



# 2021 Organic Acreage Data Trends Across California

Krista Marshall<sup>1</sup> and Houston Wilson<sup>1</sup>

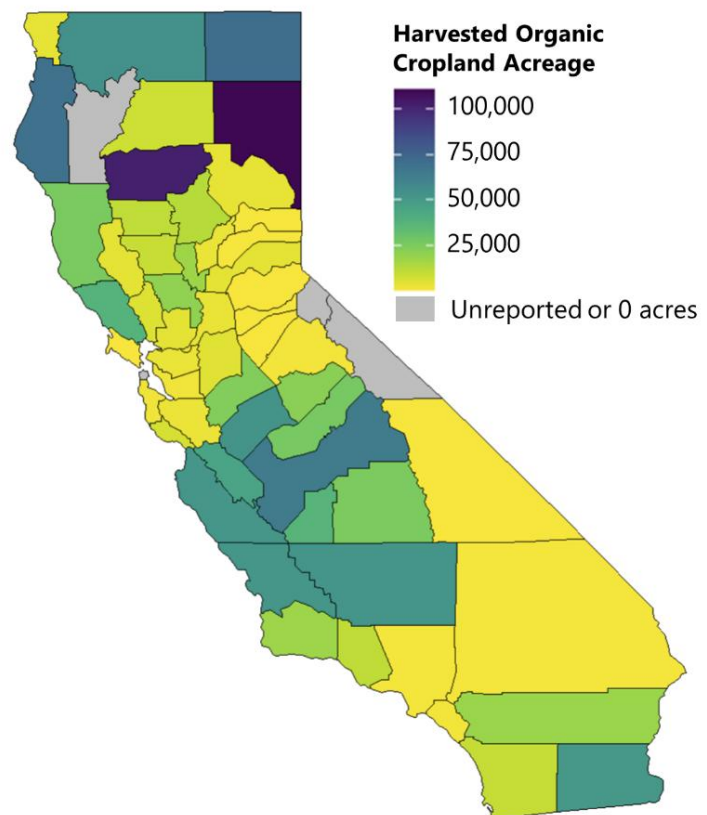
Contact: [knmarshall@ucanr.edu](mailto:knmarshall@ucanr.edu)

<sup>1</sup>University of California, Organic Agriculture Institute

## Executive Summary

California has always been a leader in organic agriculture. Since 2002, when the USDA National Organic Program went into effect, market demand for organic products has driven a continuous expansion of certified organic acreage in California. As of 2024, California more than doubled the next leading state in total certified organic acreage, total organic farms and total organic production value<sup>1</sup>. Recently, organic agriculture has gained further traction through public grant programs at the state (e.g., California Department of Food and Agriculture (CDFA) Organic Transition Pilot Program<sup>2</sup>) and federal levels (e.g. US Department of Food and Agriculture (USDA) Transition to Organic Production Program<sup>3</sup>) as well as state sustainability targets that include increasing organic acreage (e.g. CA Air Resources Board 2022 Scoping Plan For Achieving Carbon Neutrality)<sup>4</sup>.

With such growing opportunities to continue expanding organic agriculture in California, there is a need to better understand trends in organic production across the state. Here, we present an analysis of harvested acreage data from 2021 made available by the CDFA State Organic Program (SOP) as well as county-level statistical data reported through the USDA National Agricultural Statistics Service (NASS). The goal of this analysis was to characterize geographic and crop-specific trends in organic production. Improved understanding of the current distribution of organic agriculture – as well as the relative share of organic at the county and crop level – can help guide the development of more targeted strategies to ensure technical assistance, outreach, and financial incentives are relevant and accessible for organic producers.



Map depicts spread of harvested organic cropland acreage across California in 2021. Counties with highest acreage (e.g. Lassen, Tehama, Modoc) featured field crops including pasture and rangeland.

