

**ANALYSIS OF AVAILABLE IRRIGATED LANDS
REGULATORY PROGRAM (ILRP) NITROGEN DATA**



November 8, 2024

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1. Background

1.1 Irrigated Lands Regulatory Program

Agriculture in the state of California is extremely diverse, with more than 400 different commodities grown state-wide. Discharges from agricultural operations include runoff, flows from irrigation tail waters, tile drains, storm water runoff, and percolation to groundwater. These discharges can affect water quality by transporting pollutants such as pesticides, sediment, nutrient, salts, pathogens, and heavy metals from cultivated fields into surface and groundwaters. Many of California's surface water bodies are impaired due to agricultural pollutants. Groundwater impacted by agricultural discharges has elevated concentrations of pesticides, nitrate, and salts.

Water quality impacts associated with agriculture are complex and addressing them requires pooling and focusing the knowledge, expertise, and resources of all concerned parties, including growers and their representatives, regulatory agencies, and the environmental justice communities. The State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards (Regional Water Boards) must develop and implement a long-term sustainable program that protects the quality of waters of the state while supporting the viability of agriculture.

The Irrigated Lands Regulatory Program (ILRP) was established to assess threats to water quality resulting from agricultural practices and to help prevent agricultural discharges from further impairing waters. The program regulates agricultural irrigated lands throughout the state by issuing waste discharge requirements (WDRs) or conditional waivers of WDRs to growers.

The ILRP began implementation in 2003 to address agricultural runoff discharging to surface and groundwater. The program requires the development of WDRs or conditional waivers of WDRs, outreach for enrollment, reporting, and regular inspections. As of 2024, all but one region has adopted regional WDRs for irrigated agriculture.

1.2 Order No. WQ 2018-0002 (Eastern San Joaquin Water Quality Order)

In 2018, the State Water Board adopted [Order WQ 2018-0002](#), In the Matter of Review of Waste Discharge Requirements General Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Third-Party Group (Eastern San Joaquin Water Quality Order). Prior to the development of the Eastern San Joaquin Water Quality Order, the State Water Board convened an [agricultural expert panel](#) (2014 Agricultural Expert Panel) to assess existing agricultural nitrate control programs and develop recommendations to ensure that ongoing efforts are protective of groundwater quality. Based on the recommendations from the 2014 Agricultural Expert Panel, the State Board established new statewide precedential requirements for the ILRP in its Eastern San Joaquin Water Quality Order.

Among the precedential requirements was the requirement for growers to report nitrogen applied (A) and nitrogen removed (R) values to their representative third-party group to identify outliers based on similar crops and similar growing practices. At the time, the 2014 Agricultural Expert Panel determined there was insufficient data to set regulatory limits and suggested the use of A/R to determine which growers should

receive additional education requirements. The Eastern San Joaquin Water Quality Order goes a step above the recommendations from the expert panel and requires the reporting of A-R as a method to calculate the potential nitrogen discharge to groundwater. In accordance with the Eastern San Joaquin Water Quality Order's directions, growers submit A and R data via the Irrigation and Nitrogen Management Plan (INMP) Summary Report and the approved third parties anonymize the data before submitting to the Regional Water Board.

1.3 Order No. R3-2021-0040 (2021 Central Coast Ag WDRs)

In 2021, the Central Coast Regional Water Board adopted [Order R3-2021-0040](#), General Waste Discharge Requirements for Discharges from Irrigated Lands (2021 Central Coast Ag WDRs). The Central Coast Ag WDRs goes beyond the requirements set forth in the Eastern San Joaquin Water Quality Order, setting enforceable nitrogen discharge and fertilizer application limits, discounts to A, and additions to R.

The 2021 Central Coast Ag WDRs imposes limits on fertilizer nitrogen (AFER) application. Limits were developed using data collected via their Total Nitrogen Applied (TNA) Form from 2014 to 2019. Growers are required to be within the 90th percentile of past AFER values by 2023 and then within the 85th percentile by 2025.

Additionally, the Central Coast Regional Water Board created three compliance pathways for nitrogen discharge targets and limits in the 2021 Central Coast Ag WDRs. Two of the compliance pathways are versions of A-R, while the third pathway is an A and R comparison using A=R. To incentivize best management practices, the pathways include discounts for compost and organic fertilizer. Each compliance pathway allows growers to multiply a discount factor used to represent the amount of nitrogen mineralized after application to their reported applied nitrogen in both compost and organic fertilizer.

1.4 Order No. WQ 2023-0081 (Central Coast Ag Water Quality Order)

Following petitions filed in relation to the 2021 Central Coast Ag WDRs, the State Water Board adopted [Order WQ 2023-0081](#), In the Matter of Review of General Waste Discharge Requirements for Discharges from Irrigated Lands Order No. R3-2021-0040 (Central Coast Ag Water Quality Order). The State Water Board remanded a number of provisions to the Central Coast Regional Water Board to bring them into compliance with the statewide precedential requirements of the Eastern San Joaquin Water Quality Order, including the 2021 Central Coast Ag WDR's enforceable nitrogen discharge and fertilizer application limits, discounts to A, and additions to R.

In the Central Coast Ag Water Quality Order, the State Water Board directed staff to evaluate the A and R data collected in the program thus far and determine if there was sufficient information to move forward with convening a second expert panel. This staff report includes a discussion of the analysis conducted of available data and includes recommendations for next steps.

2. Irrigation and Nitrogen Management Plan (INMP) Data

2.1 Overview of INMP Data

Growers are required to self-report various data to their third-party group or to their Regional Water Board using an INMP Summary Report on an annual basis. That data includes A and projected yield (Y) for each crop type grown. At a minimum, growers must include fertilizers, organic amendments (e.g. compost and manure), and irrigation water as components of A.

In most regions, third-party groups compile the growers' INMP Summary Report data and submit the information to the Regional Water Boards using anonymous identifiers for the growers' names ("Member ID") and farm locations in an INMP data report. Using the data collected from growers, each third-party group completes a series of calculations before submitting their data report to the Regional Water Board.

One of the required calculations is to determine R. To calculate R, an established crop coefficient must be multiplied by reported Y; however, not every crop currently has an established crop coefficient.

Following the calculation of R, outliers are calculated based on 3-year averages of A/R (A/R3-year). Three-year averages are used to reduce annual variability. Each third-party group has the discretion to determine what approach is used to identify A/R3-year values as outliers. All third-party groups have decided to use an interquartile range (IQR) approach for outlier identification.

While there are requirements for data to be submitted to the Regional Water Boards, there are no standard templates used statewide. Each third-party group, typically using contracted consultants, submit their report and accompanying excel spreadsheet with unique formats. Some third-party groups include additional information in their reports beyond what is required, while others submit only what is mandatory.

2.2 Analysis of INMP Data

Following adoption of the Central Coast Ag Water Quality Order, staff conducted an analysis of available INMP data to identify any potential trends in outliers as a measure of program effectiveness. At the time of review, only the Central Valley Region had INMP data available for analysis. Staff reviewed 39 reports submitted by 13 third-party groups within the Central Valley for crop years 2020-2022 because these were the data reports that identified outliers based on the prior three-year averages of A/R values. Each third-party group submitted a supplemental excel datasheet that was used to analyze trends in A/R3-year outliers.

Data within the spreadsheets were aggregated and used to construct bar graphs (see Figures 1-12). The Tule Basin Water Quality Coalition did not include outlier data within their excel spreadsheets and were therefore not included in the analysis. The graphs were constructed to compare similar commodities within a third-party growing area. Due to potential variability in regional growing practices, conditions, and metrics used to determine outlier status, a separate graph was made for each third-party group. The number of A/R3-year outliers by anonymous Member ID was plotted against commodity types for each reporting period. Commodities that did not have identified outliers were not included in the graphs.

Because enrollment in the Central Valley Region's ILRP is not static, and because some of the A and R reporting requirements were still being phased in through 2021, looking only at the number of outliers as a measure of program performance is not sufficient. To supplement the charts presenting the number of outliers, the percentage of outliers compared to the total number of reported A/R3-year values is also presented. The evaluation of percentage of outliers normalizes the outliers within each commodity. Looking at the total number of outliers in concert with the percentage of outliers helps gain a perspective on overall program performance. For example, some commodities may appear to show an increase in the overall number of outliers, but the percentage of outliers may decrease relative to the overall number of growers due to an increase in number of growers reporting A/R3-year values. The number of outliers, growers reporting A/R3-year values, and percentages are included in Tables 1-12 as an appendix to this report.

Figure 1a: Outliers by Member ID for East San Joaquin Water Quality Coalition

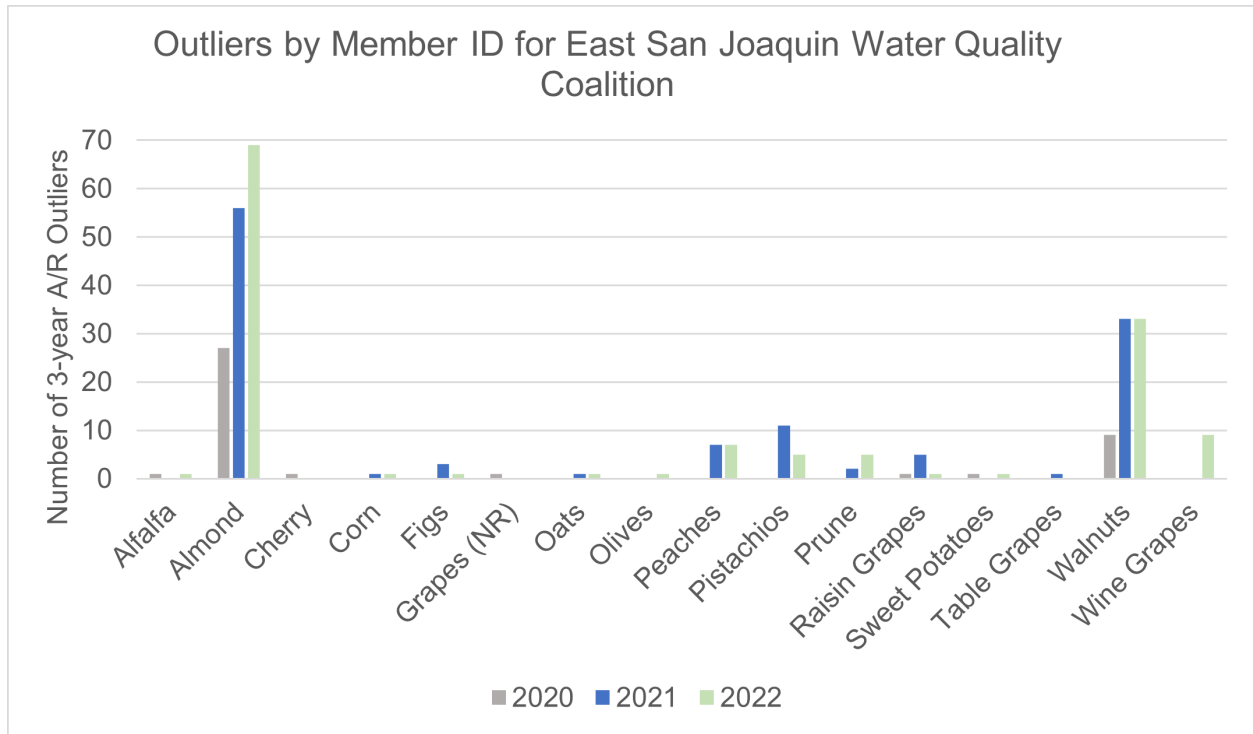


Figure 1b: Percent Outliers by Member ID for East San Joaquin Water Quality Coalition

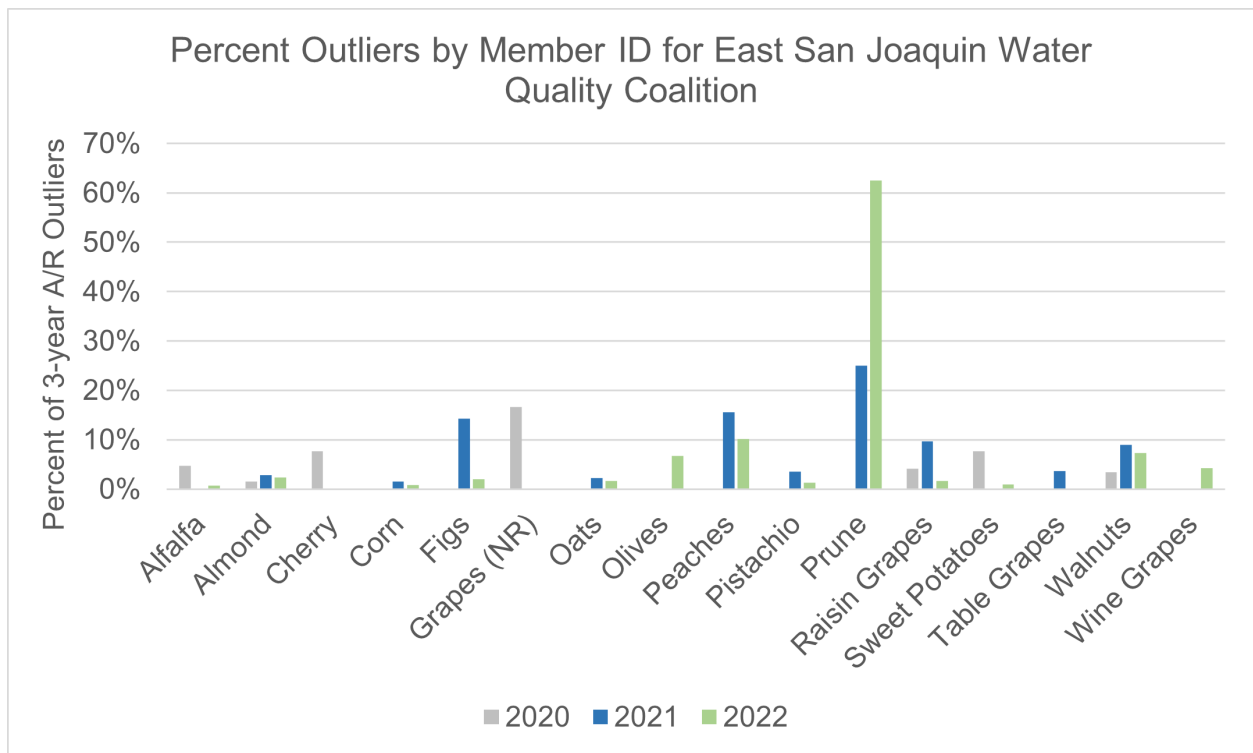


Figure 1a: Total number of outliers based on A/R3-year data submitted by the East San Joaquin Water Quality Coalition (ESJ Coalition). The ESJ Coalition identified outliers for 16 commodities during the 2020-2022 reporting periods. There were 41 total outliers identified in 2020, 120 identified in 2021, and 135 identified in 2022. Commodities showing no value for a reporting year had no outliers identified.

Figure 1b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the ESJ Coalition. The ESJ Coalition identified outliers for 16 commodities over the 2020-2022 reporting periods. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2022 percentage for prunes is 63% and may represent an error in the corresponding INMP data report.

