1	3.5659	3.5659						
19N03W	1	6.7213	6.7213						
19N04W	9	1.0733	4.104	1.0733	1.0733	1.9767	4.104	4.104	0
20N01W	3	0.0775	0.0775	0.0775	0.0775	0.0775	0.0775	0.0775	0
20N03W	9	0.0756	10.9767	0.0756	0.0756	1.5698	1.5698	3.4512	1
21N01W	1	0.0	0.0						
21N02W	1	18.206	18.206						

Table XXV-3. A-R Summary Statistics for WHEAT - GRAIN management units grouped by T-R.

For T-R blocks with only one management unit, no summary statistics could be calculated. Management units that span multiple T-R blocks are counted within all of those T-R blocks.

T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
04N03E	1	-99.12	-99.12						
04N04E	1	-10.0	-10.0						
05N03E	7	-29.0	98.4	-5.0	18.74	26.47	26.47	55.24	1
05N04E	6	-29.0	27.82	-0.59	27.82	27.82	27.82	27.82	0
06N01E	2	2.87	2.87	2.87	2.87	2.87	2.87	2.87	0
06N02E	4	-77.5	4.0	-77.5	-77.5	-77.5	-57.12	-20.45	1
06N03E	1	80.56	80.56						
06N04E	6	-14.5	27.82	-0.25	14.0	14.0	14.0	20.91	1
07N01E	6	31.4	74.0	47.7	64.0	64.0	64.0	69.0	1
07N01W	1	-103.95	-103.95						
07N02E	18	-60.5	40.02	-29.95	-26.57	-18.25	1.51	23.19	2
07N03E	5	-91.4	35.5	-91.4	-91.4	-23.3	0.24	21.4	1
07N04E	2	-43.0	97.5	-28.95	-7.88	27.25	62.38	83.45	1
08N01E	20	-207.03	53.79	-66.72	-27.52	47.23	53.79	53.79	0
08N01W	2	14.0	14.0	14.0	14.0	14.0	14.0	14.0	0
08N02E	6	-38.95	-0.62	-33.97	-24.98	-12.9	-3.69	-0.62	0
08N03E	1	35.5	35.5						
09N01E	1	-42.01	-42.01						
09N02E	28	-83.03	65.29	-69.0	-69.0	-69.0	-32.98	48.09	3
10N01E	7	-116.13	30.62	-84.49	-40.98	30.62	30.62	30.62	0
10N02E	11	-69.0	37.34	-69.0	-36.47	-3.94	-3.51	37.34	0
10N03W	2	14.0	14.0	14.0	14.0	14.0	14.0	14.0	0
11N02E	2	-23.11	-23.11	-23.11	-23.11	-23.11	-23.11	-23.11	0
11N03W	1	14.0	14.0						
12N01E	9	-23.11	187.19	-23.11	-23.11	-23.11	-23.11	18.95	1
12N01W	2	4.66	4.66	4.66	4.66	4.66	4.66	4.66	0
12N02E	11	34.75	187.19	34.75	34.75	187.19	187.19	187.19	0
13N01E	7	-1926.0	35.92	-1678.8	-1514.0	-1514.0	-760.22	10.5	1
13N02E	2	-6.45	187.19	12.91	41.96	90.37	138.78	167.83	1
13N05E	1	58.9	58.9						
14N01E	7	-1926.0	72.47	-1926.0	-966.22	42.5	57.49	72.47	0
14N01W	5	-2080.0	58.9	-1251.26	-8.15	58.9	58.9	58.9	3
14N02W	1	99.3	99.3						
14N03E	1	12.5	12.5						
15N01W	21	-2080.0	164.52	-1531.0	-6.45	34.0	131.76	164.52	0