## Key Findings – Certain Crops and Counties Trend Towards Organic

Results from this analysis showcase the wide diversity of organic agriculture present across California – and highlights key regions and cropping systems where organic production is more (or less) common. For the year 2021, 4.4% of the total cropland harvested in California was certified organic. Organic agriculture can be found throughout California, with 54 of the 58 counties reporting harvested organic acreage in 2021. Counties that did not report any organic acreage included Alpine, Mono, San Francisco, and Trinity Counties.

The top five counties in harvested certified organic acreage (Lassen, Tehama, Modoc, Humboldt, and Fresno) accounted for 36% of the total statewide harvested organic acreage. While the top counties for total harvested acreage overall (Kern, Tulare, Monterey, Inyo, and Mono) accounted for 28%. Almonds and wine grapes were leaders for both total harvested acreage and total organic acreage. Other crops – such as spinach, carrots, and seed crops – were leaders for total harvested organic acreage, but overall represented a lower share of total harvested acreage, suggesting there may be an organic niche for these crops.

Similar to the crop-level trends, there were multiple counties that had a high level of both total harvested acreage as well as total organic acreage. This included Fresno, Monterey, Kern, Merced, and Tehama counties. In contrast, some counties such as Humboldt, San Luis Obispo, Imperial, San Benito, and Sonoma had comparatively lower total harvested cropland acreage but were leaders in terms of total harvested organic cropland acreage, suggesting that organic production may have a unique niche in these regions. Finally, when considering organic as a proportion of the total harvested acreage in a county, the top two leading counties were Santa Cruz and San Luis Obispo (with >50%) followed by Sutter, Marin, Imperial and Modoc counties (12-17%). Crops including spinach, all other berries excluding strawberries, carrots, lettuce, celery and broccoli were all leaders with >20% of statewide acres under organic production.

## Project Limitations – Dataset Comparability Challenges

While this analysis revealed some interesting trends for organic agriculture in California, substantial differences in data collection methodologies between the CDFA SOP organic acreage and NASS total acreage datasets made it difficult to infer trends for certain crops and regions. For instance, a category called “Sum of Others” is used to maintain the privacy of producers when a county has a small number of producers for a specific crop category in the NASS total harvested acreage dataset. This results, in some cases, in a large proportion of a crop category not having a geographic location associated with it. For example, 57% of the carrots crop data is reported as “Sum of Others” – meaning that 57% of reported harvested acreage for carrots did not have a county assigned to the data to maintain producer anonymity. This made it difficult to infer any county-level trends for crop categories with high proportions of acreage reported as “Sum of Others”. Furthermore, animal production was incomparable because CDFA SOP data presented animal production categories in terms of total acreage and lumped rangeland and pasture in as field crops. Contrastingly, NASS datasets presented animal production in terms of units (e.g. head of cattle) and rangeland and pasture as their own acreage categories. As such, this analysis focused only on harvested cropland acreage. Finally, differences in data collection resulted in notable discrepancies for some crop categories and counties in California.

## Background and Objectives

Since the USDA National Organic Program went into effect in the early 2000s, market-share and consumer interest in certified organic products has seen steady upward growth – with sales across the US at \$71.6 billion in 2024<sup>5</sup>. This may come as no surprise given that organic agriculture can contribute to a wide range of social and environmental goals such as reduced greenhouse gas emissions and pesticide use as well as improved biodiversity and soil health<sup>6</sup>. While organic agriculture can be found across the country, California has continued to lead the nation in total organic acreage, number of certified organic farms, and total sales of organic products<sup>1</sup>. More recently, a targeted emphasis on increasing certified organic acreage has been outlined by multiple California state agencies such as the California Air Resources Board (CARB) Scoping Plan for Achieving Carbon Neutrality<sup>4</sup>. Additionally, the California Department of Pesticide Regulation (CDPR) Sustainable Pest Management Roadmap<sup>7</sup> called for increased support for organic agriculture as a way to further reduce reliance on synthetic pesticides. New federal programs, such as the USDA Transition to Organic Partnership Program<sup>2</sup> have also presented new opportunities for organic agriculture nationally. As organic agriculture continues to grow through increased market demand and institutional support, there is a need to better understand trends in organic production across the state.