Figure 2a: Outliers by Member ID for Cawelo Water District Coalition

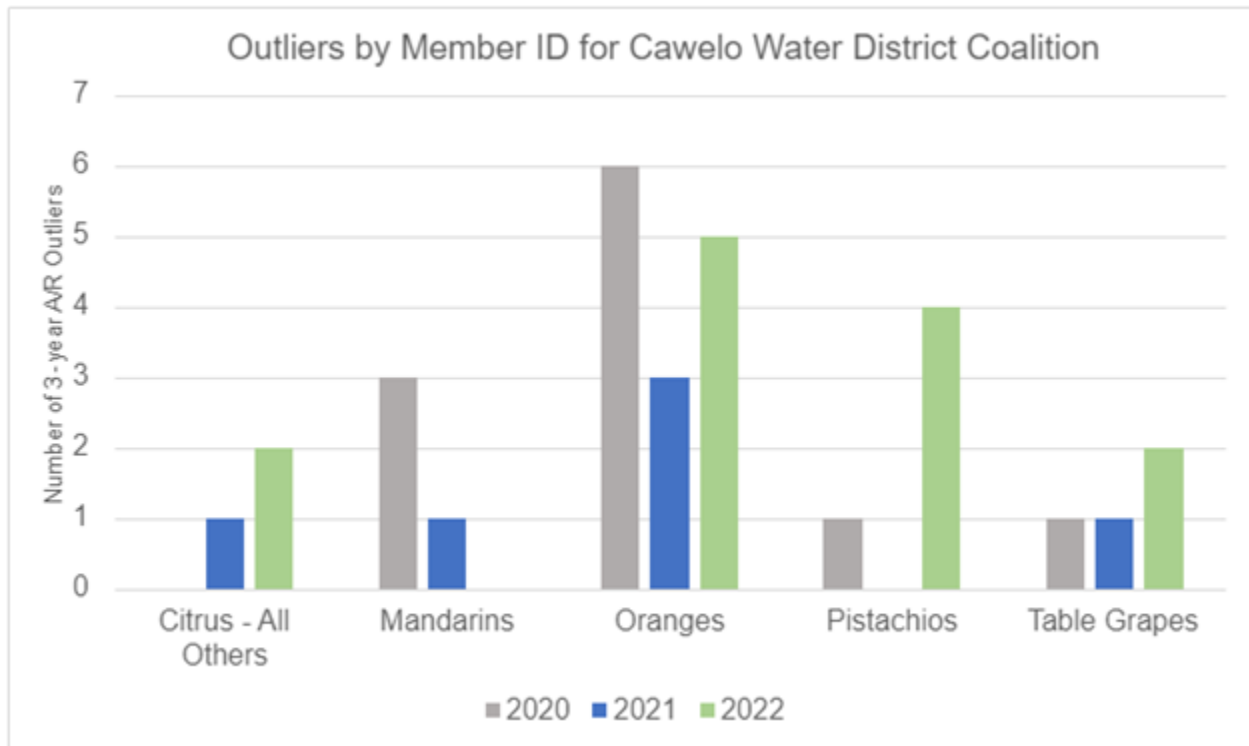


Figure 2b: Percent Outliers by Member ID for Cawelo District Coalition

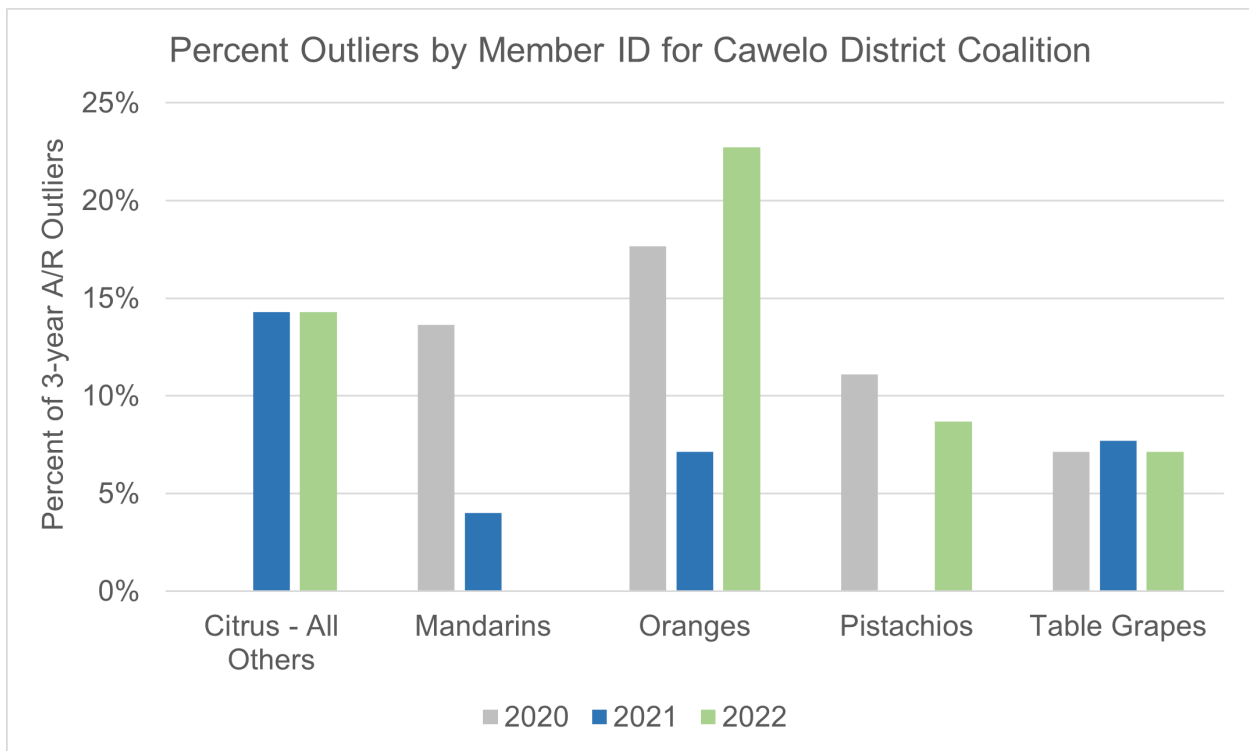


Figure 2a: Total number of outliers based on A/R3-year data submitted by the Cawelo Water District Coalition (Cawelo Coalition). The Cawelo Coalition identified outliers for 5 commodities during the 2020-2022 reporting periods. There were 11 total outliers identified in 2020, 6 identified in 2021, and 13 identified in 2022. Commodities showing no value for a reporting year had no outliers identified.

Figure 2b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Cawelo Coalition. The Cawelo Coalition identified outliers for 5 commodities over the 2020-2022 reporting periods. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The Cawelo Coalition's 2022 INMP data report did not have any reported A/R3-year values for mandarins. This is potentially due to a change in naming convention for this commodity from "Mandarins" to "Mandarins, Tangerines, Clementines, Tangelos, Tangor" with additional crops grouped into to the category.

Figure 3a: Outliers by Member ID for Kern River Watershed Coalition Authority

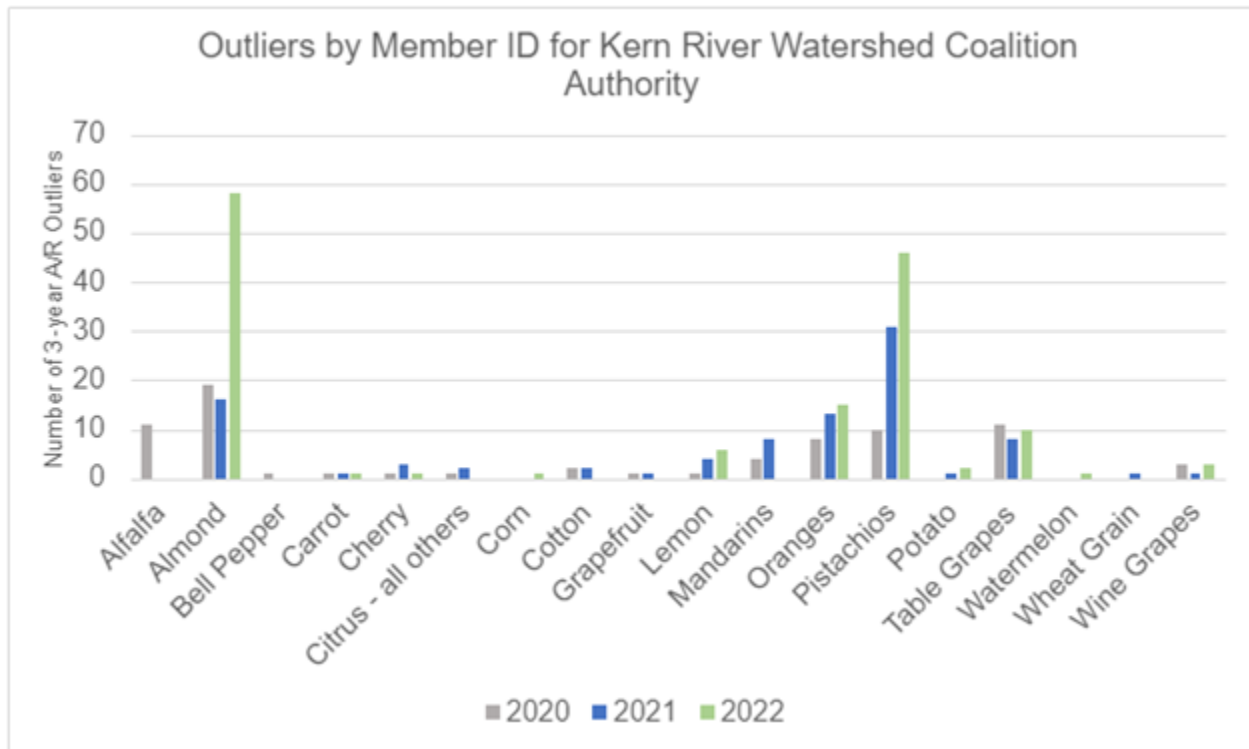


Figure 3b: Percent Outliers by Member ID for Kern River Watershed Coalition Authority

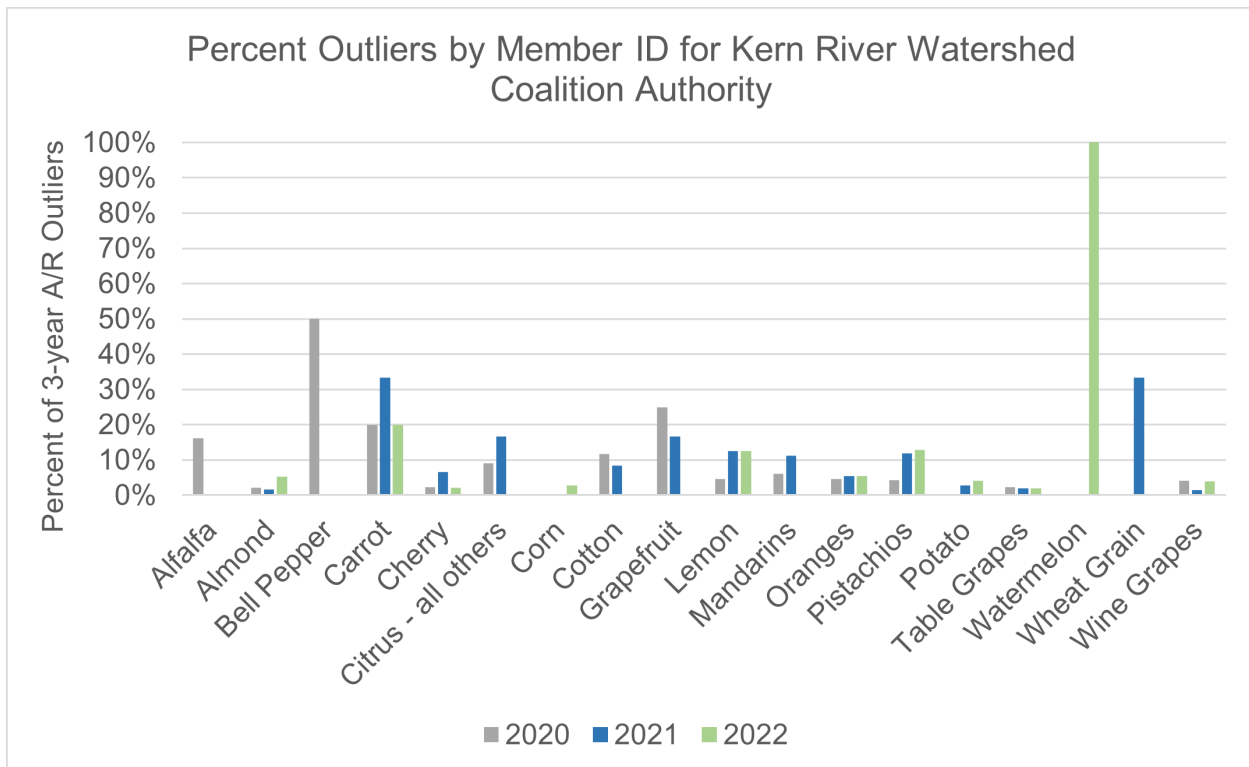


Figure 3a: Total number of outliers based on A/R3-year data submitted by the Kern River Watershed Coalition Authority (Kern River Coalition). The Kern River Coalition identified outliers for 18 commodities during the 2020-2022 reporting periods. There were 74 total outliers identified in 2020, 92 identified in 2021, and 144 identified in 2022. Commodities showing no value for a reporting year had no outliers identified.

Figure 3b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Kern River Coalition. The Kern River Coalition identified outliers for 18 commodities over the 2020-2022 reporting periods. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2020 percentage for bell pepper as 50% and the 2022 percentage for watermelon as 100% may represent an error in the corresponding INMP data report. The Kern River Coalition's 2022 INMP data report did not have any reported A/R3-year values for grapefruit or mandarins. This is potentially due to a change in naming convention for both commodities. In the 2022 report, "Grapefruit" was reported as "Grapefruit/Pomelo" and "Mandarins" was reported as "Mandarins, Tangerines, Clementines, Tangelos, Tangor." Grouping these crops together may explain why no A/R3-year values were reported for these commodities in 2022.

Figure 4a: Outliers by Member ID for Grassland Drainage Area Coalition

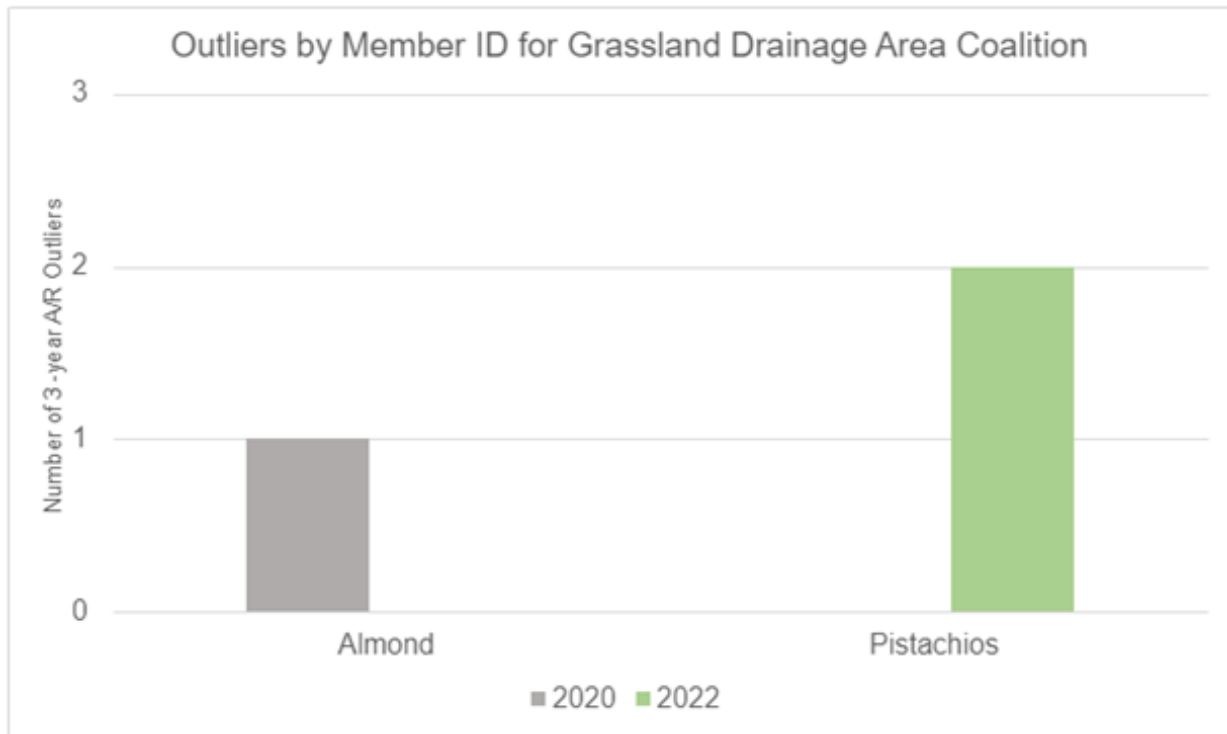


Figure 4b: Percent Outliers by Member ID for Grassland Drainage Area Coalition

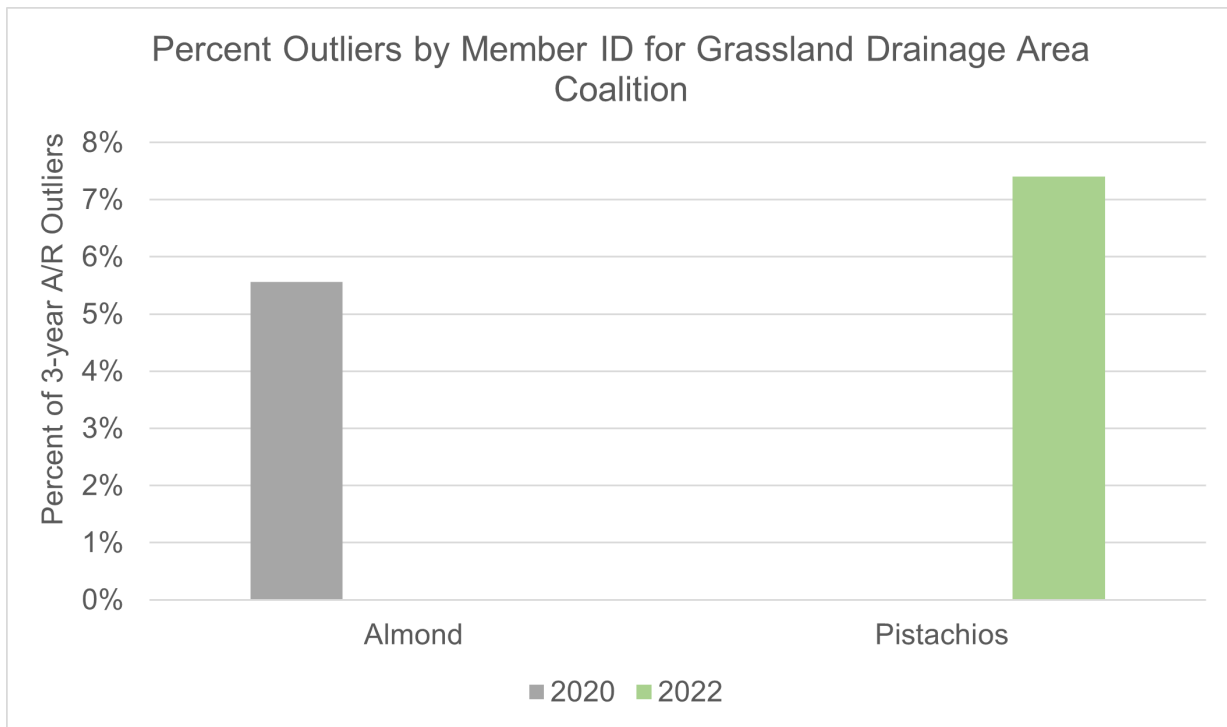


Figure 4a: Total number of outliers based on A/R3-year data submitted by the Grassland Drainage Area Coalition (Grassland Coalition). The Grassland Coalition identified outliers for 2 commodities during the 2020-2022 reporting periods. There was 1 outlier identified in 2020, 0 identified in 2021, and 2 identified in 2022. Commodities showing no value for a reporting year had no outliers identified. The 2021 reporting period was excluded from the graph as there were no outliers identified in the INMP data report.