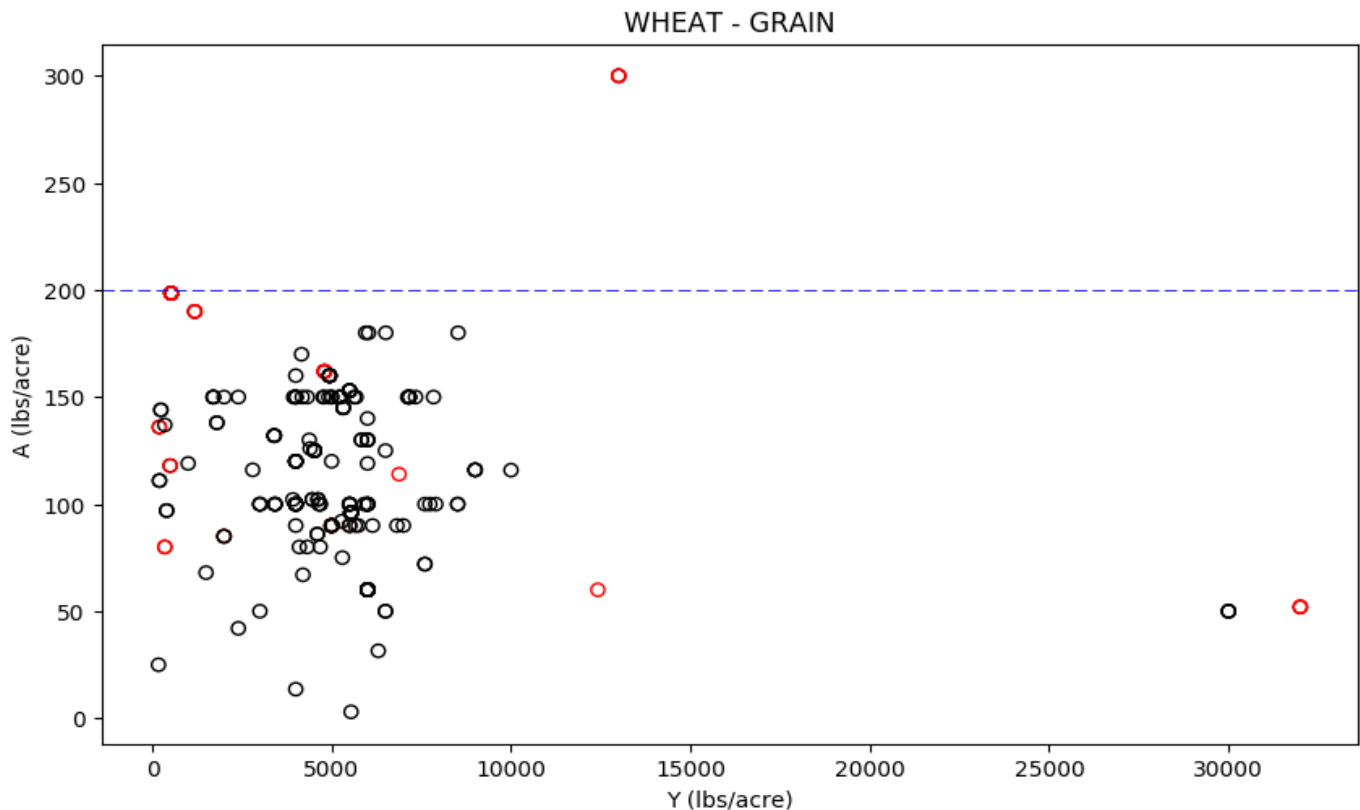
T-R	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
16N03E	2	-72.4	107.0	-54.46	-27.55	17.3	62.15	89.06	1
17N01W	2	106.7	106.7	106.7	106.7	106.7	106.7	106.7	0
17N02W	7	-1685.0	34.0	-1685.0	-1685.0	-1685.0	-825.5	34.0	0
18N01W	18	-89.75	88.4	-39.17	-17.5	-17.5	-10.89	65.58	2
18N04W	1	99.3	99.3						
19N03W	1	21.28	21.28						
19N04W	9	20.5	113.45	20.5	20.5	42.0	113.45	113.45	3
20N01W	3	-595.0	-595.0	-595.0	-595.0	-595.0	-595.0	-595.0	0
20N03W	9	-636.0	107.25	-636.0	-636.0	58.8	58.8	68.49	1
21N01W	1	-51.6	-51.6						
21N02W	1	129.48	129.48						

Table XXV-4. Summary Statistics for WHEAT - GRAIN management units in Coalition.

Parameter	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
A/Y	263	0.0	0.6904	0.0028	0.0129	0.0217	0.032	0.0882	26
A/R	263	0.0	32.1096	0.1292	0.6003	1.0078	1.4861	4.104	26
A-R	263	-2080.0	187.19	-97.58	-36.43	1.0	42.0	98.22	27

Figure XXV-2. Scatter plot of A vs. Y for WHEAT - GRAIN with all T-R together.