The collection of organic acreage data at the county- and crop-specific level is essential to understanding key trends in organic agriculture, which can in turn be used to develop effective research, extension, and policy support across California. Currently, publically-available data on California's certified organic production is collected by the California Department of Food and Agriculture (CDFA) State Organic Program (SOP). While this data has been previously used to broadly characterize organic production in California<sup>8</sup>, those analyses are now dated. Further, the analysis presented here aims to evaluate whether certain counties and crops tend to skew more or less away from organic production.

In this project, we attempt to summarize and compare recently available datasets (Year 2021) of harvested organic acreage and total harvested acreage for key crops at the county level in California. These datasets were evaluated to summarize: 1) the total and organic harvested acreage across counties and cropping systems, 2) the relative proportion (%) of organic compared across counties and cropping systems, and 3) overall trends in organic production at the state level. In addition to applications of this work for state agency work related to organic, these extended summaries of organic trends across counties and cropping systems can help to guide the development of targeted extension, outreach, and technical assistance efforts.

## Methods – Project Approach and Data Analysis

The public data used for this project was taken from both the CDFA SOP as well as USDA NASS California production statistics. While both data sources aim to summarize harvested acreage across cropping systems and counties, the data collection and aggregation methods were drastically different. In what follows, each dataset's collection method and data summarization process will be briefly outlined as well as any project data manipulation that was performed to facilitate comparison between the two.

## CDFA State Organic Program Data

Every year the CDFA SOP collects production information from certified organic farmers and ranchers across the state as part of their state registration process<sup>9</sup>. For the 2021 production year, there was no reporting of harvested organic acreage from Alpine, Mono, Trinity and San Francisco counties. All certified organic producers – including any organic operations with gross annual sales less than \$5,000 who are exempt from certification – must register with the state annually and self-report on their operations. Each registrant must report on both their business operation (e.g. geographic location, entity name, gross annual sales) as well as the number of organic acres of each crop and livestock aspect of their production. While not the focus of this report, organic processors and handlers must also report similar information – but to the California Department of Health. There are predetermined crop and livestock categories outlined in the California Organic Food and Farming Act, which was signed into law in 2017 to update numerous aspects of the SOP including the reporting requirements for certified organic producers<sup>10</sup>. See Box A below for a list of the categories used in 2021.

**Box A.** Categories of organic acreage in cropland and livestock reported to the SOP in 2021.

### Fruit crops

Citrus  
Grapes, table  
Grapes, wine  
Grapes, raisins  
Stone fruit  
Pome fruit  
Strawberries (fresh market)  
All other berries  
All other fruit crops

### Vegetable crops

Broccoli  
Carrots  
Celery/celeriac  
Lettuce (head, leaf, mixes)  
Spinach (fresh or processed)  
Tomatoes  
All other vegetables

### Nut crops

Almonds  
All other nut crops

### Livestock or dairy

Cattle, beef  
Chicken, broilers  
Chicken, layers  
Fluid milk, cow  
All other dairy and dairy products  
All other poultry/livestock products

### Other

Fallow  
Propagation  
Seed crops  
All other field crops (incl. pasture/rangeland)  
All other not previously reported or listed

## California Agricultural Production Statistics (APS) Data

Crop and livestock statistics are collected annually by County Agricultural Commissioners across the state and then aggregated into state-level reports. These data sets are compiled and hosted by the USDA NASS<sup>11</sup>. In 2021, reports were received from 53 of the 58 counties – where the five counties that did not provide any data for the CA Agricultural Production Statistics (APS) Report included Del Norte, Humboldt, Lassen, San Francisco, and Trinity.