Figure 4b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Grassland Coalition. The Grassland Coalition identified outliers for 2 commodities over the 2020-2022 reporting periods. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2021 reporting period was excluded from the graph as there were no outliers identified in the INMP data report.

Figure 5a: Outliers by Member ID for Kaweah Basin Water Quality Association

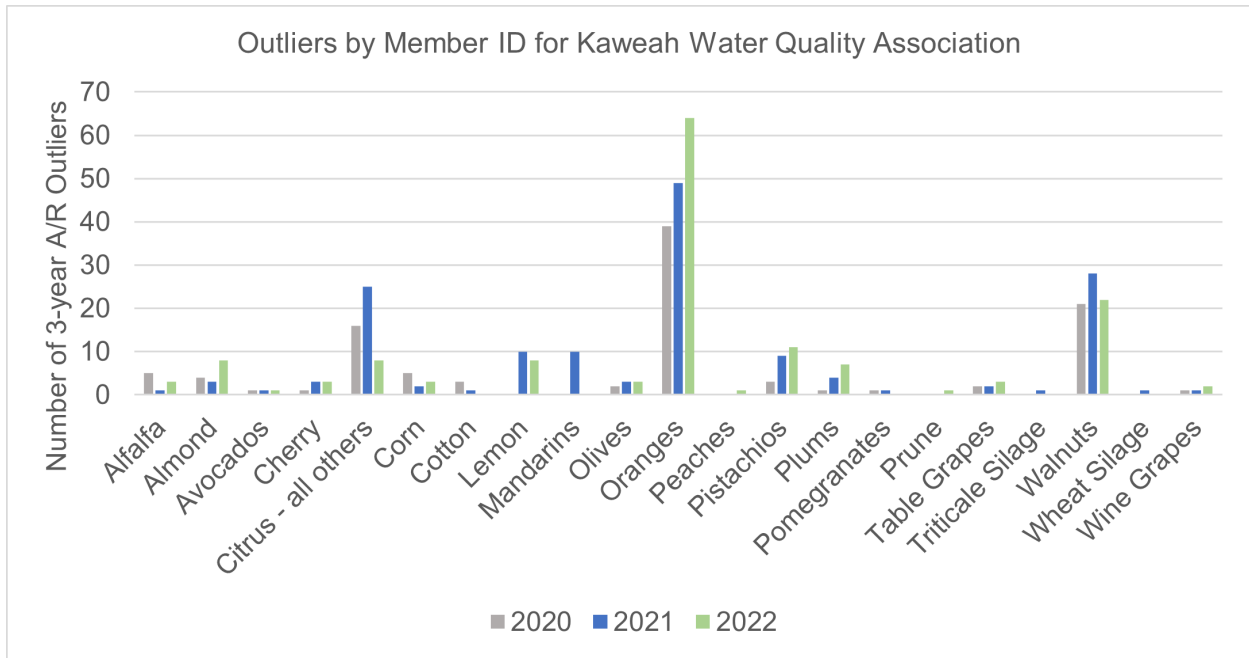


Figure 5b: Percent Outliers by Member ID for Kaweah Basin Water Quality Association

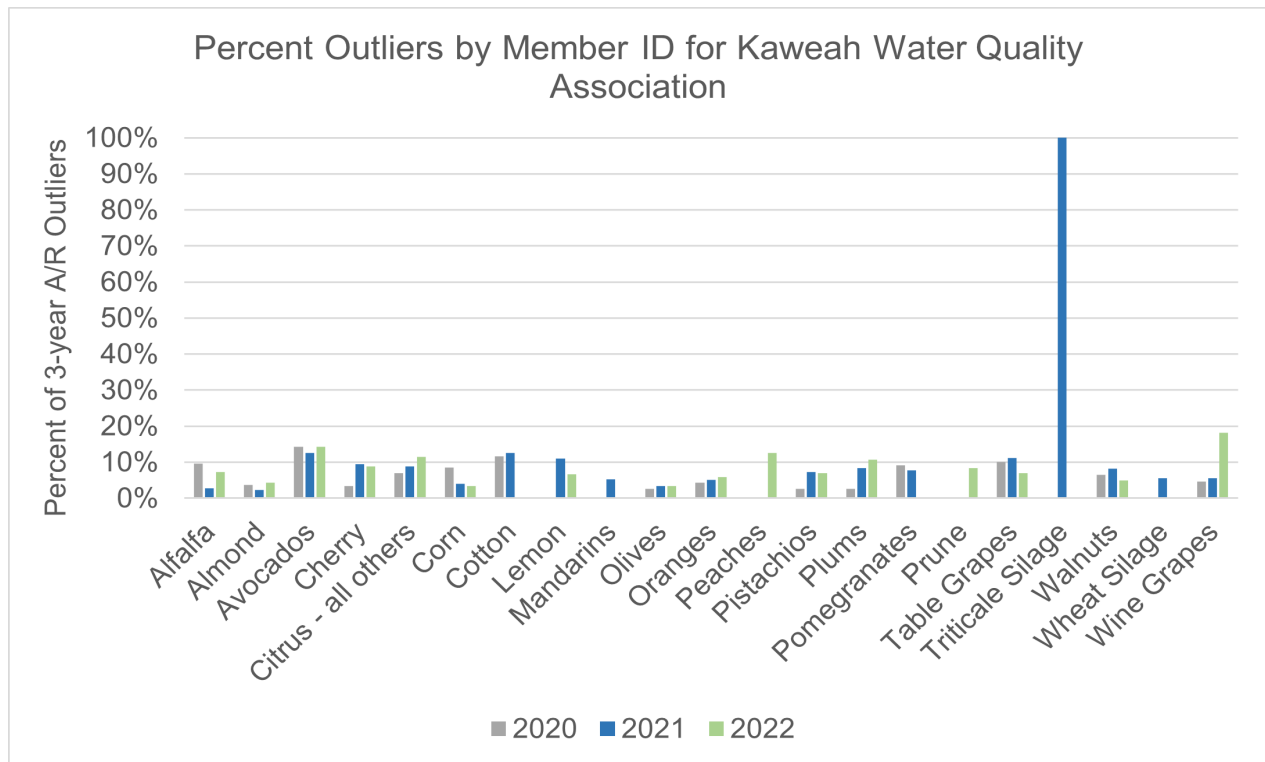


Figure 5a: Total number of outliers based on A/R3-year data submitted by the Kaweah Basin Water Quality Association (Kaweah Basin Coalition). The Kaweah Basin Coalition identified outliers for 21 commodities during the 2020-2022 reporting periods. There were 105 total outliers identified in 2020, 155 identified in 2021, and 145 identified in 2022. Commodities showing no value for a reporting year had no outliers identified.

Figure 5b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Kaweah Coalition. The Kaweah Coalition identified outliers for 21 commodities over the 2020-2022 reporting periods. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2021 percentage for triticale silage was 100% and may represent an error in the corresponding INMP data report. The Kaweah Coalition's 2020 INMP data report did not have any reported A/R3-year values for peaches, likely due to a lack of previous year A/R data. In the 2022 INMP data report, there were no A/R3-year values reported for mandarins. The lack of A/R3-year for mandarins in 2022 is potentially due to a change in naming convention for the commodity. In the previous reports, "Mandarins" was reported as "Mandarins, Tangerines, Clementines, Tangelos, Tangor." Grouping these crops together may explain why no A/R3-year values were reported. Additionally, the 2020 INMP data report did not have any reported data for lemon or mandarins.

Figure 6a: Outliers by Member ID for Sacramento Valley Water Quality Coalition

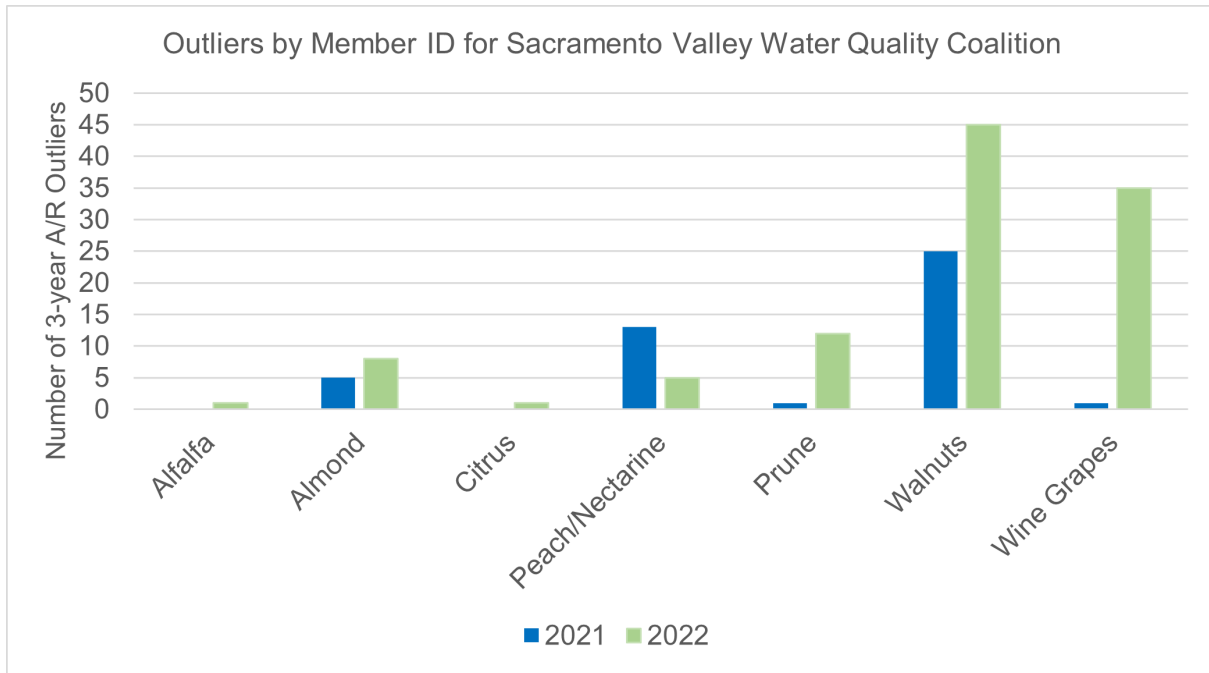


Figure 6b: Percent Outliers by Member ID for Sacramento Valley Water Quality Coalition

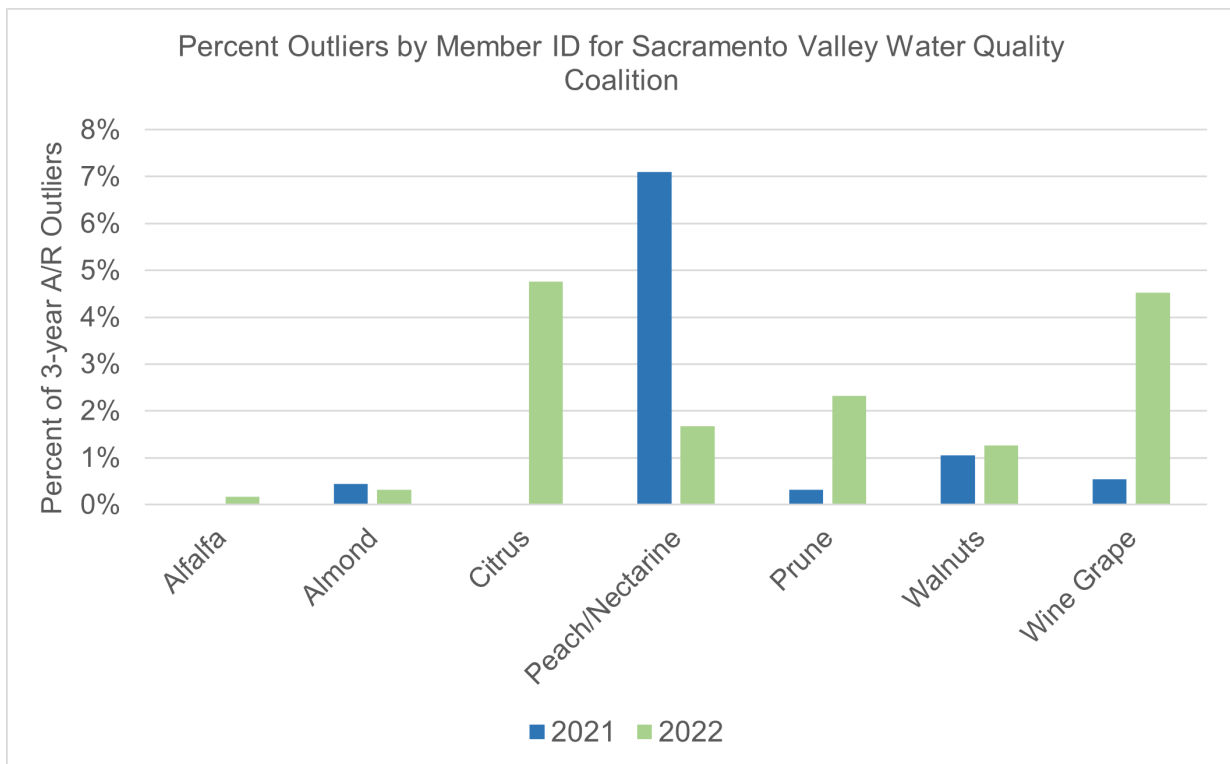


Figure 6a: Total number of outliers based on A/R3-year data submitted by the Sacramento Valley Water Quality Coalition (Sacramento Valley Coalition). The Sacramento Valley Coalition identified outliers for 7 commodities during the 2021 and 2022 reporting periods. There were 45 total outliers identified in 2021 and 107 identified in 2022. While they did not report any 3-year A/R outliers in 2020, the Sacramento Valley Coalition did report 1,154 single-year A/R outliers in their INMP data report. Due to year-year variability, single-year A/R outliers were not included in this analysis. Commodities showing no value for a reporting year had no outliers identified. The 2020 reporting period was excluded from the graph as there were no outliers identified in the INMP data report.

Figure 6b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Sacramento Valley Coalition. The Sacramento Valley Coalition identified outliers for 7 commodities during the 2021 and 2022 reporting periods. No A/R3-year values were reported in the 2020 INMP data report. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2020 reporting period was excluded from the graph as there were no outliers identified in the INMP data report.