Each dot represents one MU-parcel. Red dots represent regional outliers (A/Y > 90% for all T-R together). Blue lines represent recommended or typical N application rates as described in Appendix B.



NOTE: 17.0 record(s) above Yield value of 40000 lbs/acre not shown to avoid skewing of scatter plot.

XXVI. OTHER CROPS

Table XXVI-1. A/Y summary statistics for crops with limited representation in the SVWQC region.

Summary statistics are reported across the Coalition rather than each township due to limited representation of these crops. For crops with only one MU, no summary statistics could be calculated.

Crop	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
3 GRAIN	6	0.0007	0.0162	0.003	0.0057	0.0071	0.0081	0.0123	1
ALFALFA - SEED	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
APPLES	13	0.0	0.9881	0.0	0.0	0.0029	0.0067	0.0187	2
APRICOTS	3	0.0	0.0898	0.0179	0.0448	0.0895	0.0897	0.0898	1
ARUGULA	1	0.0	0.0						
ASPARAGUS	4	0.0	0.0212	0.0014	0.0034	0.009	0.0155	0.0189	1
ASPARAGUS - SEED	1	0.2365	0.2365						
BARLEY	19	0.0096	0.0426	0.0101	0.016	0.0162	0.0219	0.0285	2
BLACKBERRY	2	0.0312	0.0392	0.032	0.0332	0.0353	0.0372	0.0384	2
BROCCOLI/BROCOLINI	1	0.0401	0.0401						
CABBAGE	1	0.0177	0.0177						
CABBAGE - SEED	1	0.2103	0.2103						
CARROT - SEED	3	0.0581	0.0581	0.0581	0.0581	0.0581	0.0581	0.0581	
CAULIFLOWER - SEED	1	0.0106	0.0106						
CHERRY	12	0.0	0.0217	0.0	0.001	0.0066	0.0085	0.0205	2
CHESTNUTS	1	0.0156	0.0156						
CHRISTMAS TREES	2	0.0	0.0139	0.0014	0.0035	0.0069	0.0104	0.0125	1
CITRUS	6	0.0024	0.4	0.0096	0.0175	0.0641	0.1314	0.2696	1
CORIANDER	1	0.0781	0.0781						
CORIANDER - SEED	1	0.0251	0.0251						
CORN - NR	1	0.02	0.02						
CORN - SWEET	14	0.0025	0.1371	0.0062	0.0109	0.0109	0.0178	0.1093	2
COTTON	9	0.0713	0.4688	0.0713	0.0713	0.0713	0.0882	0.1738	1
DAIKON	1	0.0	0.0						
DICHONDRA	2	0.0003	0.204	0.0207	0.0512	0.1022	0.1531	0.1836	1
DICHONDRA - SEED	1	0.3876	0.3876						
FALLOW	1	0.044	0.044						
FENNEL	1	0.0	0.0						
FIGS	3	0.0003	0.0152	0.0017	0.0039	0.0075	0.0114	0.0137	1
GARLIC	3	0.0	0.0229	0.0046	0.0115	0.0229	0.0229	0.0229	
GOURDS	1	0.1825	0.1825						
GRAPE - BARE ROOTS	2	0.0121	0.0181	0.0127	0.0136	0.0151	0.0166	0.0175	1
GRAPE - BUDWOOD	1	0.0199	0.0199						