The data collected by County Agricultural Commissioners is compiled through multiple methods and varies county to county. Examples of data sources include grower surveys, regulatory and inspection data, shipment data, and industry assessments. Further, the acreage data collected for each crop may be

organized differently depending on the county such as listing all grape acreage versus parsing grape acreage by raisin, table, and wine grapes. For ease, the data is presented both as reported by County Agricultural Commissioners as well as in aggregated categories (e.g. Grapes, all). For livestock statistics, California Agricultural Production Statistics are reported as units (e.g., number of head). This contrasts with the reporting method for the CDFA SOP, which uses acreage for animal production data such as dairy cattle or broiler chickens. Finally, a proportion of the reporting for cropland and livestock operations in the California APS is not connected to any geographic area, and is instead reported as “Sum of Others” to meet confidentiality requirements at a county level<sup>11</sup>. For some categories, such as carrots, this “Sum of Others” can account for more than half of the reported acreage, which likely means there is significant undercounting of harvested acreage in some counties for certain data categories.

## Data Translation and Evaluation

The CDFA SOP and California APS datasets had many differences that needed to be addressed and documented before evaluating trends in organic acreage across cropping systems and counties. Given that the CDFA SOP data was collected and organized into 29 cropland and livestock categories, the first step involved aggregating over 200 hundred data categories from the CA APS into the equivalent data categories from CDFA SOP. Definitions of crop categories that summarized many individual crop categories – such as “All other not previously reported or listed” or “All other field crops (including pasture/rangeland)” – were informed by available resources from CDFA<sup>12</sup>. The results from this aggregation process are listed in Supplemental Table 1 of this report.

While most cropland categories were relatively easy to organize and compare across both datasets, differences in collection methods for the livestock-related data made the datasets incomparable between the CDFA SOP and CA APS. Specifically, the metrics used to quantify livestock-related activities were different between the two datasets. For the CDFA SOP, data was collected from farmers as acreage specifically allocated for various livestock-related operations such as beef cattle, chicken broilers, fluid milk cows, and others. In contrast, the CA APS collected data as number of livestock units (e.g. head of cattle, colonies of bees) for similar categories – which is a more common metric for this data type. Before the 2017 legislative change, the SOP collected livestock data using similar metrics to CA APS (California Code of Regulations § 1391.7. Registration Requirements). Given this, direct livestock operational categories (e.g. Cattle, beef) were excluded due to the differences in data collection methods. Finally, for the purpose of this report, pasture and rangeland acreage collected for the CA APS was included in the CDFA SOP category “All other field crops (incl. pasture/rangeland)”.

## Results

### Organic Agriculture is Widespread Across California but Varies by County

Almost every California county (54 out of 58 counties) reported harvested organic acreage in 2021 (Table 1, Fig. 1). Counties that did not report any organic acreage (unreported or <0.5 acres) to the State Organic Program included Alpine, Mono, San Francisco, and Trinity Counties. Altogether, this data analysis suggested that in 2021 4.4% of harvested cropland acreage across the state was certified organic (i.e. 1,174,539 certified acres). Due to the differences in data collection outlined above, this estimate excludes SOP acreage data explicitly dedicated to animal operations. Unfortunately, it was not

possible to calculate the percentage organic production for multiple counties because they did not report total acreage data at the county level for the California APS in 2021 (i.e. Del Norte, Humboldt, Lassen, Los Angeles, San Francisco, and Trinity counties).

The top counties for total harvested organic acreage and total harvested acreage were mostly different (Table 2-3). The top counties for harvested organic acreage heavily featured field crop, pasture, and rangeland systems with Fresno County in the 5<sup>th</sup> spot featuring a wide range of cropping systems. Whereas the top counties (Kern, Tulare, Monterey) for total harvested acreage were counties that featured many specialty crops. While the top counties were different, the same 8 counties were featured somewhere in the top 15 for both total organic harvested acreage and total harvested acreage.