Figure 7a: Outliers by Member ID for San Joaquin County and Delta Water Quality Coalition

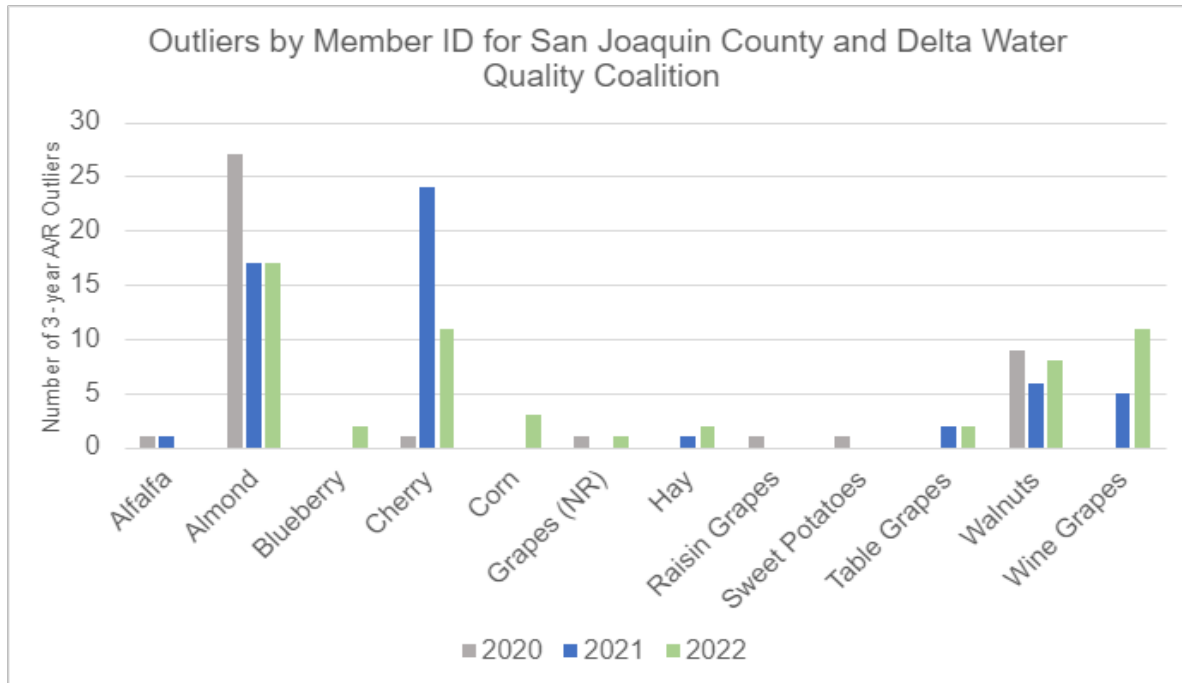


Figure 7b: Percent Outliers by Member ID for San Joaquin County and Delta Water Quality Coalition

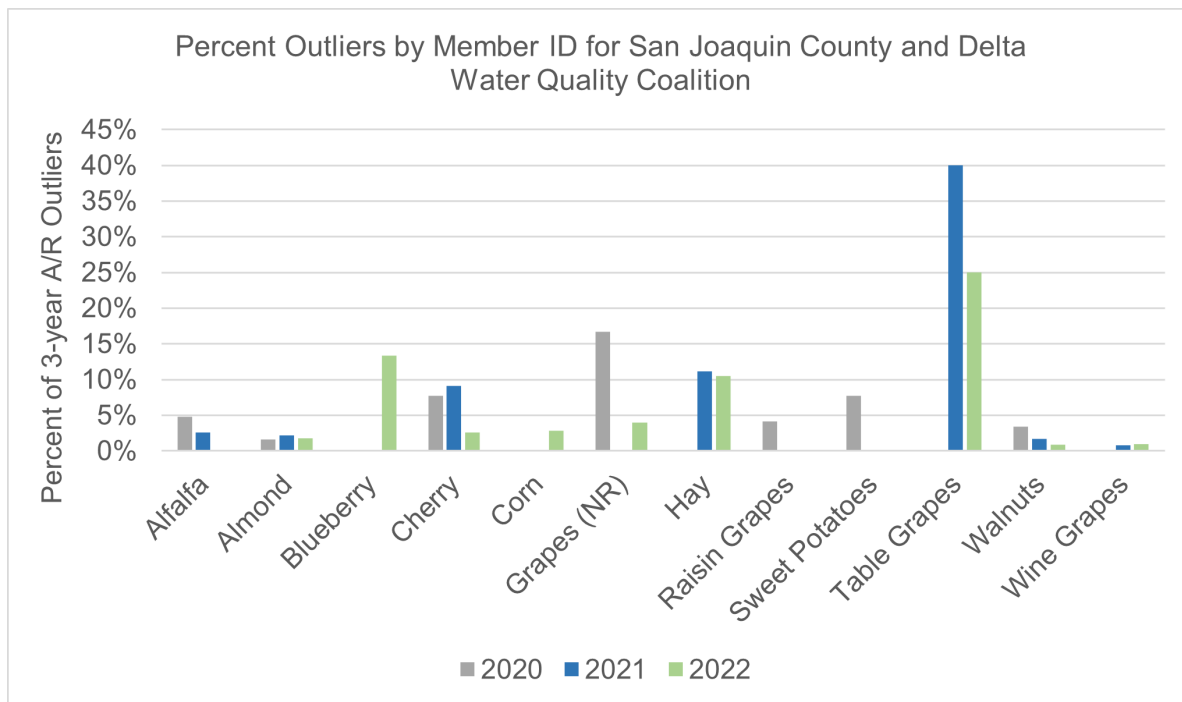


Figure 7a: Total number of outliers based on A/R3-year data submitted by the San Joaquin County and Delta Water Quality Coalition (San Joaquin Co. and Delta Coalition). The San Joaquin Co. and Delta Coalition identified outliers for 12 commodities during the 2020-2022 reporting periods. There were 41 total outliers identified in 2020, 56 identified in 2021, and 57 identified in 2022. Commodities showing no value for a reporting year had no outliers identified.

Figure 7b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the San Joaquin Co. and Delta Coalition. The San Joaquin Co. and Delta Coalition identified outliers for 12 commodities over the 2020-2022 reporting periods. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2021 percentage for table grapes was 40% and may represent an error in the corresponding INMP data report. The San Joaquin Co. and Delta Coalition's 2020 INMP data report did not have any reported A/R3-year values for wine grapes and the 2021 report did not have any reported A/R3-year values for blueberry, likely due to a lack of previous year A/R data. Additionally, the 2021 and 2022 INMP data reports did not have any reported data for raisin grapes or sweet potatoes.

Figure 8a: Outliers by Member ID for Westlands Water Quality Coalition

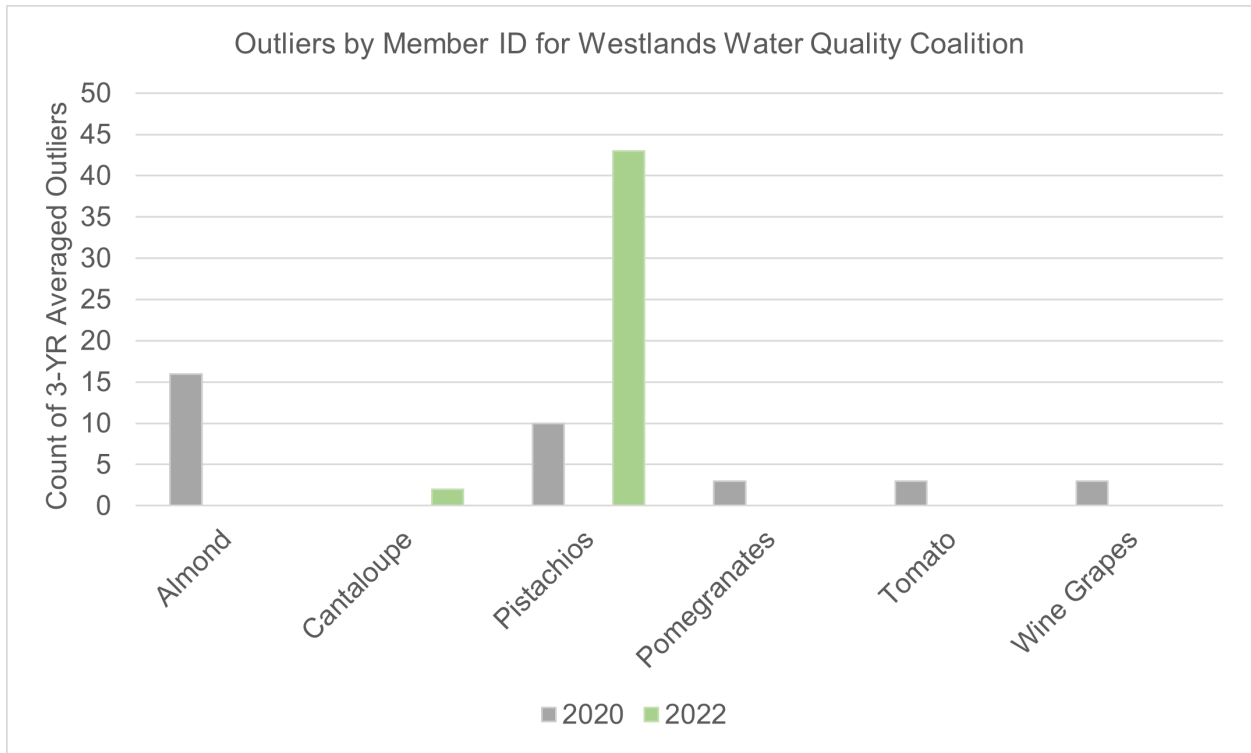


Figure 8b: Percent Outliers by Member ID for Westlands Water Quality Coalition

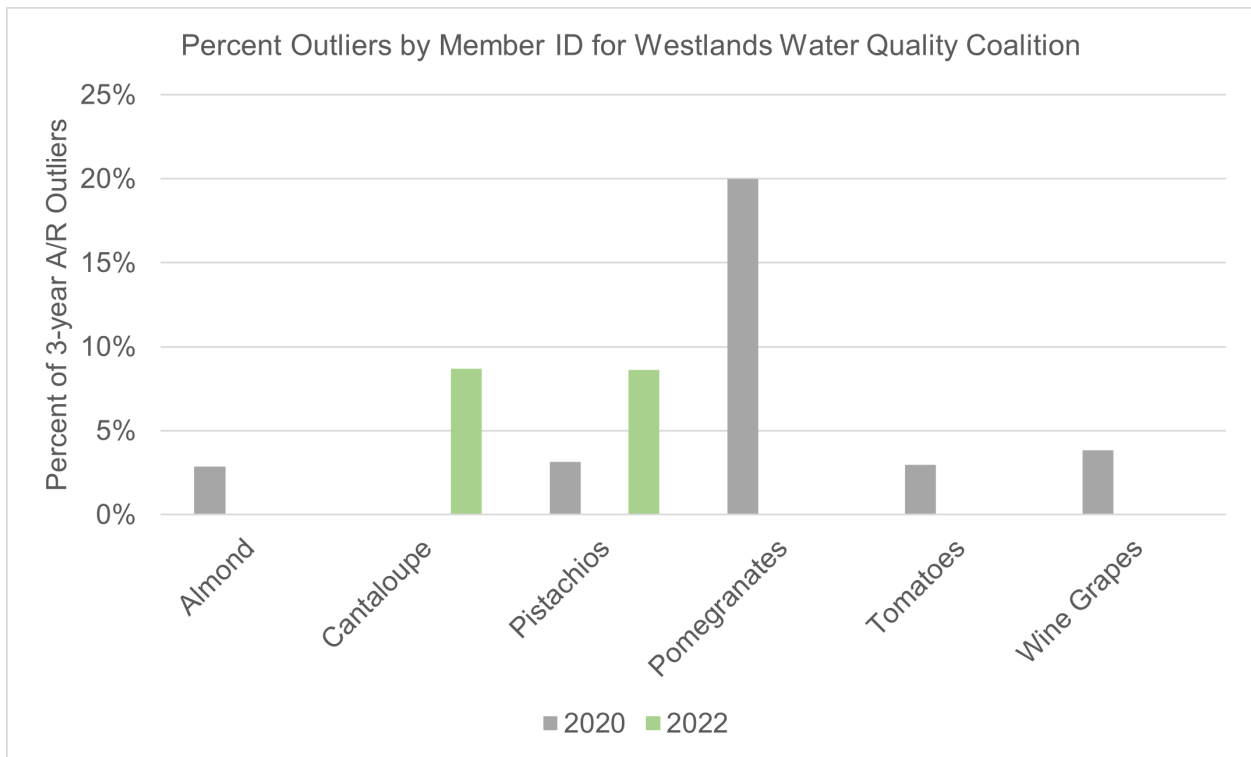


Figure 8a: Total number of outliers based on A/R3-year data submitted by the Westlands Water Quality Coalition (Westlands Coalition). The Westlands Coalition identified outliers for 6 commodities during the 2020-2022 reporting periods. There were 35 total outliers identified in 2020, 0 identified in 2021, and 45 identified in 2022. Commodities showing no value for a reporting year had no outliers identified. The 2021 reporting period was excluded from the graph as there were no outliers identified in the INMP data report.

Figure 8b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Westlands Coalition. The Westlands Coalition identified outliers for 6 commodities during the 2020 and 2022 reporting periods. No A/R3-year values were reported in the 2021 INMP data report. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2021 reporting period was excluded from the graph as there were no outliers identified in the INMP data report.

Figure 9a: Outliers by Member ID for Westside San Joaquin River Watershed Coalition

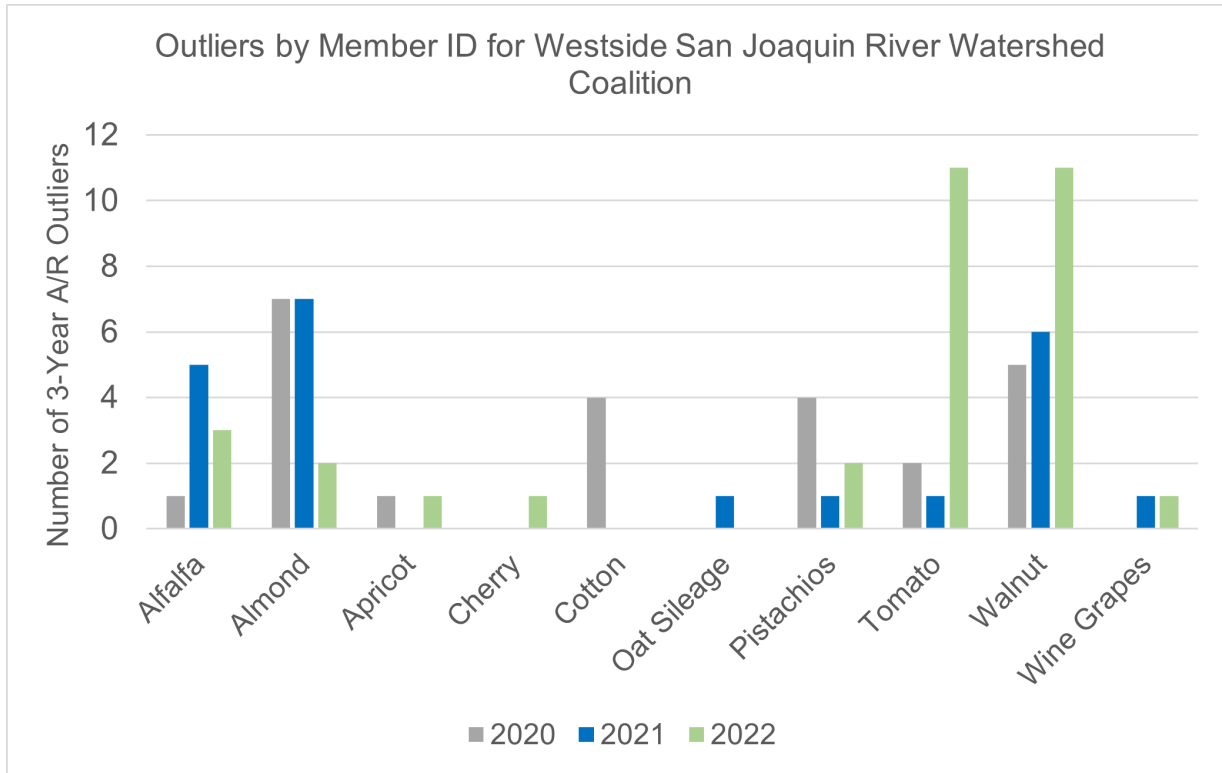


Figure 9b: Percent Outliers by Member ID for Westside San Joaquin River Watershed Coalition

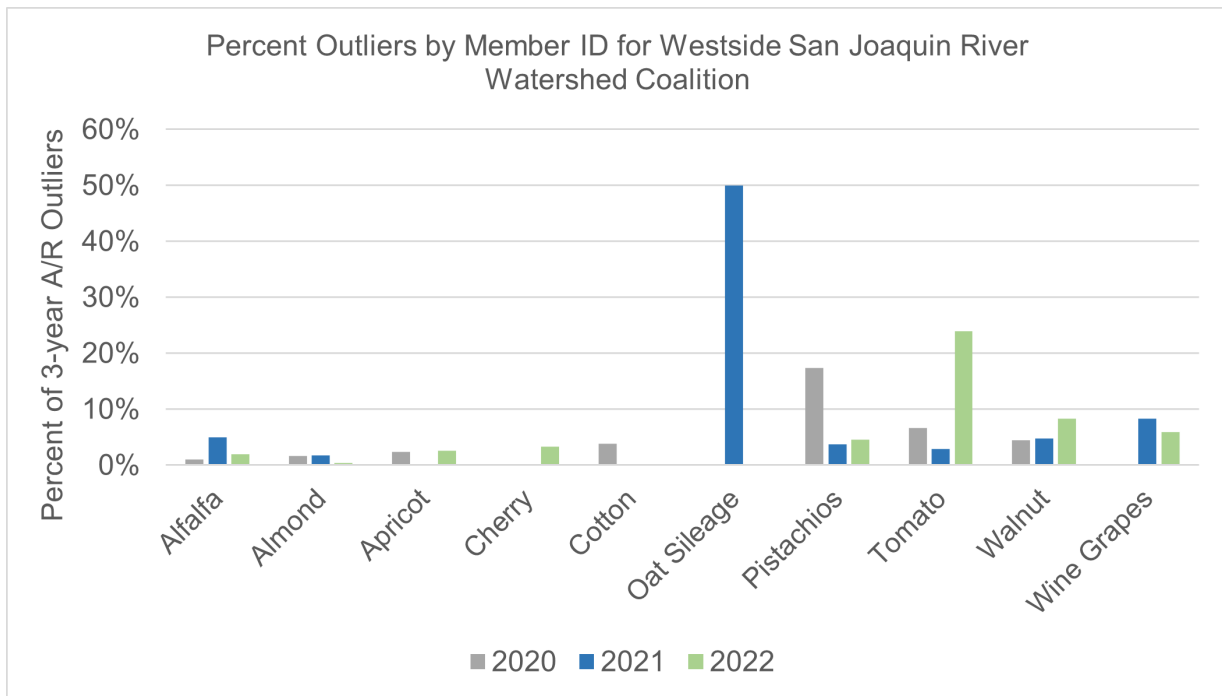


Figure 9a: Total number of outliers based on A/R3-year data submitted by the Westside San Joaquin River Watershed Coalition (Westside San Joaquin Coalition). The Westside San Joaquin Coalition identified outliers for 10 commodities during the 2020-2022 reporting periods. There were 24 total outliers identified in 2020, 22 identified in 2021, and 32 identified in 2022. Commodities showing no value for a reporting year had no outliers identified.