Crop	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
GRAPE - ROOT STOCK	3	0.016	0.1579	0.0236	0.035	0.0541	0.106	0.1372	2
GRAPE - TABLE	3	0.0016	0.0337	0.008	0.0176	0.0337	0.0337	0.0337	
HOPS	3	0.5175	0.6912	0.5522	0.6044	0.6912	0.6912	0.6912	1
KALE	3	0.0	0.0116	0.0	0.0	0.0	0.0058	0.0093	
KIWI	14	0.0	0.0414	0.0	0.0011	0.0062	0.0091	0.0322	2
LEEKs	3	0.0	0.0294	0.0	0.0	0.0	0.0147	0.0236	1
LETTUCE	3	0.0	0.0093	0.0	0.0	0.0	0.0046	0.0074	
MELON - CANTALOUPE	2	0.0	0.0059	0.0006	0.0015	0.003	0.0044	0.0053	
MELON - HONEYDEW	9	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	
MELON - NR	4	0.0038	0.1091	0.0038	0.0038	0.0038	0.0301	0.0775	1
MILLET	1	0.017	0.017						
MISC ROW CROPS	3	0.0236	2.0	0.0522	0.0951	0.1667	1.0833	1.6333	2
MISC VEGETABLES SEED	2	0.0038	0.1376	0.0172	0.0373	0.0707	0.1042	0.1242	1
MUSTARD GREENS	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
NURSERY/ORNAMENTALS	6	0.0	0.0315	0.0099	0.0198	0.0198	0.0198	0.0257	1
OATS - GRAIN	13	0.0	0.0633	0.0	0.0	0.0062	0.0066	0.0088	1
OATS - HAY	4	0.0	0.0158	0.0033	0.0083	0.0124	0.0142	0.0151	1
ONION	4	0.0	0.0189	0.0	0.0	0.0035	0.01	0.0153	1
ONION - SEED	5	0.7874	1.375	0.8264	0.885	1.2406	1.3608	1.3693	2
OTHER	9	0.0	0.0725	0.0	0.0223	0.0444	0.0725	0.0725	
PARSLEY	1	0.0	0.0						
PEAR	59	0.0008	0.02	0.001	0.0011	0.0018	0.0036	0.0047	1
PECAN	20	0.0	0.42	0.0429	0.1332	0.2364	0.3425	0.42	
PEPPERS	15	0.0052	0.0221	0.0054	0.0057	0.0091	0.0132	0.014	1
PERSIMMON	10	0.0015	0.035	0.0054	0.0076	0.0095	0.0114	0.035	
POMEGRANATES	1	0.0	0.0						
POTATO	3	0.007	0.0167	0.007	0.0071	0.0072	0.0119	0.0148	1
PUMPKIN	9	0.0017	0.1453	0.0024	0.0026	0.0037	0.005	0.0331	1
RADISH	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
RESEARCH	2	0.748	1.5	0.8232	0.936	1.124	1.312	1.4248	2
RICE - WILD	1	0.2185	0.2185						
RYE/SUDAN	3	0.01	0.0214	0.01	0.01	0.01	0.0157	0.0191	1
SEED CROP	2	0.0285	0.2	0.0456	0.0713	0.1142	0.1571	0.1828	2
SPINACH	1	0.0	0.0						
SQUASH	16	0.0	31.6212	0.0	0.0003	0.0057	0.0191	0.1429	1
STRAWBERRIES	1	0.0033	0.0033						
TEFF	6	0.0133	0.0133	0.0133	0.0133	0.0133	0.0133	0.0133	
TOMATO - FRESH	22	0.0	5.056	0.0092	0.0185	0.022	0.022	0.025	2
TOMATO - NR	12	0.0	0.6446	0.0	0.009	0.0597	0.1313	0.2481	2

Crop	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
TRITICALE - GRAIN	6	0.0167	0.055	0.0167	0.0167	0.0167	0.0167	0.0358	1
TRITICALE - HAY	2	0.0114	0.0141	0.0117	0.0121	0.0128	0.0135	0.0139	1
TURF	4	0.0009	0.3	0.0009	0.0009	0.0009	0.0757	0.2103	1
TURNIP	3	0.0	0.0118	0.0009	0.0023	0.0046	0.0082	0.0104	
TURNIP - SEED	2	0.1739	0.1739	0.1739	0.1739	0.1739	0.1739	0.1739	
WATERMELON	12	0.002	4.2907	0.0031	0.0078	0.0186	0.1505	0.3788	2
WHEAT - HAY	1	0.0	0.0						

Table XXVI-1. A/R summary statistics for crops with limited representation in the SVWQC region.

Summary statistics are reported across the Coalition rather than each township due to limited representation of these crops. For crops with only one MU, no summary statistics could be calculated.