The top 3 counties for total harvested acreage had percentages in organic lower than the statewide average of 4.4%. Interestingly, two of these counties (Kern and Monterey) were also featured in the top ten for total harvested organic acreage. This may not be surprising, though, given that these counties produce a significant amount of specialty crop commodities exported from California generally and are in the top ten counties for agricultural sales nationwide<sup>13</sup>. The crop profiles for Monterey and Kern Counties showcase the range and scale of production taking place there (Supplemental Table 2). Given the significant amount of crop commodity production happening in these counties, it may not be surprising that their relatively large amount of total harvested organic acreage is only a small fraction of total production happening in the Counties.

Counties that were in the top four of total harvested organic acreage (Lassen, Tehama, Modoc and Humboldt Counties) were all located geographically close to each other in Northern California and share a similar focus on animal agriculture, pasture/rangeland, and some agronomic crops (Table 2). Specifically, almost all the acreage for their counties that was evaluated in this project was categorized as “All other field crops (including pasture and rangeland)” (Supplemental Table 3). Given that these agricultural systems require extensive land to operate profitably, this may help explain why these counties ended up as leaders in total harvested organic acreage. Furthermore, some of these counties (e.g., Humboldt and Tehama) are known for their emphasis on organic dairy operations so market niches are also likely to support organic production in this region. These counties also specialize in a significant number of agronomic crops like alfalfa hay, wheat, potatoes (for Modoc), and other field crops.

For this analysis, only three counties with the top organic harvested acreage also had top 10 highest percentages of their total production acreage in organic – Modoc, San Luis Obispo, Tehama (Table 4-5). In Modoc and Tehama counties, this high percentage may reflect their market niches in potatoes, rangeland, agronomic crops, and dairy. Many of the other counties with high percentages in organic had relatively small total harvested organic acreages. For some of the county’s leading in percentage organic – such as Santa Cruz, San Luis Obispo, Sonoma, and Marin – this may be in part because they are reputationally known for having an emphasis on organic agriculture, smaller-scale farms, and/or regional food economies. Therefore, these counties may have high percentages of total production acreage in organic while also having relatively lower overall harvested acreage and higher value crops. Other counties like Imperial had a high percentage of production in organic (no. 6) and – while not in the top ten – approximately 51,000 acres of organic agriculture. This may not be surprising as Imperial County is widely known for its production and export nationwide of organic (and non-organic) commodities such as carrots, lettuce, and brassicas.

Finally, this exercise also exposed how some of the discrepancies in data collection methods between the SOP and CA APS programs, noted above, impacted the ability to accurately infer trends in organic agriculture across the State. First, some counties did not report total harvested acreage to the State so it was impossible to calculate county-level percentages of production in organic. Further, our methods suggested that Orange County had the highest percentage in organic of all counties, with >100% of total acreage as certified organic – clearly this cannot be the case and indicates a calculation error driven by differences between the two datasets. This is likely due predominantly to the methodological differences in data collection such as using surveys versus farmer self-reporting. Other differences, such as the use of the “Sum of Others” category to maintain producer confidentiality by the CA APS, resulted in a category larger than any other individual county for total harvested acreage (Table 3). This translated to a large amount of data being unaccounted for geographically and, ultimately, inaccurate reporting at the county level for a large portion of the total harvested acreage and proportions of acreage in organic. These differences and data discrepancies made it challenging or impossible to compare these datasets to identify trends with more specificity and/or certainty.

## **Emphasis on Organic Production Differs Across Cropping Systems**

Organic agriculture is prevalent across all the cropping systems in California evaluated in this project (Table 6). However, the harvested organic acreage as well as the percentage of total acreage in organic varied substantially across the crop categories evaluated. This variability suggested that some specialty crops grown in California may have more of an emphasis (or not) on organic production.

Across the top ten crop categories, five crops were reflected in both the top organic and total harvested acreage across the state (Tables 7-8) – this included almonds, lettuce, and wine grapes as well as the broader categories of “all other field crops (incl. pasture and rangeland)” and “all other vegetables”. The category “all other field crops (incl. pasture and rangeland)” shared the top position for both organic and total harvested acreages. This is not surprising as this crop category includes pasture, rangeland, and other agronomic crops that require large acreages for successful operation. Further, California is amongst the top producers nationwide for many of products.