Figure 9b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Westside San Joaquin Coalition. The Westside San Joaquin Coalition identified outliers for 10 commodities over the 2020-2022 reporting periods. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2021 percentage for oat silage of 50% is high and may represent an error in the corresponding INMP data report.

Figure 10a: Outliers by Member ID for Westside Water Quality Coalition

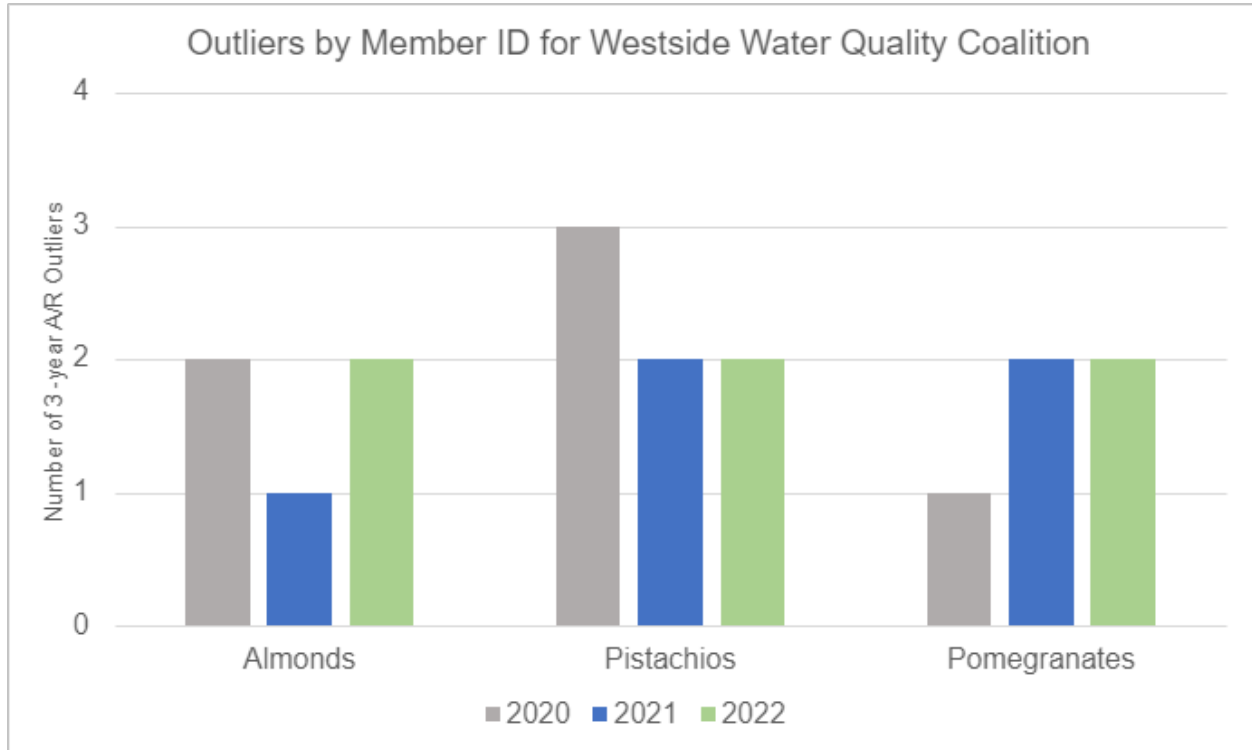


Figure 10b: Percent Outliers by Member ID for Westside Water Quality Coalition

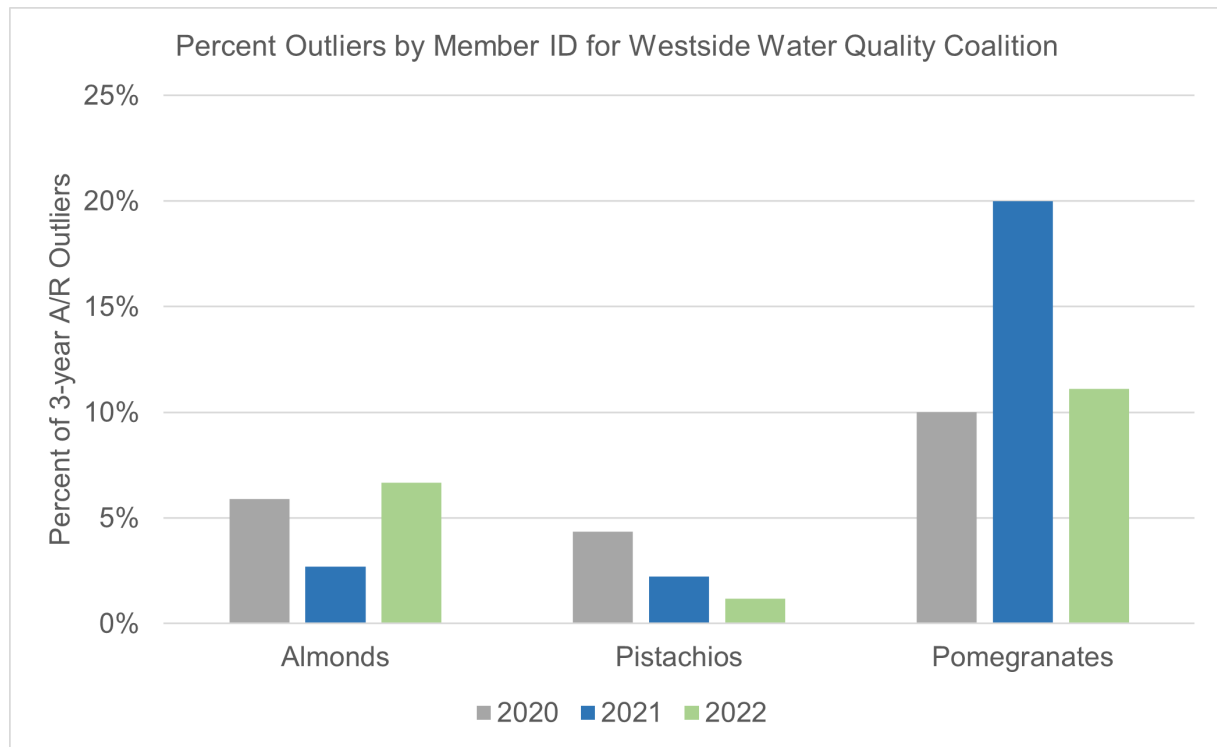


Figure 10a: Total number of outliers based on A/R3-year data submitted by the Westside Water Quality Coalition (Westside WQ Coalition). The Westside WQ Coalition identified outliers for 3 commodities during the 2020-2022 reporting periods. There were 6 total outliers identified in 2020, 5 identified in 2021, and 6 identified in 2022.

Figure 10b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Westside WQ Coalition. The Westside WQ Coalition identified outliers for 3 commodities over the 2020-2022 reporting periods.

Figure 11a: Outliers by Member ID for Kings River Water Quality Coalition

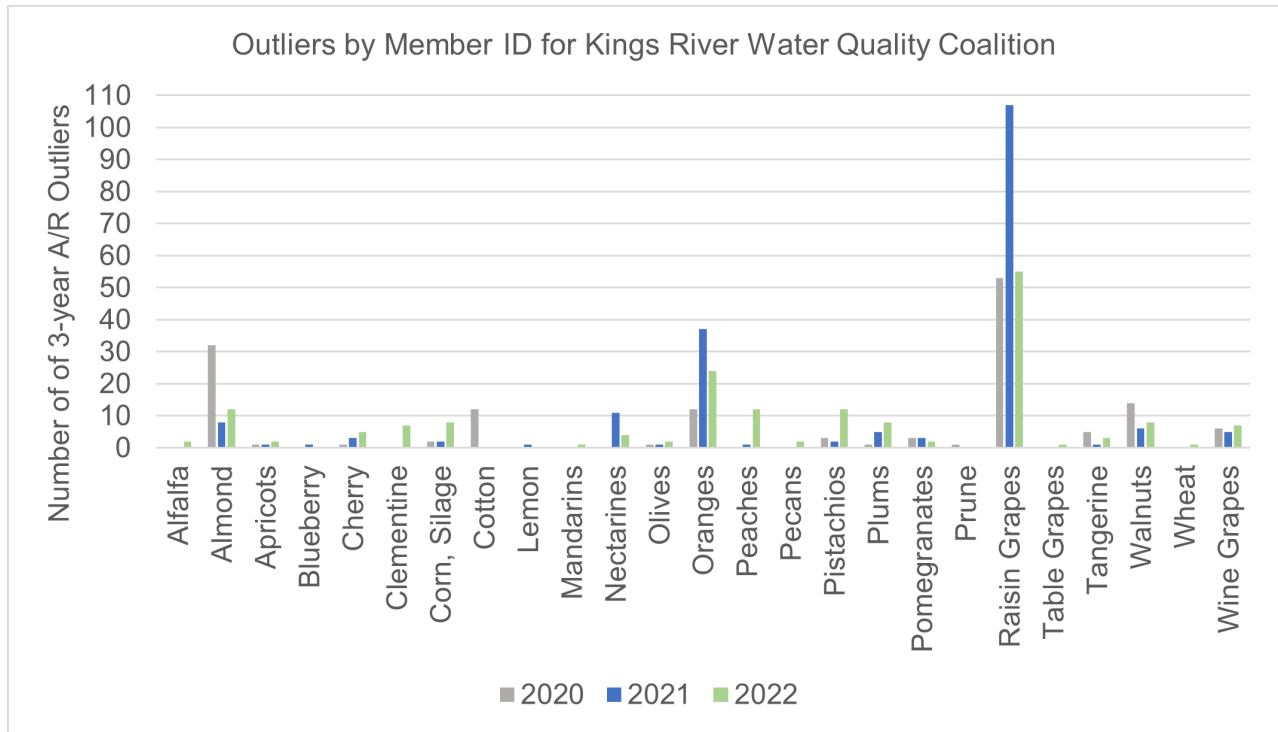


Figure 11b: Percent Outliers by Member ID for Kings River Water Quality Coalition

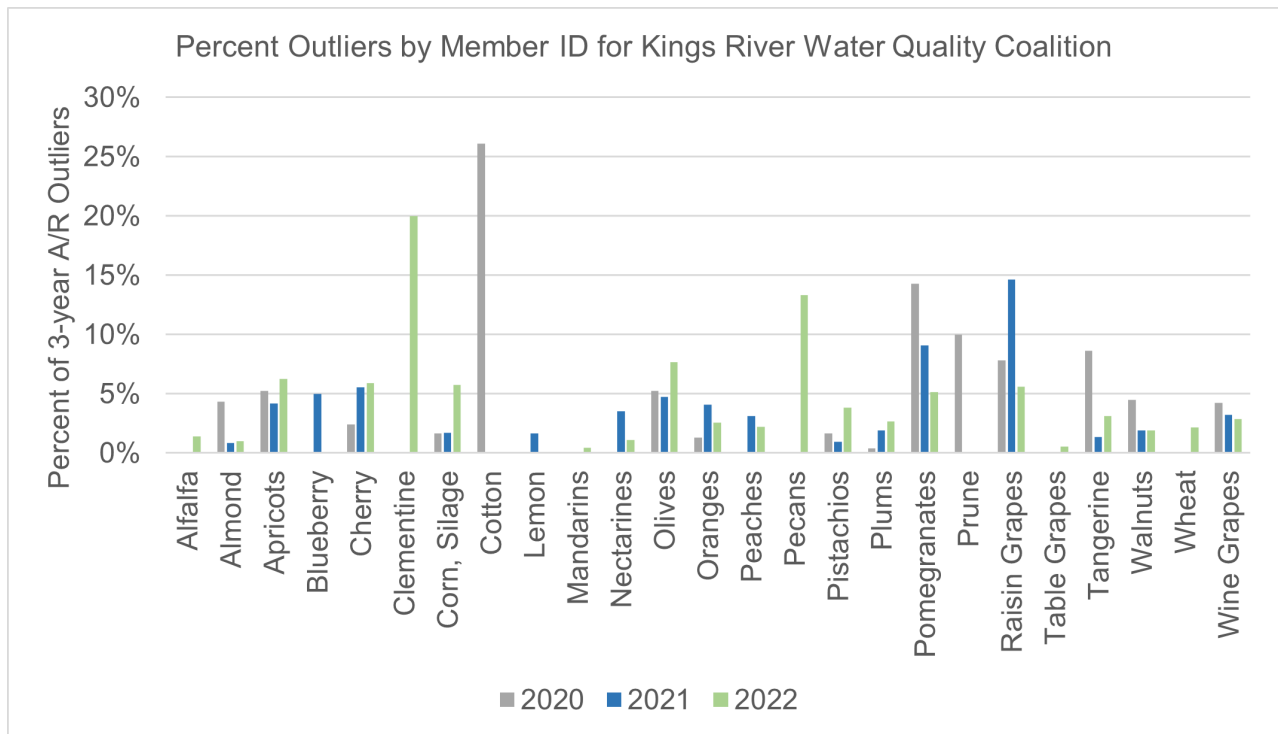


Figure 11a: Total number of outliers based on A/R3-year data submitted by the Kings River Water Quality Coalition (Kings River Coalition). The Kings River Coalition identified outliers for 25 commodities during the 2020-2022 reporting periods. There were 147 total outliers identified in 2020, 194 identified in 2021, and 178 identified in 2022. Commodities showing no value for a reporting year had no outliers identified.

Figure 11b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Kings River Coalition. The Kings River Coalition identified outliers for 25 commodities over the 2020-2022 reporting periods. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The Kings River Coalition's 2020 and 2021 INMP data reports did not have any reported A/R3-year values for clementine, mandarin, or pecans, likely due to a lack of previous year A/R data.