Crop	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
APPLES	13	0.0	1829.806	0.0	0.0	5.291	12.3457	34.5679	
APRICOTS	3	0.0	32.3149	6.441	16.1026	32.2051	32.26	32.2929	
ASPARAGUS	4	0.0	7.2483	0.4616	1.1539	3.0894	5.2922	6.4659	
BARLEY	19	0.5687	2.5368	0.6005	0.9527	0.9643	1.3041	1.6978	
BROCCOLI/BROCOLINI	1	7.1623	7.1623						
CHERRY	12	0.0	9.8266	0.0	0.4323	2.9942	3.8671	9.2545	
CITRUS	6	1.6455	270.2703	6.4534	11.8076	43.3222	88.8081	182.1408	
CORN - SWEET	14	0.6974	38.2546	1.718	3.0509	3.0509	4.9686	30.4742	
COTTON	9	3.2653	21.4531	3.2653	3.2653	3.2653	4.0382	7.952	
FIGS	3	0.2139	11.9985	1.353	3.0616	5.9094	8.9539	10.7807	
GARLIC	3	0.0	3.0337	0.6067	1.5168	3.0337	3.0337	3.0337	
GRAPE - TABLE	3	1.3766	29.784	7.0581	15.5803	29.784	29.784	29.784	
LETTUCE	3	0.0	7.0413	0.0	0.0	0.0	3.5206	5.633	
MELON - CANTALOUPE	2	0.0	2.4325	0.2432	0.6081	1.2162	1.8244	2.1893	
MELON - HONEYDEW	9	1.8596	1.8596	1.8596	1.8596	1.8596	1.8596	1.8596	
MELON - NR	4	2.443	71.069	2.443	2.443	2.443	19.5995	50.4812	
OATS - GRAIN	13	0.0	3.3599	0.0	0.0	0.3316	0.3486	0.4676	
OATS - HAY	4	0.0	1.4553	0.3072	0.7681	1.1404	1.3064	1.3958	
ONION	4	0.0	9.6084	0.0	0.0	1.7718	5.0599	7.789	
PEAR	59	1.1926	31.0078	1.6157	1.6852	2.736	5.5493	7.2232	
PEPPERS	15	3.1298	13.3434	3.2719	3.4524	5.493	8.0028	8.4412	
POMEGRANATES	1	0.0	0.0						
POTATO	3	2.2489	5.3419	2.2581	2.2719	2.2949	3.8184	4.7325	
PUMPKIN	9	0.4529	39.4835	0.6612	0.7133	0.9929	1.3681	8.9912	
SQUASH	16	0.0	17232.2403	0.0	0.1635	3.1222	10.3819	77.8513	
TOMATO - FRESH	22	0.0	3874.308	7.0851	14.2102	16.8515	16.8515	19.1571	
TRITICALE - GRAIN	6	0.8251	2.7228	0.8251	0.8251	0.8251	0.8251	1.774	

Crop	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
TRITICALE - HAY	2	2.5296	3.1297	2.5896	2.6796	2.8296	2.9797	3.0697	
WATERMELON	12	2.9376	6173.732	4.5124	11.2178	26.6952	216.5747	545.0485	
WHEAT - HAY	1	0.0	0.0						

Table XXVI-1. A-R summary statistics for crops with limited representation in the SVWQC region.

Summary statistics are reported across the Coalition rather than each township due to limited representation of these crops. For crops with only one MU, no summary statistics could be calculated.