The prevalence of other top ten crop categories likely reflects a multitude of dynamics such as market niches, climactic considerations, and industry supports. For example, almonds and wine grapes are two commodity groups that California specializes in due to the wide range of climactic conditions that facilitate the production of both these crops. It is therefore not surprising that both crop categories were included in the top ten for both organic and total harvested acreage. In contrast, there were some crop categories included in the top ten for harvested organic acreage that may reflect market trends and consumer preferences specifically for organic products nationwide. For example, produce like carrots and packaged lettuce are consistently top sales categories for organic produce purchases across the United States<sup>14</sup>. This market niche can be filled by California agriculture partially because its diverse climactic conditions can facilitate growing these crops during times of the year when other parts of the US cannot, such as the winter to early spring seasons.

A majority of the crop categories (19 of 22) had percentages of total acreage in organic that were higher than the state average of 4.4% (Table 6). For example, spinach, all other berries (e.g, raspberries, blackberries – but not strawberries), and carrots had between 41-72% of production as certified organic in 2021. Given that consumer demand nationwide for these specific organic products is particularly high<sup>14</sup>

and California's climate facilitates the production of these crops, it may not be surprising that these crop categories were so skewed towards organic. However, most of the other crop categories also had substantially higher percentages in certified organic than the state average of 4.4% including: broccoli (20.6%), celery/celeriac (21.2%), lettuce (23.1%), pome fruits (15.6%), and strawberries (15.5%).

While most crop categories were higher than the state average, there was one category below the average that likely had significant influence on the overall percentage in organic for the state. The "all other field crops (incl. pasture and rangeland)" accounted for over 60% of total harvested organic acreage (Table 7) but only had 3.4% of total harvested acreage as certified organic (Table 6). The high proportion of total acreage accounted for by this category likely skewed the overall percentage of cropland in organic lower. Given that this category includes mostly rangeland, pasture, and agronomic crops, it may be useful to separate this category out for future analyses to evaluate organic trends at a more granular level.

Methodological differences between the SOP and CA APS data collection process also impacted the analysis of cropping system trends in organic agriculture across the state. Specifically, the top crop category for percentage organic was "all other not previously reported or listed" – which reported as over 190% of total harvested acreage in organic. This suggests that there is discrepancies in how these crops are accounted for between SOP and CA APS. Given that this category represents a relatively large amount of acreage (28,732 acres), addressing discrepancies in data collection and reporting is critical. The "Sum of Others" county category in the CA APS also generated barriers to understanding organic cropping system trends at a county level.

## Differences in Datasets Create Challenges for Accurate Trend Reporting

While this analysis generated a useful overview of interesting potential trends in organic agriculture from a regional to statewide level, differences in collection methods between the SOP and CA APS datasets create substantial barriers to ensuring accuracy for such evaluations.

One of the predominant challenges that creates uncertainty in accurate comparability between these two datasets is the differences in data collection methods. The SOP collects acreage data directly from certified organic producers because they are required to register with the State annually. Contrastingly, the CA APS synthesizes data from each county that is collected using a variety of methods (e.g., voluntary surveys, inspection data, shipment data, commodity board data). Further, each county determines what suite of data collection methods are used - this could introduce additional levels of uncertainty from the county to statewide level. These differences in data collection methods showed up multiple times throughout this project. For example, and as mentioned earlier, Orange County had the "highest" percentage of organic acreage at the county level (>100%). This would suggest that not only is this county only growing organic crops, but this county is undercounting their overall total harvested acreage. This is likely not the case – but rather this highlights the discrepancies generated by comparing directly reported data with other methods such as census-style surveys. Given the importance of understanding the organic landscape, identifying pathways to better coordinate data collection efforts would be useful.