Figure 12a: Outliers by Member ID for Buena Vista Coalition

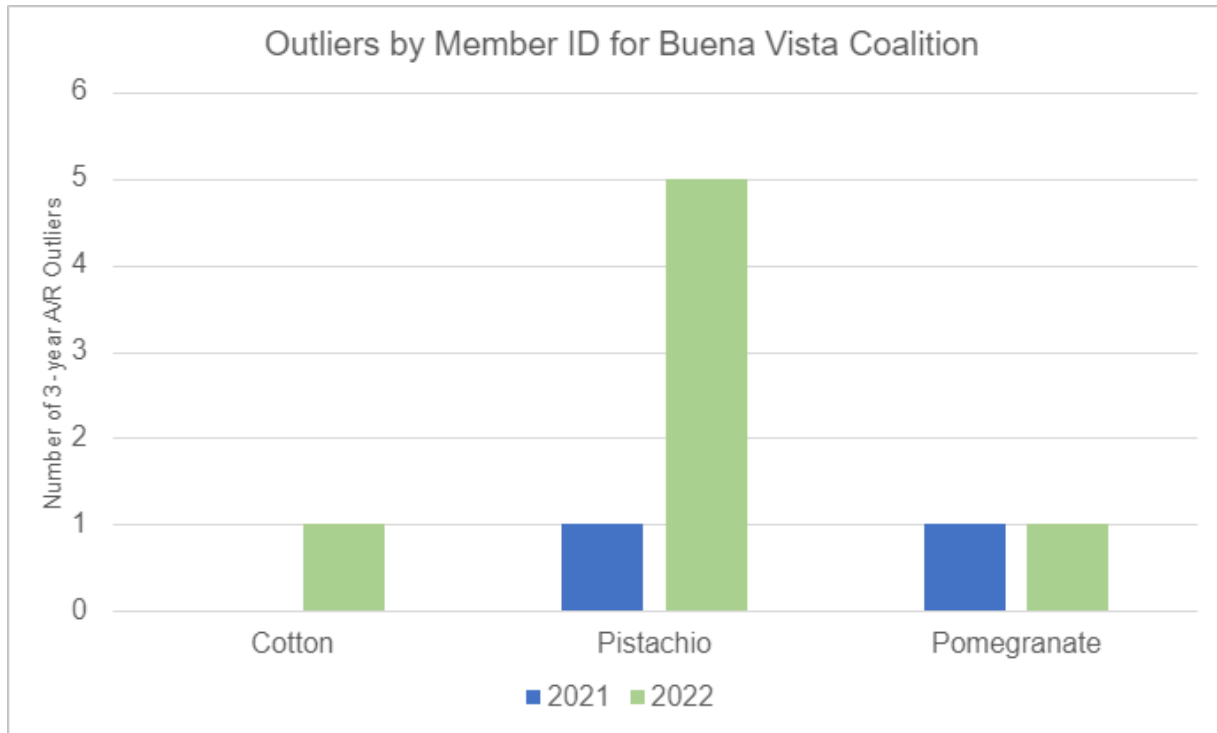


Figure 12b: Percent Outliers by Member ID for Buena Vista Coalition

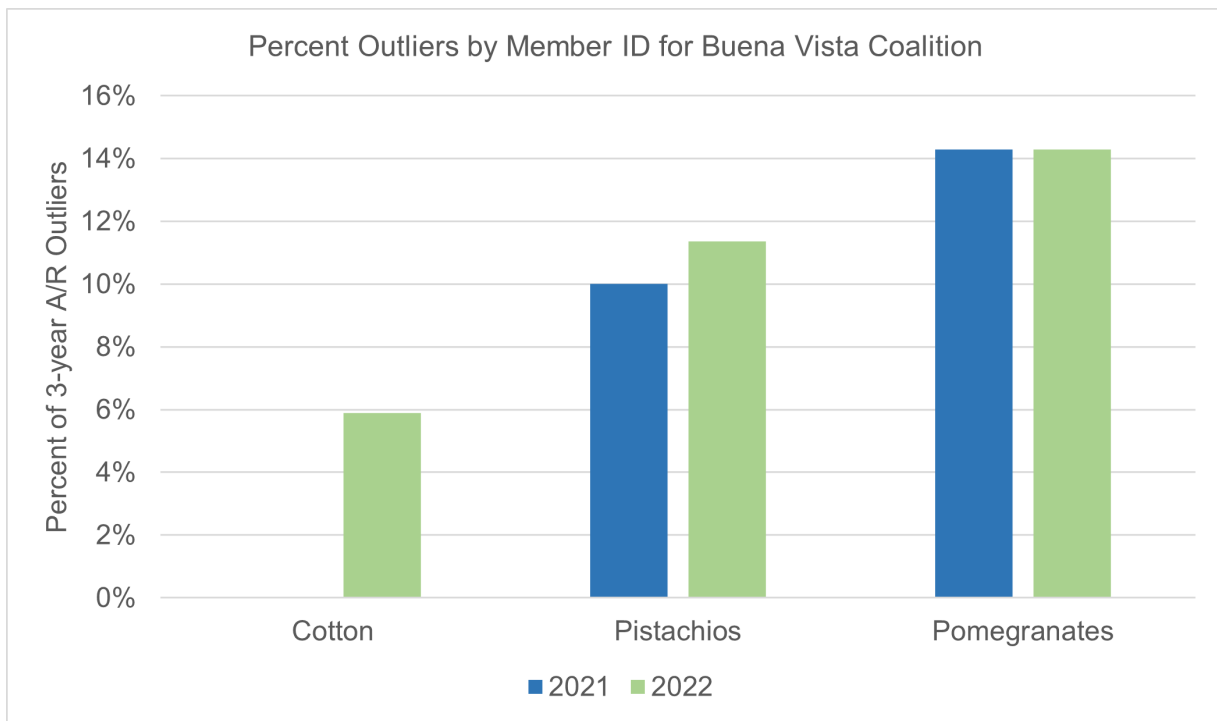


Figure 12a: Total number of outliers based on A/R3-year data submitted by the Buena Vista Coalition. The Buena Vista Coalition identified outliers for 3 commodities during the 2021 and 2022 reporting periods. There were 2 total outliers identified in 2021 and 7 identified in 2022. While they did not report any 3-year A/R outliers in 2020, the Buena Vista Coalition did report 1 single-year A/R outlier in their INMP data report. Due to year-year variability, single-year A/R outliers were not included in this analysis. Commodities showing no value for a reporting year had no outliers identified.

Figure 12b: Percent of A/R3-year outliers compared to the total A/R3-year values reported for each commodity over three reporting periods in the Buena Vista Coalition. The Buena Vista Coalition identified outliers for 3 commodities during the 2021 and 2022 reporting periods. No A/R3-year values were reported in the 2020 INMP data report. Commodities with no value for a reporting period indicates the percent of A/R3-year outliers was 0%. The 2020 reporting period was excluded from the graph as there were no A/R3-year outliers identified in the INMP data report.

3. Total Nitrogen Applied (TNA) Report Data

3.1 Overview of TNA Report Data

Prior to the implementation of INMP A and R reporting requirements, growers within the Central Coast Region were required to submit a TNA Report on an annual basis. The TNA Report requirement was phased-in across the region based on grower location, with most growers reporting data starting in 2017.

Among other components of the TNA Report, growers self-reported the amount of nitrogen applied to each crop, including traditional fertilizer, organic amendments, and other sources of nitrogen.

3.2 Analysis of TNA Report Data

At the time of analysis, A and R values were not yet being reported by growers on a statewide basis. A and R values were available in the Central Valley as discussed earlier in this report, but the 2018 Eastern San Joaquin Water Quality Order gave the remaining regions up to five years to revise their ILRP programs to be consistent with the precedential direction for growers to report their A and R values. However, TNA values were available in the Central Coast. Staff compared A values in crops grown in both the Central Coast and Central Valley regions. Data for cauliflower, strawberries, lettuce, broccoli, and wine grapes were compared using the Central Coast's TNA Reports and the Central Valley's INMP data for Crop Year 2022 as it is the most current dataset. Staff used these crops for comparison purposes because they were crops with A values available in both regions, but it is important to note that the comparison of these A values is complicated by the rotational nature of many of these crops. There were some instances in the Central Coast and the Central Valley that A was reported as zero. In Figures 13 through 17, the A values reported as zero were included for the Central Valley only if a corresponding R value was also reported. These Central Valley A values were included because the corresponding R values indicate that a crop was grown and harvested even though no additional nitrogen was applied. A values were not included in these figures if both A and R were listed as zero. At the time of this analysis, the Central Coast did not require reporting R values. Accordingly, the A values reported as zero were not included because it was unclear whether a crop was grown and harvested and a logical comparison could be made.

Reported A values from the TNA and INMP data reports were aggregated and constructed into separate box and whisker plots for each crop (see Figures 13-17). Statistical outliers for A are plotted on each graph. The California Department of Food and Agriculture (CDFA) developed recommended [crop fertilization guidelines](#). The CDFA recommended fertilization rates are overlaid for comparison.

All five crops included in the analysis had similar A values across the Central Coast and Central Valley regions. Most growers applied nitrogen within the CDFA recommended fertilization rates, with some growers outside the recommended fertilization range. Wine grapes do not have a CDFA recommended fertilization rate; however, A values do not appear to vary widely. It is important to note that CDFA recommended fertilization rates are developed to optimize yield and, in some cases include ranges based on soil and climate conditions.

Figure 13: Comparison of Nitrogen Applied (A) in Central Coast and Central Valley Cauliflower

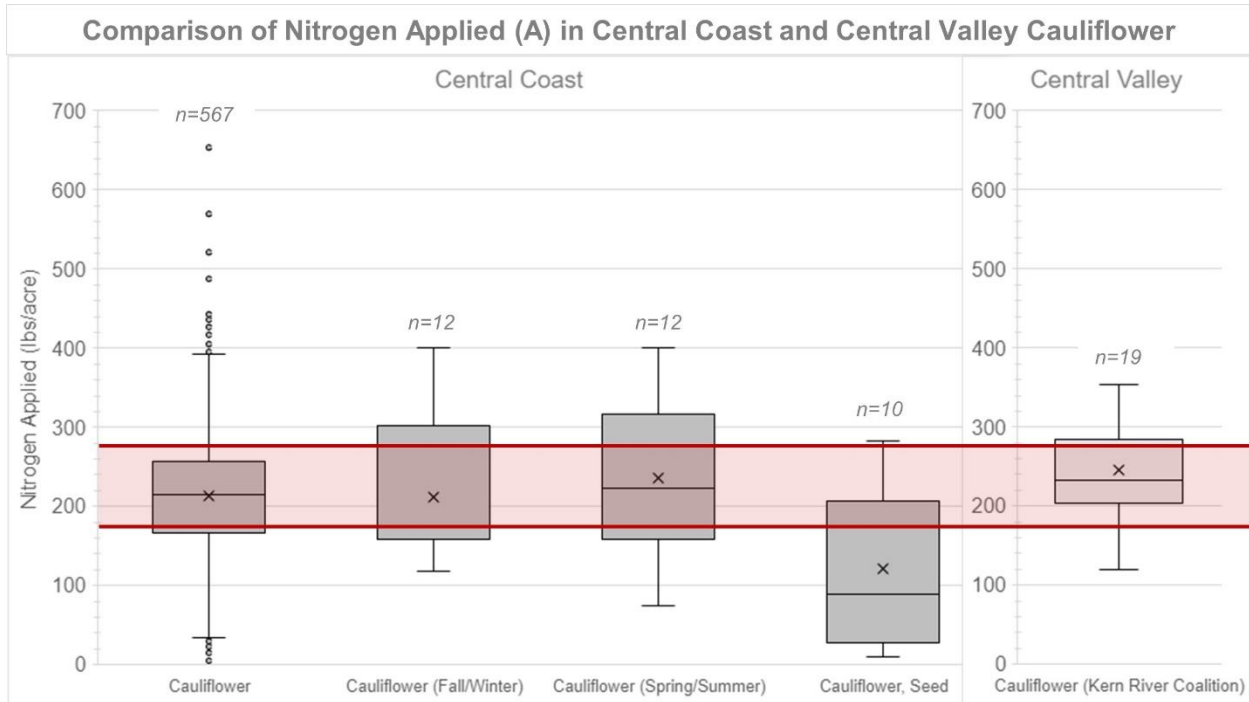


Figure 13: Comparison of total nitrogen applied (A) data reported within the Central Coast and Central Valley regions for cauliflower during the 2022 Crop Year. The total number of fields reported for each crop is indicated using n above each box and whisker plot. The California Department of Food and Agriculture (CDFA) recommended A for cauliflower is 170-270lbs/acre and is illustrated on the above graph in red. Central Coast A data was collected via the TNA Form and the Central Valley A data was collected via the INMP data reports. There was data for 4 different variations of cauliflower reported within the Central Coast Region. The Kern River Coalition was the only approved third-party group within the Central Valley that reported A values for cauliflower in their INMP data report for Crop Year 2022.

Figure 14: Comparison of Nitrogen Applied (A) in Central Coast and Central Valley Strawberries

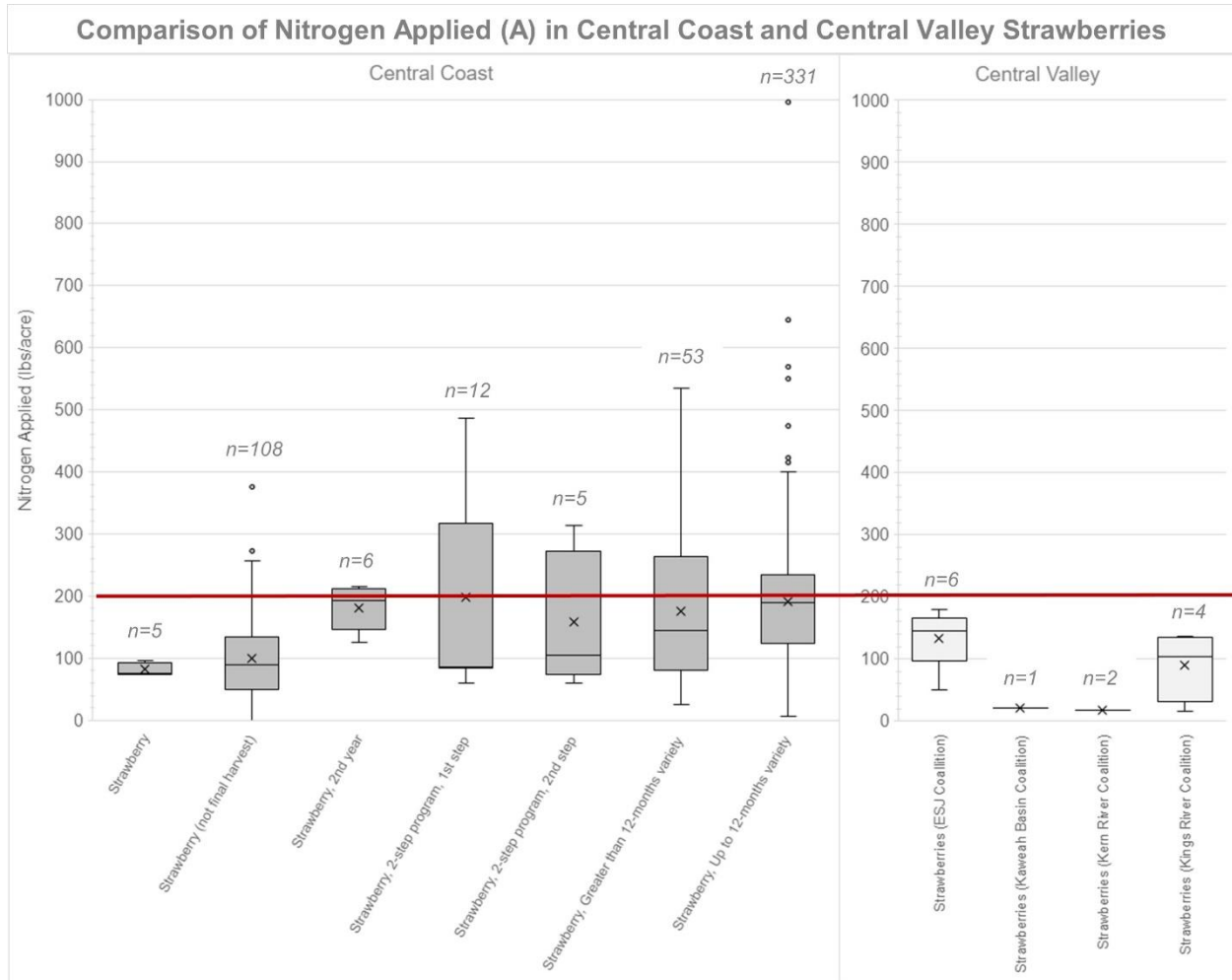


Figure 14: Comparison of total nitrogen applied (A) data reported within the Central Coast and Central Valley regions for strawberry during the 2022 Crop Year. The total number of fields reported for each crop is indicated using n above each box and whisker plot. The California Department of Food and Agriculture (CDFA) recommended A for strawberry is 200lbs/acre and is illustrated on the above graph in red. Central Coast A data was collected via the TNA Form and the Central Valley A data was collected via the INMP data reports. There was data for 7 different variations of strawberry reported within the Central Coast Region. The ESJ Coalition, Kaweah Basin Coalition, Kern River Coalition, and the Kings River Coalition were the only approved third-party groups within the Central Valley that reported A values for strawberries in their INMP data report for Crop Year 2022.