Crop	No. MU-parcels	Min	Max	10%	25%	50%	75%	90%	No. Outliers
APPLES	13	-18.36	82.9546	-6.3396	-0.5972	59.48	71.36	77.624	
APRICOTS	3	-1.39	153.3044	29.5455	75.9489	153.2877	153.2961	153.3011	
ASPARAGUS	4	-14.4202	103.4445	-8.6767	-0.0613	38.8413	80.5794	94.2984	
BARLEY	19	-29.6	108.44	-22.752	-3.745	-3.0	27.56	47.928	
BROCCOLI/BROCOLINI	1	227.1403	227.1403						
CHERRY	12	-29.394	104.2314	-16.5308	-10.166	13.678	33.6322	89.5468	
CITRUS	6	6.496	199.26	35.304	75.8529	146.6578	184.3182	192.1354	
CORN - SWEET	14	-17.36	243.49	31.3334	82.348	82.348	227.64	233.7262	
COTTON	9	86.7188	143.008	86.7188	86.7188	86.7188	112.855	138.0116	
FIGS	3	-3.4923	36.6662	-0.2999	4.4888	12.47	24.5681	31.827	
GARLIC	3	-12.08	157.537	21.8434	72.7285	157.537	157.537	157.537	
GRAPE - TABLE	3	7.66	154.628	37.0536	81.144	154.628	154.628	154.628	
LETTUCE	3	-10.9583	107.2475	-10.0817	-8.7667	-6.575	50.3362	84.483	
MELON - CANTALOUPE	2	-1.5584	90.69	7.6664	21.5037	44.5658	67.6279	81.4652	
MELON - HONEYDEW	9	35.5	35.5	35.5	35.5	35.5	35.5	35.5	
MELON - NR	4	44.3	118.3115	44.3	44.3	44.3	62.8029	96.108	
OATS - GRAIN	12	-100.8	66.725	-99.315	-85.95	-80.875	-75.4	-48.256	
OATS - HAY	4	-282.1	18.77	-197.047	-69.4675	6.835	13.8875	16.817	
ONION	4	-17.927	237.42	-17.8679	-17.7792	4.4145	79.2742	174.1617	
PEAR	59	6.46	134.94	16.522	20.33	49.04	115.0385	120.8068	
PEPPERS	15	128.392	263.7899	133.5173	140.2045	196.308	214.3858	256.3299	
POMEGRANATES	1	-18.24	-18.24						
POTATO	3	12.192	78.9946	25.3029	44.9693	77.7466	78.3706	78.745	
PUMPKIN	9	-84.56	99.4166	-50.672	-42.2	-0.544	39.28	51.3073	
SQUASH	16	-76.75	239.31	-51.22	-23.5303	64.2175	136.2446	237.475	
TOMATO - FRESH	22	-4.959	233.7535	35.6829	143.8442	169.8618	233.7535	233.7535	
TRITICALE - GRAIN	6	-21.2	104.4	-21.2	-21.2	-21.2	-21.2	41.6	
TRITICALE - HAY	2	44.231	54.4218	45.2501	46.7787	49.3264	51.8741	53.4027	
WATERMELON	12	34.9943	188.7573	63.7787	82.27	115.0912	138.1268	188.7573	
WHEAT - HAY	1	-31.5	-31.5						

APPENDIX B

FERTILIZER RECOMMENDATIONS

Recommended nitrogen application values (lbs/acre).

Crop	Min	Max	Notes	Source
Hay, Alfalfa (established)	0	0	In general, N applications after stand establishment are only effective when nodulation and N fixation are restricted.	CDFA
Hay, Alfalfa (planting)	20	40	A starter application may be beneficial when the residual nitrate concentration is below 3-4 ppm NO ₃ -N. Larger amounts of N may inhibit symbiotic N fixation.	CDFA
Almonds - Year 1	6.25	18.75	Suggested rates for drip-irrigated trees on non-fertile soils. Values converted from ounces/tree to lbs/acre assuming 100 trees/acre	CDFA
Almonds - Year 2	12.5	37.5		
Almonds - Year 3	25	75		
Almonds - Year 4	37.5	100		
Almonds - Year 5	100	200		
Almonds - Year > 4	95	380	Fertilization rate dependent on desired yield. Minimum value for 1000 lbs/acre yield; max for 4000 lbs/acre yield. Fertigation via low volume irrigation.	
Apples - Years 1 - 3	20	60	Values are from cost study, not recommendations, but rates considered typical. Assumes 14-30 tons/acre granny smith variety. Density of 340 trees/acre and fertigation via micro-sprinkler.	UC Davis
Apples - Year 4+	80	80		
Asparagus (planting)	16.8	16.8	Values are from cost study, not recommendations, but rates considered	UC Davis
Asparagus (established)	90	90		

Recommended nitrogen application values (lbs/acre).

Crop	Min	Max	Notes	Source
Beans, Blackeye	0	0	Blackeye beans fix all N from atmosphere, but a small amount of starter N can sometimes increase yield	CDFA
Beans, Common	65	125	Estimated N applications for dry bean crops with a yield goal of 2500 lbs/acre	
Beans, Garbanzo	35	110		
Beans, Lima	55	125		
Corn	150	270	Rates dependent on yield goal and pre-sidedress nitrate test (PSNT). Values are from other states and have not been tested in California. These values are for a PSNT < 10 ppm and yields of 150 bu/ac - grain (25 tons/ac - silage) to 225 bu/ac - grain (38 tons/ac)	CDFA
Cucumber	80	150	Values dependent on soil type and nutrient carryover. Slicing cucumbers may require 300 lbs/ac N or more.	UCANR
Garlic		256	Values are from cost study, not recommendations, but rates considered typical.	UC Davis
Grapes - Raisin	0	60	Values dependent on irrigation type, vine vigor, and soil type. Lower values recommended for drip irrigation compared to furrow and for vigorous vines. Higher values for weak vigor and sandy soils.	CDFA
Grapes - Wine	0	40	Same considerations as above. Wine grape yield is lower compared to raisins, requiring less N.	