Another challenge that arose during data analysis was the prevalence of the geographic category called "sum of others". This category is used to maintain confidentiality when reported data may easily identify a producer at the county level. Overall, 10% of total harvested acreage was reported as "sum of others" across all crop categories. This proportion, however, varied widely depending on the crop

category. For example, the crop categories carrots, all other fruit crops, and all other vegetables had data reported as “sum of others” for 57%, 22%, and 11%, respectively, of total harvested acreage in 2021. This suggests that there is significant underreporting for certain counties and, ultimately, makes it impossible to accurately evaluate trends in both organic and total harvested acreage for these crop categories. Conversely, crops such as almonds, strawberries, and wine grapes had data reported as “sum of others” less than one percent – making it easier to infer county-based trends for these categories (Table 9-11). While ensuring confidentiality is critical to maintaining the trust needed to generate these datasets, efforts to minimize unreported county information would enable detailed trend evaluations and the identification of production niches happening at the crop and county level.

Differences in data collection at a cropping system level introduced further challenges to generating an accurate and comprehensive picture of organic agriculture across California. Specifically, the selected categories used by the SOP to collect and categorize data from organic producers leaves lots of uncertainty about a wide range of cropping systems. Some categories are specific – such as “carrots” or “almonds” – whereas others are broad like “all other field crops (incl. pasture and rangeland)”, “all other nut crops (not almonds)” or “all other not previously reported or listed”. This makes it impossible to inquire about particular crops that fall within a broad crop category – leaving unknowns for important commodities including rice, oranges, walnuts, pistachios, and others. Further, comparisons with total production statistics required significant transformations of the CA APS data to fit these specific crop categories. Efforts to identify additional crop categories that could balance more nuanced data evaluation (making pasture and rangeland its own category, for example) while not significantly increasing the reporting burden would be impactful for better understanding cropping system trends for organic in California.

Finally, this report did not evaluate trends in organic livestock agriculture due to insurmountable data collection differences between SOP and CA APS. The SOP uses harvested organic acreage as their data metric for all categories including livestock agriculture. This is unusual because most other metrics for livestock are in units (e.g. “head”). This metric choice made it impossible to compare organic and total livestock data, ultimately leaving trends for organic livestock operations unexplored. Other livestock-related data such as the pasture and rangeland acreage were not comparable between organic and total because it was included in the category “all other field crops (incl. pasture and rangeland)” for the SOP. Both of these data metric choices not only create comparability challenges but also introduce uncertainty in how farmers are reporting their livestock production data because individuals may interpret acreage dedicated to animals versus pasture and rangeland acreage differently. Given that these cropland and livestock categories are significant portions of agricultural land use for the state, parsing these categories out would enable greatly improved comparability between data.

It is undoubtedly difficult to generate this level of statistical data for statewide organic and total acreage across counties and cropping systems. Currently available data does allow for a degree of comparability between organic and total harvested acreage and inference about high level trends. However, it is imperative that efforts to improve accuracy and consistency are made because many organizations, incentive programs, and sustainability goals rely on this data to guide their efforts. Identifying pathways to streamline data collection methods at a county level and expand crop categories would help to address these challenges and improve the usefulness of these essential datasets.

## Conclusions and Next Steps

This report was a first attempt to characterize whether certain crops, counties or specific crops within a county tended to skew toward or away from certified organic production – ultimately suggesting whether certain counties or regions may have niches for organic production. Identification of such niches (or lack thereof) may shed light on unique conditions within a region or cropping system that are more or less conducive to organic production. In this way, findings from efforts like this could help in the development of more relevant and timely research and extension activities as well as policy support for organic producers. These can in turn help the state achieve their goal of increasing organic production as outlined in various recent scoping documents. Key findings from this analysis suggested that certain counties and crops did indeed trend towards organic production. However, much remains unknown – especially about animal agriculture – due to significant discrepancies between the available datasets. While there is still some utility in the output from the analysis presented here, it will be critical to reconcile differences in data collection between the SOP and California APS prior to revisiting this type of analysis in subsequent years.

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