Figure 15: Comparison of Nitrogen Applied (A) in Central Coast and Central Valley Lettuce

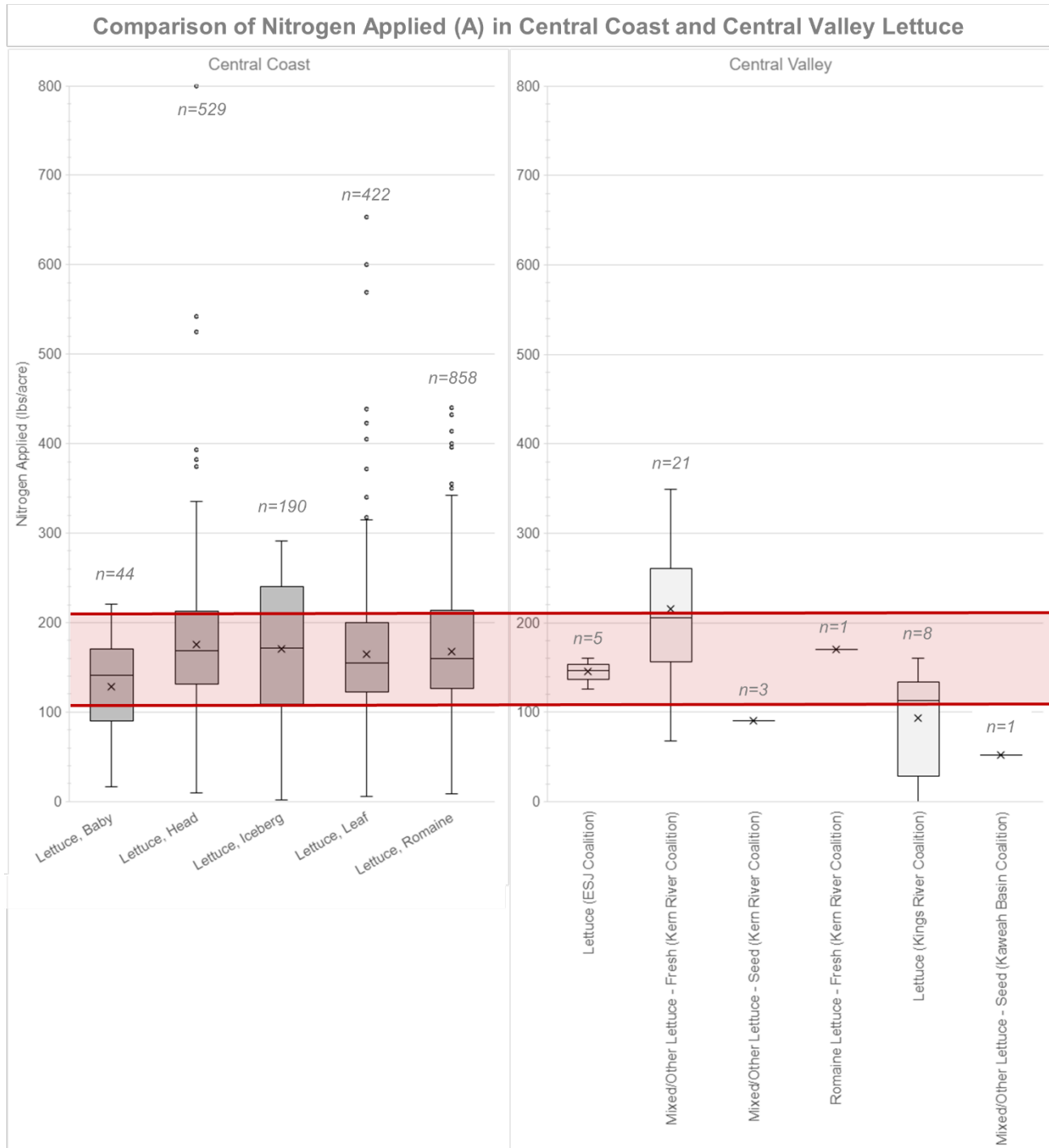


Figure 15: Comparison of total nitrogen applied (A) data reported within the Central Coast and Central Valley regions for lettuce during the 2022 Crop Year. The total number of fields reported for each crop is indicated using n above each box and whisker

plot. The California Department of Food and Agriculture (CDFA) recommended A for lettuce is 120-220lbs/acre and is illustrated on the above graph in red. Central Coast A data was collected via the TNA Form and the Central Valley A data was collected via the INMP data reports. There was data for 5 different variations of lettuce reported within the Central Coast Region. The ESJ Coalition, Kern River Coalition, Kings River Coalition, and the Kaweah Basin Coalition were the only approved third-party groups within the Central Valley that reported A values for lettuce in their INMP data report for Crop Year 2022.

Figure 16: Comparison of Nitrogen Applied (A) in Central Coast and Central Valley Broccoli

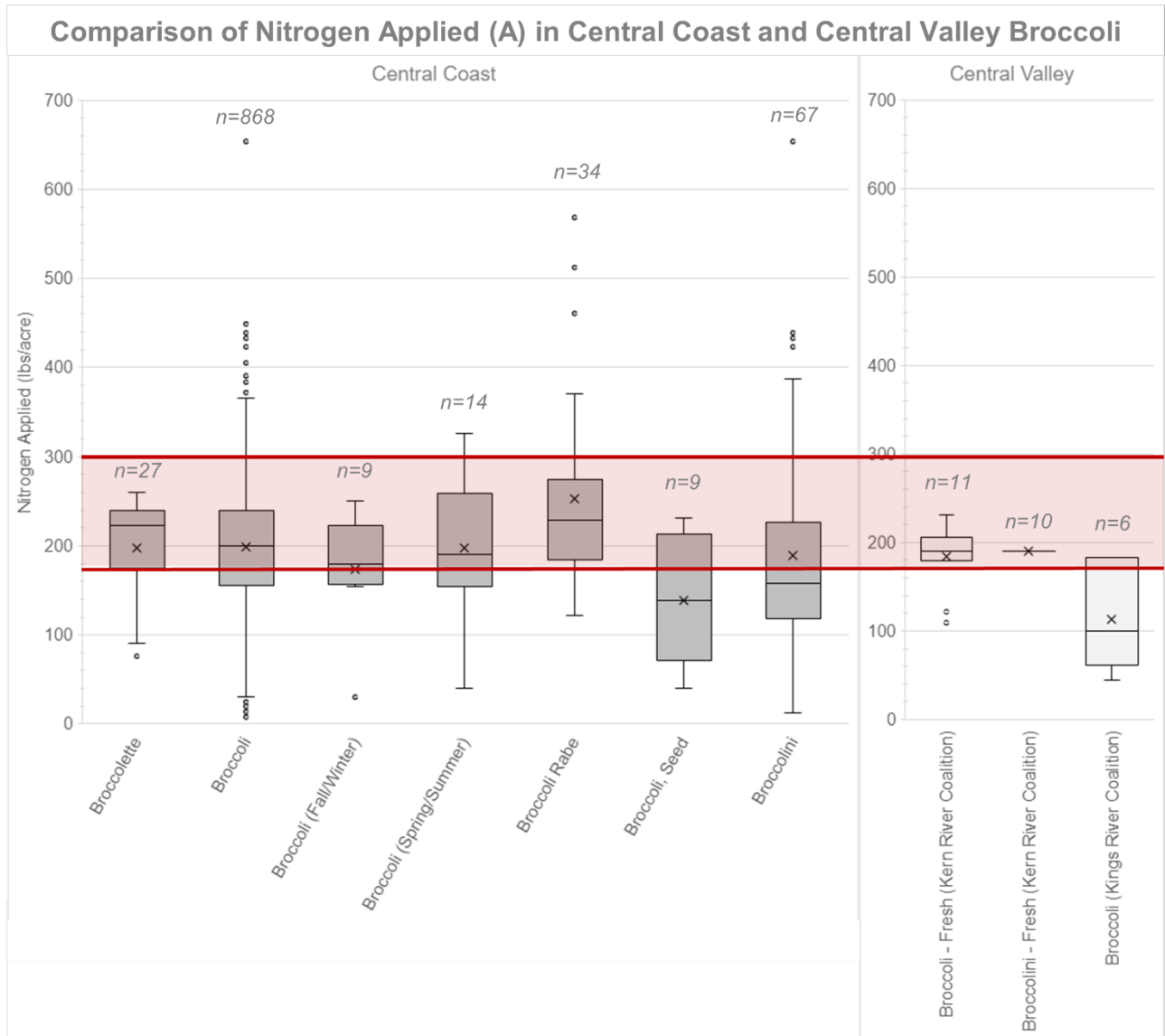


Figure 16: Comparison of total nitrogen applied (A) data reported within the Central Coast and Central Valley regions for broccoli during the 2022 Crop Year. The total number of fields reported for each crop is indicated using n above each box and whisker plot. The California Department of Food and Agriculture (CDFA) recommended A for broccoli is 170-300lbs/acre and is illustrated on the above graph in red. Central Coast A data was collected via the TNA Form and the Central Valley A data was collected via the INMP data reports. There was data for 7 different variations of broccoli reported within the Central Coast Region. The Kern River Coalition and the Kings River Coalition were the only approved third-party group within the Central Valley that reported A values for broccoli in their INMP data report for Crop Year 2022.

Figure 17: Comparison of Nitrogen Applied (A) in Central Coast and Central Valley Wine Grapes

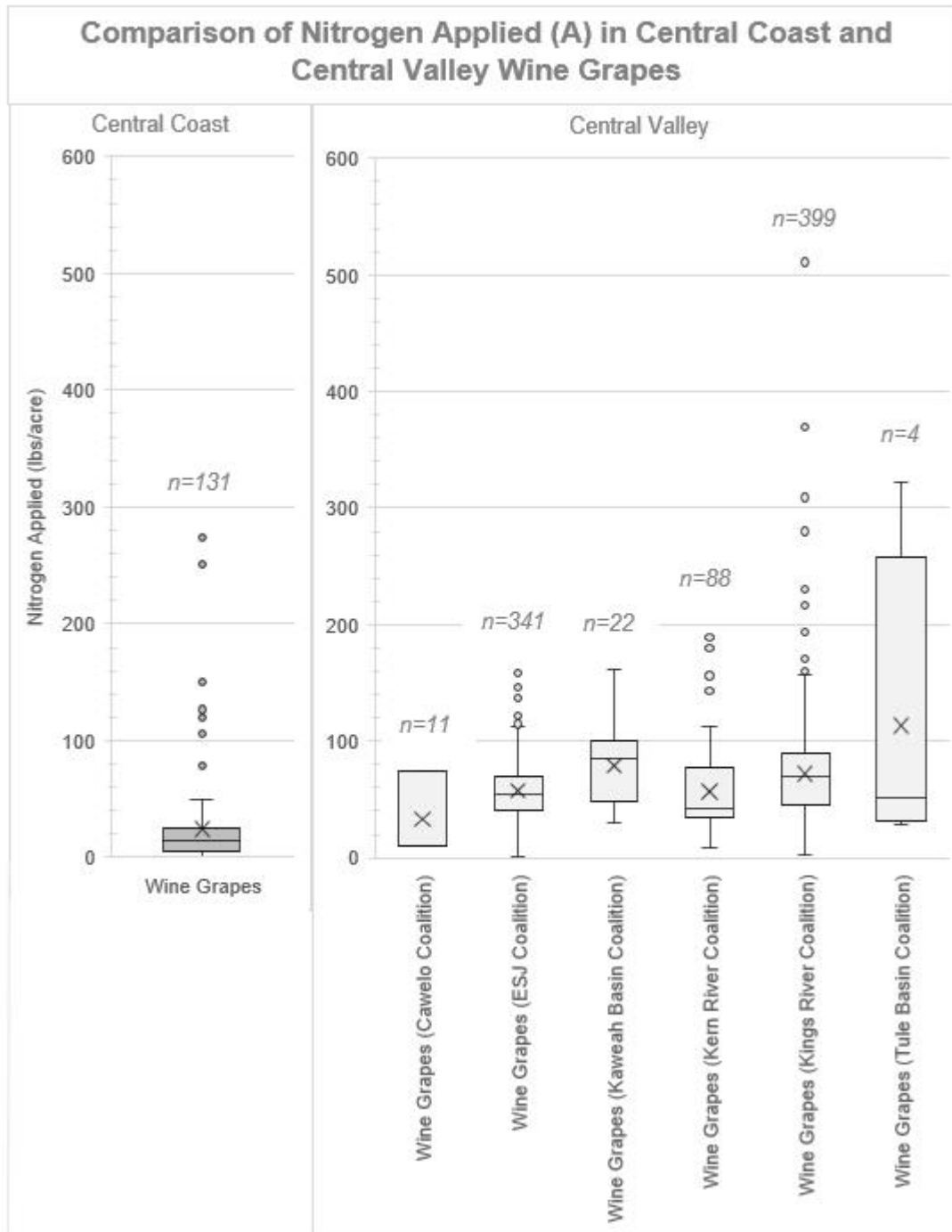


Figure 17: Comparison of total nitrogen applied (A) data reported within the Central Coast and Central Valley regions for wine grapes during the 2022 Crop Year. The total number of fields reported for each crop is indicated using n above each box and whisker

plot. There is currently no California Department of Food and Agriculture (CDFA) recommended A for wine grapes. Central Coast A data was collected via the TNA Form and the Central Valley A data was collected via the INMP data reports. The Cawelo Coalition, ESJ Coalition, Kaweah Basin Coalition, Kern River Coalition, Kings River Coalition, and Tule Basin Coalition were the only approved third-party group within the Central Valley that reported A values for wine grapes in their INMP data report for Crop Year 2022.

4. Discussion

Based on the analysis of A and R, A/R3-year outliers reported within the Central Valley for 2020-2022, there does not appear to be discernible trends in outlier status. Some graphs show an increase in the number of outliers; however, comparing the percentage of outliers to the total number of A/R3-year values for each commodity may still indicate a relative decline in outliers. Therefore, relying solely upon the number of outliers may not be indicative of program performance. Because the program is still developing, data available for analysis will increase as the reporting requirement is phased-in and more crop coefficients required to calculate R values are established.

Comparison of A values in five crops grown within the Central Coast and Central Valley regions showed no obvious variations in nitrogen application practices. Additionally, most growers applied nitrogen within the CDFA recommended fertilization rates.

4.1 Limitations

During analysis of available INMP data, limitations were identified regarding reporting practices and data availability.

4.1.1 Reporting Limitations

One issue noted in data gathering and analysis is the inconsistency in reporting structures. Coalitions can report required data in a format that is most suitable for their grower members. Variation in naming conventions or commodity grouping can be challenging to get equal comparison between similar crop types across coalitions. For example, the Sacramento Valley Coalition reports peaches under “Peaches/Nectarine,” while the ESJ Coalition reports peaches under “Peaches, NR,” “Peaches, Fresh Market,” and “Peaches, Processing.” Additionally, each third-party group also has the discretion to determine what approach is used to identify A/R3-year values as outliers. While all the INMP data reports analyzed used an interquartile range (IQR) approach for outlier identification, that does not exclude third-party groups from proposing their own unique approach for outlier identification in the future.

Another issue to note is the potential for error in data entry. In instances where obvious reporting errors were made, the third-party groups all described steps to correct or remove the data from their INMP data reports. While each third-party group reported quality assurance measures, the actions are not a requirement and are not standard across entities. In the evaluation of the outliers, it did appear that some may have been mis-identified as an outlier. However, further inquiry would be necessary to determine if an error was made.

4.1.2 Data Limitations

Although there was a considerable amount of data included in this analysis, the reporting requirement for A and R is still expanding. At the time of this analysis, only one region had begun collection of INMP Summary Reports. The trend analysis of A/R3-year outlier status included in this evaluation is an initial assessment and is not representative of the entire state’s agricultural program.

Additionally, the research involved in establishing crop coefficients for each of the state's 400 agricultural commodities is still developing. In the interim, some growers and third-party groups report yield (Y) as a proxy for R in crops for which no crop coefficient is established. While valuable, Y cannot be used to determine A/R3-year outliers.

In some instances, growers may decide to rotate non-permanent crops grown on a certain field after a specified amount of time. Crop rotation is often done annually or after a completed growing season but can vary. When done more frequently, crop rotation inhibits the calculation of A/R3-year outliers for that field.

Although using the multi-year averaged A/R value for outlier identification limits the variability from year-to-year, it also potentially conceals improvements made in best management practices. Future analysis may reveal certain A/R3-year outliers have made improvements in farming practices but have not yet resulted in the averaged value decreasing enough to be excluded from outlier status. For example, there were six outliers identified using A/R3-year values in Kern River, but four of those growers had single year values that were below the threshold. An additional limitation of the data is the outliers identified are counted by the number of growers, rather than the number of acres. Because outliers are identified by the number of growers, it is difficult to determine with certainty the translated impact to the environment through trend analysis of outliers.

4.2 Next Steps

Although the analysis noted limitations, convening a second Agricultural Expert Panel now is critical for program development. Staff is proposing to move forward with convening the second expert panel to get recommendations as early as feasible while there is still room for flexibility. The second Agricultural Expert Panel will evaluate current reporting practices in addition to recent research to provide recommendations for the program moving forward. A contract is being developed with a third-party facilitator to convene and lead the expert panel.

Staff issued a public notice with draft questions, a request for areas of expertise, and a call for materials for the proposed expert panel to consider on May 13, 2024. The public comment period ended on June 28, 2024. The finalized questions for the second Agricultural Expert Panel and a general response to comments received on the draft questions are available on the [Agriculture webpage](#).