Recommended nitrogen application values (lbs/acre).

Crop	Min	Max	Notes	Source
Kiwi		150	For fullbearing vines, use 1 lb of N per plant. Younger plants (yrs 1 - 4) should receive less.	UC Davis
Melon - Cantaloupe/Honeydew	50	250	Values vary based on yield goal. Numbers are for cantaloupe; honeydew likely requires less N/acre.	CDFA
Melon - Watermelon		160	Values vary based on yield goal.	UCANR
Milo/Sorghum		140	Values are from cost study, not recommendations, but rates considered typical.	UC Davis
Oat Hay	50	75	Values are from cost study, not recommendations, but rates considered typical.	UC Davis
Olive	40	100	Varies based on fruit load, variety, orchard spacing, and pruning. Values are for California oil variety in irrigated, super-high density system. Application rates should be adjusted for N residue in prunings and alternate bearing years.	CDFA
Pasture	32	42	Values are from cost study, not recommendations, but rates considered typical.	UC Davis
Peach	63	155	Minimum value for 6 ton/ac yield, max for 30 ton/ac yield. Assumes prunings are not removed from the orchard. For young trees, recommended rates are lower	CDFA

Recommended nitrogen application values (lbs/acre).

Crop	Min	Max	Notes	Source
Pear - Years 1 -6	35	75	Values are from cost study, not recommendations, but rates considered typical. Varies based on tree nitrogen status	UC Davis
Pear - Year 7+	120	150		
Pecan - Years 1 -6	6	100	Values are from cost study, not recommendations, but rates considered	UC Davis
Pecan - Years 7+		200		
Peppers - Fresh		275	Values are from cost study, not recommendations, but rates considered typical.	UC Davis
Peppers - Processing		200	Values are from cost study, not recommendations, but rates considered typical.	UC Davis
Persimmon - Year 1	10	21	Varies based on tree age and variety. 2oz N per year of tree age per tree. Values converted from oz/tree to lbs/acre assuming 170 trees/acre for Fuyu and 75 trees/acre for Hachiya.	UCANR
Persimmon - Year 10	94	212		
Pistachio - 1st Leaf	0	150	Based on optimal leaf N concentration for rapidly growing immature trees and a density of 120 tree/acre.	CDFA
Pistachio - 2nd Leaf	18	24		
Pistachio - 3rd Leaf	30	42		
Pistachio - 4th Leaf	60	72		
Pistachio - 5th Leaf	100	120		
Pistachio - 6th Leaf	120	130		
Pistachio - 7th Leaf	135	150		
Pistachio - Year > 9 (Drip)	40	240	Values vary based on yield goal. Minimum value is for 1000 lbs/ac yield, max for 6000 lb/ac yield	
Pistachio - Year >10 (Furrow)	56	336		
Plum/Pluot	100	150		CDFA

Recommended nitrogen application values (lbs/acre).

Crop	Min	Max	Notes	Source
Prunes - Year 1	5	10	Assumes density of 183 trees/acre	CDFA
Prunes - Year 2		25		
Prunes - Year 3		30		
Prunes - Year 4		40		
Prunes - Year 5		75		
Prunes - Year >5	65	150	Varies based on yield. Assumes N application through drip or microsprinklers and an N use efficiency of 70%	
Ryegrass		200	Values are from cost study, not recommendations, but rates considered typical.	UC Davis
Safflower	40	180	Varies based on yield goal. Minimum is for 1000 lb/ac yield, max is for 3000 lb/ac yield	CDFA
Squash	80	150	Values are for summer squash	UC Davis
Strawberries		158	Value is for second year of production from cost study, not recommendations, but rates considered typical.	UC Davis
Sudan Grass		140	Values are from cost study, not recommendations, but rates considered typical.	UC Davis
Sunflower	45	175	Varies based on yield goal. Minimum is for 1000 lb/ac yield, max is for 2500 lb/ac yield	CDFA

Recommended nitrogen application values (lbs/acre).

Crop	Min	Max	Notes	Source
Tomato - Fresh	100	180	Typical grower rates for bush-grown are 125-250 lbs N/ac and for pole-grown 150-350 lbs N/ac. Values shown are UC recommended rates.	UCANR
Tomato - Processing	150	175	For drip-irrigated tomatoes	CDFA
Tomato - Processing	100	150	For furrow irrigated tomatoes	
Walnuts - Year 1	10	20	Lower rate is for N applied through drip or microsprinkler on fertile soils. Assumes density of 65 trees/ac	CDFA
Walnuts - Year 2	25	50		
Walnuts - Year 3	50	100		
Walnuts - Year 4	63	125		
Walnuts - Year 5	75	150		
Walnuts - Year >5 (Fertigation)	68	169	Varies based on yield goal. Minimum is for 1 ton/ac yield, max is for 2.5 tons/ac yield.	
Walnuts - Year >5 (Split broadcast)	86	214		
Wheat	150	200	Values are from study producing 4-4.6 tons/ac. Does not include residual soil N (30-80 lbs/acre)	CDFA
Durum Wheat		240	Split into preplant, tillering, and boot stage applications	

APPENDIX C

EXAMPLE MEMBER NMP SUMMARY REPORT

**Sacramento Valley Water Quality Coalition
2016 Nitrogen Management Plan Summary Report Results**

Member ID: XXXXX

Grower Name: XXXXX

Crop – ALFALFA

These results represent information you provided on your 2016 Nitrogen Management Plan Summary Report comparing your Nitrogen *Applied* divided by your *Yield* (A/Y) to other fields of the same crop in your Township(s).

For more detailed information, please refer to the cover letter included with your 2016 Nitrogen Management Plan Summary Results.

The table below includes:

Columns 1 & 2: Your Applied pounds of Nitrogen per acre compared to the average pounds of Nitrogen Applied per acre within your parcel's Township.

Columns 3 & 4: Your A/Y per acre compared to the average A/Y per acre within your parcel's Township.

Columns 5 & 6: Your Nitrogen *Applied* divided by the Nitrogen *Removed* (A/R)⁴ per acre compared to the average A/R per acre within your parcel's Township

Member ID	Member APN	Member # of Irr. Acres	(1) Member lbs. of N Applied per Acre	(2) Township Average lbs. of N Applied per Acre	(3) Member A/Y per Acre	(4) Township Average ¹ A/Y per Acre	(5) Member A/R per Acre ⁵	(6) Township Average A/R per Acre	Township	# of Parcels in Township ²
XXXX	XXXXXXXXXX	100	56	###	.0075	###	0.1621	###	10N04E	5
XXXX	XXXXXXXXXX	50	145	###	.0052	###	1.1653	###	08N06E	30

A/Y and A/R Status Color Key

Outlier³ (>90% of parcels)
 High (>75% of parcels)
 Average (<75% of parcels)
 Not Enough Data

The A/Y and A/R status color shows how your parcels compare to others of the same crop in the same Township. If your A/Y or A/R values are greater than 90% of all parcels in the Township, that is considered to be an “outlier” value. A value is considered “high” if it is greater than 75% of all parcels in the Township and “average” if the value is less than 75% of all parcels in the Township. In some cases, there were not enough data points in the Township to calculate outliers.

If one of your management units (MUs) included parcels in more than one Township, the A/Y and A/R status for that MU could be different for each Township.

Notes:

1. Average is calculated using median value
2. A Township is typically six by six square miles, 36 Sections, or 23,040 acres. Parcels can be counted more than once in a Township if there are multiple fields of the same crop associated with that parcel.
3. Outliers have an Applied Nitrogen over Yield value that is greater than 90% of other high vulnerability parcels of the same crop in that Township.
4. A/R Value: The purpose of this value is to estimate the amount of residual Nitrogen available to leach to groundwater. The A/R value (total Applied N divided by N Removed), was calculated using published N removal values from: *Nitrogen concentrations in harvested plant parts - A literature overview* (Geisseler, 2016) (https://apps1.cdfa.ca.gov/FertilizerResearch/docs/Geisseler_Report_2016_12_02.pdf). This publication documents the best available information, but values are expected to be updated and modified as new information becomes available. For many crops, the publication indicates only few if any values could be found, while for others extensive datasets were available.

APPENDIX D
GIS DELIVERABLE

(ESRI shapefile provided electronically)