Appendix: Data Overview Tables with Numbers of A/R3-year Outliers, Total Number of Reported A/R3-year Values, and Percent of Reported Outliers by Crop

Table 1: East San Joaquin Water Quality Coalition Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Alfalfa	1	21	4.8%
2021	Alfalfa	0	43	0%
2022	Alfalfa	1	132	0.8%
2020	Almond	27	1721	1.6%
2021	Almond	56	1969	2.8%
2022	Almond	69	2957	2.3%
2020	Cherry	1	13	7.7%
2021	Cherry	0	26	0%
2022	Cherry	0	32	0%
2020	Corn	0	64	0%
2021	Corn	1	66	1.5%
2022	Corn	1	127	0.8%
2020	Figs	0	5	0%
2021	Figs	3	21	14.3%
2022	Figs	1	51	2.0%
2020	Grapes (NR)	1	6	16.7%
2021	Grapes (NR)	0	5	0%
2022	Grapes (NR)	0	16	0%
2020	Oats	0	32	0%
2021	Oats	1	45	2.2%
2022	Oats	1	59	1.7%
2020	Olives	0	5	0%
2021	Olives	0	12	0%
2022	Olives	1	15	6.7%
2020	Peaches	0	23	0%
2021	Peaches	7	45	15.6%
2022	Peaches	7	69	10.1%
2020	Pistachios	0	232	0%
2021	Pistachios	11	310	3.5%
2022	Pistachios	5	374	1.3%
2020	Prune	0	7	0%
2021	Prune	2	8	25.0%
2022	Prune	5	8	62.5%

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Raisin Grapes	1	24	4.2%
2021	Raisin Grapes	5	52	9.6%
2022	Raisin Grapes	1	59	1.7%
2020	Sweet Potatoes	1	13	7.7%
2021	Sweet Potatoes	0	18	0%
2022	Sweet Potatoes	1	104	1.0%
2020	Table Grapes	0	18	0%
2021	Table Grapes	1	27	3.7%
2022	Table Grapes	0	33	0%
2020	Walnuts	9	265	3.4%
2021	Walnuts	33	366	9.0%
2022	Walnuts	33	449	7.3%
2020	Wine Grapes	0	85	0%
2021	Wine Grapes	0	194	0%
2022	Wine Grapes	9	211	4.3%

+ = All percent values rounded to the nearest tenth of a percent

Table 2: Cawelo Water District Coalition Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Citrus - All Others	0	5	0%
2021	Citrus - All Others	1	7	14.3%
2022	Citrus - All Others	2	14	14.3%
2020	Mandarins	3	22	13.6%
2021	Mandarins	1	25	4.0%
2022	Mandarins	0	0	0%
2020	Oranges	6	34	17.6%
2021	Oranges	3	42	7.1%
2022	Oranges	5	22	22.7%
2020	Pistachios	1	9	11.1%
2021	Pistachios	0	9	0%
2022	Pistachios	4	46	8.7%
2020	Table Grapes	1	14	7.1%
2021	Table Grapes	1	13	7.7%
2022	Table Grapes	2	28	7.1%

+ = All percent values rounded to the nearest tenth of a percent

Table 3: Kern River Watershed Coalition Authority Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Alfalfa	11	68	16.2%
2021	Alfalfa	0	86	0%
2022	Alfalfa	0	133	0%
2020	Almond	19	877	2.2%
2021	Almond	16	961	1.7%
2022	Almond	58	1114	5.2%
2020	Bell Pepper	1	2	50.0%
2021	Bell Pepper	0	3	0%
2022	Bell Pepper	0	1	0%
2020	Carrot	1	5	20.0%
2021	Carrot	1	3	33.3%
2022	Carrot	1	5	20.0%
2020	Cherry	1	42	2.4%
2021	Cherry	3	46	6.5%
2022	Cherry	1	48	2.1%
2020	Citrus - all others	1	11	9.1%
2021	Citrus - all others	2	12	16.7%
2022	Citrus - all others	0	16	0%
2020	Corn	0	11	0%
2021	Corn	0	25	0%
2022	Corn	1	36	2.8%
2020	Cotton	2	17	11.8%
2021	Cotton	2	24	8.3%
2022	Cotton	0	13	0%
2020	Grapefruit	1	4	25.0%
2021	Grapefruit	1	6	16.7%
2022	Grapefruit	0	0	0%
2020	Lemon	1	22	4.5%
2021	Lemon	4	32	12.5%
2022	Lemon	6	48	12.5%
2020	Mandarins	4	65	6.2%
2021	Mandarins	8	71	11.3%
2022	Mandarins	0	0	0%
2020	Oranges	8	176	4.5%
2021	Oranges	13	236	5.5%
2022	Oranges	15	280	5.4%
2020	Pistachios	10	235	4.3%

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2021	Pistachios	31	260	11.9%
2022	Pistachios	46	359	12.8%
2020	Potato	0	21	0%
2021	Potato	1	36	2.8%
2022	Potato	2	49	4.1%
2020	Table Grapes	11	468	2.4%
2021	Table Grapes	8	420	1.9%
2022	Table Grapes	10	520	1.9%
2020	Watermelon	0	0	0%
2021	Watermelon	0	1	0%
2022	Watermelon	1	1	100.0%
2020	Wheat Grain	0	3	0%
2021	Wheat Grain	1	3	33.3%
2022	Wheat Grain	0	8	0%
2020	Wine Grapes	3	74	4.1%
2021	Wine Grapes	1	67	1.5%
2022	Wine Grapes	3	77	3.9%

+ = All percent values rounded to the nearest tenth of a percent

Table 4: Grassland Drainage Area Coalition Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Almond	1	18	5.6%
2021	Almond	0	14	0%
2022	Almond	0	36	0%
2020	Pistachios	0	3	0%
2021	Pistachios	0	1	0%
2022	Pistachios	2	27	7.4%

+ = All percent values rounded to the nearest tenth of a percent

Table 5: Kaweah Basin Water Quality Association Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Alfalfa	5	52	9.6%
2021	Alfalfa	1	37	2.7%
2022	Alfalfa	3	41	7.3%
2020	Almond	4	107	3.7%

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2021	Almond	3	134	2.2%
2022	Almond	8	185	4.3%
2020	Avocados	1	7	14.3%
2021	Avocados	1	8	12.5%
2022	Avocados	1	7	14.3%
2020	Cherry	1	30	3.3%
2021	Cherry	3	32	9.4%
2022	Cherry	3	34	8.8%
2020	Citrus - all others	16	228	7.0%
2021	Citrus - all others	25	284	8.8%
2022	Citrus - all others	8	70	11.4%
2020	Corn	5	59	8.5%
2021	Corn	2	51	3.9%
2022	Corn	3	88	3.4%
2020	Cotton	3	26	11.5%
2021	Cotton	1	8	12.5%
2022	Cotton	0	8	0%
2020	Lemon	NR*	NR	NR
2021	Lemon	10	91	11.0%
2022	Lemon	8	121	6.6%
2020	Mandarins	NR	NR	NR
2021	Mandarins	10	193	5.2%
2022	Mandarins	0	0	0%
2020	Olives	2	76	2.6%
2021	Olives	3	90	3.3%
2022	Olives	3	91	3.3%
2020	Oranges	39	903	4.3%
2021	Oranges	49	970	5.1%
2022	Oranges	64	1096	5.8%
2020	Peaches	0	0	0%
2021	Peaches	0	3	0%
2022	Peaches	1	8	12.5%
2020	Pistachios	3	116	2.6%
2021	Pistachios	9	123	7.3%
2022	Pistachios	11	160	6.9%
2020	Plums	1	39	2.6%
2021	Plums	4	48	8.3%
2022	Plums	7	66	10.6%
2020	Pomegranates	1	11	9.1%
2021	Pomegranates	1	13	7.7%

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2022	Pomegranates	0	11	0%
2020	Prune	0	1	0%
2021	Prune	0	1	0%
2022	Prune	1	12	8.3%
2020	Table Grapes	2	20	10.0%
2021	Table Grapes	2	18	11.1%
2022	Table Grapes	3	43	7.0%
2020	Triticale Silage	0	1	0%
2021	Triticale Silage	1	1	100.0%
2022	Triticale Silage	0	1	0%
2020	Walnuts	21	324	6.5%
2021	Walnuts	28	343	8.2%
2022	Walnuts	22	442	5.0%
2020	Wheat Silage	0	17	0%
2021	Wheat Silage	1	18	5.6%
2022	Wheat Silage	0	41	0%
2020	Wine Grapes	1	22	4.5%
2021	Wine Grapes	1	18	5.6%
2022	Wine Grapes	2	11	18.2%

* = None Reported (commodity not included in corresponding INMP data report)

+ = All percent values rounded to the nearest tenth of a percent

Table 6: Sacramento Valley Water Quality Coalition Member ID Outlier Overview Data

Year [^]	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2021	Alfalfa	0	272	0%
2022	Alfalfa	1	586	0.2%
2021	Almond	5	1142	0.4%
2022	Almond	8	2512	0.3%
2021	Citrus	0	6	0%
2022	Citrus	1	21	4.8%
2021	Peach/Nectarine	13	183	7.1%
2022	Peach/Nectarine	5	299	1.7%
2021	Prune	1	311	0.3%
2022	Prune	12	518	2.3%
2021	Walnuts	25	2384	1.0%
2022	Walnuts	45	3575	1.3%
2021	Wine Grape	1	183	0.5%

Year [^]	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2022	Wine Grape	35	773	4.5%

[^] = No A/R3-year values were included in the 2020 INMP data report

⁺ = All percent values rounded to the nearest tenth of a percent

Table 7: San Joaquin County and Delta Water Quality Coalition Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Alfalfa	1	21	4.8%
2021	Alfalfa	1	39	2.6%
2022	Alfalfa	0	129	0%
2020	Almond	27	1721	1.6%
2021	Almond	17	786	2.2%
2022	Almond	17	971	1.8%
2020	Blueberry	0	1	0%
2021	Blueberry	0	0	0%
2022	Blueberry	2	15	13.3%
2020	Cherry	1	13	7.7%
2021	Cherry	24	263	9.1%
2022	Cherry	11	428	2.6%
2020	Corn	0	64	0%
2021	Corn	0	33	0%
2022	Corn	3	107	2.8%
2020	Grapes (NR)	1	6	16.7%
2021	Grapes (NR)	0	4	0%
2022	Grapes (NR)	1	25	4.0%
2020	Hay	0	3	0%
2021	Hay	1	9	11.1%
2022	Hay	2	19	10.5%
2020	Raisin Grapes	1	24	4.2%
2021	Raisin Grapes	NR*	NR	NR
2022	Raisin Grapes	NR	NR	NR
2020	Sweet Potatoes	1	13	7.7%
2021	Sweet Potatoes	NR	NR	NR
2022	Sweet Potatoes	NR	NR	NR
2020	Table Grapes	0	18	0%
2021	Table Grapes	2	5	40.0%
2022	Table Grapes	2	8	25.0%
2020	Walnuts	9	265	3.4%

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2021	Walnuts	6	361	1.7%
2022	Walnuts	8	897	0.9%
2020	Wine Grapes	0	0	0%
2021	Wine Grapes	5	606	0.8%
2022	Wine Grapes	11	1122	1.0%

* = None Reported (commodity not included in corresponding INMP data report)

+ = All percent values rounded to the nearest tenth of a percent

Table 8: Westlands Water Quality Coalition Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Almond	16	557	2.9%
2021	Almond	0	539	0%
2022	Almond	0	504	0%
2020	Cantaloupe	0	15	0%
2021	Cantaloupe	0	25	0%
2022	Cantaloupe	2	23	8.7%
2020	Pistachios	10	317	3.2%
2021	Pistachios	0	415	0%
2022	Pistachios	43	498	8.6%
2020	Pomegranates	3	15	20.0%
2021	Pomegranates	0	22	0%
2022	Pomegranates	0	20	0%
2020	Tomatoes	3	117	2.6%
2021	Tomatoes	0	107	0%
2022	Tomatoes	0	90	0%
2020	Wine Grapes	3	78	3.8%
2021	Wine Grapes	0	80	0%
2022	Wine Grapes	0	69	0%

+ = All percent values rounded to the nearest tenth of a percent

Table 9: Westside San Joaquin River Watershed Coalition Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Alfalfa	1	98	1.0%
2021	Alfalfa	5	101	5.0%
2022	Alfalfa	3	151	2.0%

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Almond	7	428	1.6%
2021	Almond	7	408	1.7%
2022	Almond	2	493	0.4%
2020	Apricot	1	43	2.3%
2021	Apricot	0	38	0%
2022	Apricot	1	39	2.6%
2020	Cherry	0	32	0%
2021	Cherry	0	34	0%
2022	Cherry	1	30	3.3%
2020	Cotton	4	103	3.9%
2021	Cotton	0	70	0%
2022	Cotton	0	173	0%
2020	Oat Silage	0	1	0%
2021	Oat Silage	1	2	50.0%
2022	Oat Silage	0	3	0%
2020	Pistachios	4	23	17.4%
2021	Pistachios	1	27	3.7%
2022	Pistachios	2	44	4.5%
2020	Tomato	2	30	6.7%
2021	Tomato	1	35	2.9%
2022	Tomato	11	46	23.9%
2020	Walnut	5	111	4.5%
2021	Walnut	6	126	4.8%
2022	Walnut	11	132	8.3%
2020	Wine Grapes	0	13	0%
2021	Wine Grapes	1	12	8.3%
2022	Wine Grapes	1	17	5.9%

+ = All percent values rounded to the nearest tenth of a percent

Table 10: Westside Water Quality Coalition Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Almonds	2	34	5.9%
2021	Almonds	1	37	2.7%
2022	Almonds	2	30	6.7%
2020	Pistachios	3	69	4.3%
2021	Pistachios	2	90	2.2%
2022	Pistachios	2	170	1.2%
2020	Pomegranates	1	10	10.0%

2021	Pomegranates	2	10	20.0%
2022	Pomegranates	2	18	11.1%

+ = All percent values rounded to the nearest tenth of a percent

Table 11: Kings River Water Quality Coalition Member ID Outlier Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Alfalfa	0	5	0%
2021	Alfalfa	0	4	0%
2022	Alfalfa	2	142	1.4%
2020	Almond	32	735	4.4%
2021	Almond	8	935	0.9%
2022	Almond	12	1226	1.0%
2020	Apricots	1	19	5.3%
2021	Apricots	1	24	4.2%
2022	Apricots	2	32	6.3%
2020	Blueberry	0	19	0%
2021	Blueberry	1	20	5.0%
2022	Blueberry	0	29	0%
2020	Cherry	1	41	2.4%
2021	Cherry	3	54	5.6%
2022	Cherry	5	85	5.9%
2020	Clementine	0	0	0%
2021	Clementine	0	0	0%
2022	Clementine	7	35	20.0%
2020	Corn, Silage	2	121	1.7%
2021	Corn, Silage	2	117	1.7%
2022	Corn, Silage	8	139	5.8%
2020	Cotton	12	46	26.1%
2021	Cotton	0	63	0%
2022	Cotton	0	48	0%
2020	Lemon	0	58	0%
2021	Lemon	1	61	1.6%
2022	Lemon	0	95	0%
2020	Mandarins	0	0	0%
2021	Mandarins	0	0	0%
2022	Mandarins	1	233	0.4%
2020	Nectarines	0	285	0%
2021	Nectarines	11	312	3.5%
2022	Nectarines	4	363	1.1%
2020	Olives	1	19	5.3%
2021	Olives	1	21	4.8%

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2022	Olives	2	26	7.7%
2020	Oranges	12	929	1.3%
2021	Oranges	37	909	4.1%
2022	Oranges	24	930	2.6%
2020	Peaches	0	77	0%
2021	Peaches	1	32	3.1%
2022	Peaches	12	538	2.2%
2020	Pecans	0	0	0%
2021	Pecans	0	0	0%
2022	Pecans	2	15	13.3%
2020	Pistachios	3	182	1.6%
2021	Pistachios	2	205	1.0%
2022	Pistachios	12	314	3.8%
2020	Plums	1	237	0.4%
2021	Plums	5	261	1.9%
2022	Plums	8	300	2.7%
2020	Pomegranates	3	21	14.3%
2021	Pomegranates	3	33	9.1%
2022	Pomegranates	2	39	5.1%
2020	Prune	1	10	10.0%
2021	Prune	0	7	0%
2022	Prune	0	5	0%
2020	Raisin Grapes	53	679	7.8%
2021	Raisin Grapes	107	732	14.6%
2022	Raisin Grapes	55	979	5.6%
2020	Table Grapes	0	135	0%
2021	Table Grapes	0	127	0%
2022	Table Grapes	1	188	0.5%
2020	Tangerine	5	58	8.6%
2021	Tangerine	1	74	1.4%
2022	Tangerine	3	96	3.1%
2020	Walnuts	14	311	4.5%
2021	Walnuts	6	314	1.9%
2022	Walnuts	8	416	1.9%
2020	Wheat	0	20	0%
2021	Wheat	0	20	0%
2022	Wheat	1	46	2.2%
2020	Wine Grapes	6	142	4.2%
2021	Wine Grapes	5	156	3.2%
2022	Wine Grapes	7	243	2.9%

+ = All percent values rounded to the nearest tenth of a percent

Table 12: Buena Vista Coalition Outlier Member ID Overview Data

Year	Crop	Number of A/R3-year Outliers	Total Number of Reported A/R3-year Values	Percent of Values Reported as Outliers ⁺
2020	Cotton	0	3	0%
2021	Cotton	0	3	0%
2022	Cotton	1	17	5.9%
2020	Pistachio	0	0	0%
2021	Pistachio	1	10	10.0%
2022	Pistachio	5	44	11.4%
2020	Pomegranate	0	0	0%
2021	Pomegranate	1	7	14.3%
2022	Pomegranate	1	7	14.3%

+ = All percent values rounded to the nearest tenth of a percent