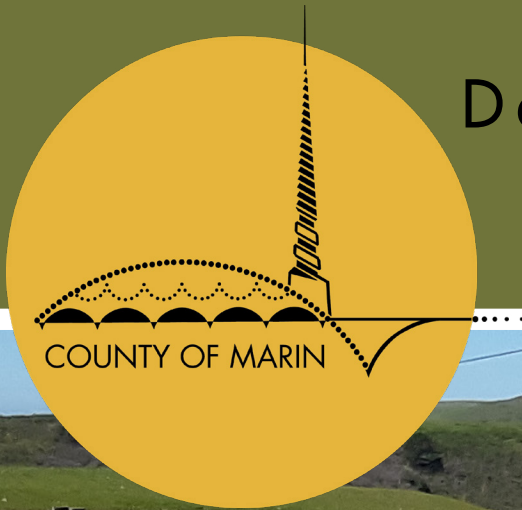


Department of Agriculture Weights and Measures



2021 Crop and Livestock Report

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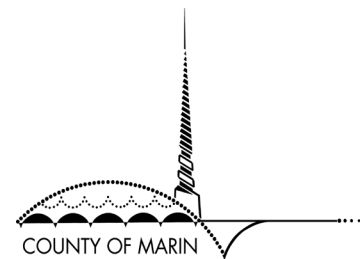
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Cover photo taken by Department Staff: Sheep running out to pasture in Inverness. **Did you spot the livestock guardian dog?**

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Stefan Parnay, Commissioner/Director

It is my privilege to present the 2021 Marin County Crop and Livestock Report. This report is prepared in accordance with Sections 2272 and 2279 of the California Food and Agricultural Code and summarizes the acreage, production, and gross value of agricultural products produced in Marin County.

The total gross value of agricultural crops and commodities produced in Marin County during 2021 was \$96,656,000. This represents a decrease of \$5,184,000 or 5% from the previous year's total of \$101,840,000.

Much of this decline can be attributed to the ongoing impacts of drought conditions, as evidenced in 2021 by record low rainfall and the second consecutive dry winter in Marin County. The unavailability of water affected nearly every commodity type in Marin County from Field Crops to Livestock, as well as Fruits and Vegetables.

Organic Milk continued to be the leading agricultural commodity in Marin County with a gross value of \$33,568,000, which represented 35% of the total gross value of all commodities and crops produced in 2021. Poultry remained the County's second highest valued commodity at \$22,601,000 and accounted for 23% of the total value. The value of Aquaculture increased 119% due to revitalized demand by consumers after the coronavirus shuttered market and restaurant doors in 2020.

Drought conditions detrimentally affected the production of Field Crops, Fruits and Vegetables, and Nursery Products in 2021. The total value of Pasture, Hay, and Silage decreased by 33%, 49% and 43% respectively, with many pastures experiencing foraging loss, and total production of hay and silage down more than 10,000 tons or 46% compared to 2020. Fruit and Vegetable acreage decreased by 42% and total value was down by 34% with many growers following land due to lack of water. The total value of Nursery Products decreased 25% due in part to some permanent and some temporary closures of a few small, family-owned nursery and cut flower producers.

I would like to express my gratitude for the continuing cooperation of all individuals, growers, and agencies who contributed information necessary to prepare this report. Without their assistance, this report would not be possible. I wish to thank my team, in particular Allison Klein, who made the publication of this report possible.

Respectfully submitted,

A handwritten signature in cursive script that reads "Stefan Parnay". The signature is written in black ink and is positioned below the "Respectfully submitted," text.

Stefan Parnay
Agricultural Commissioner
Director of Weights & Measures

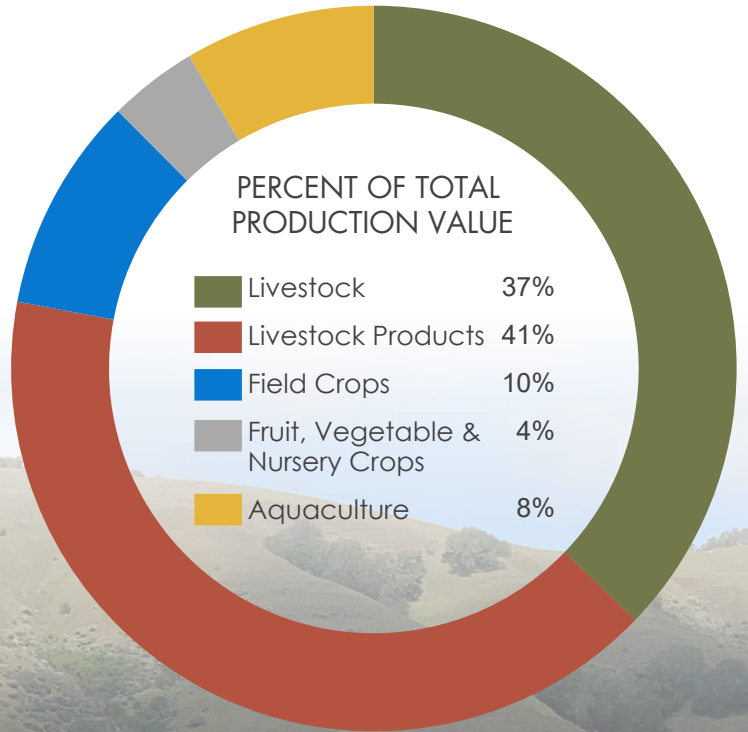


Agricultural Production Summary

The gross value of all agricultural production in Marin County for 2021 was approximately

\$96,656,000

which represents a decrease of approximately 5% compared to the 2020 gross value of \$101,840,000.



TEN YEAR SUMMARY

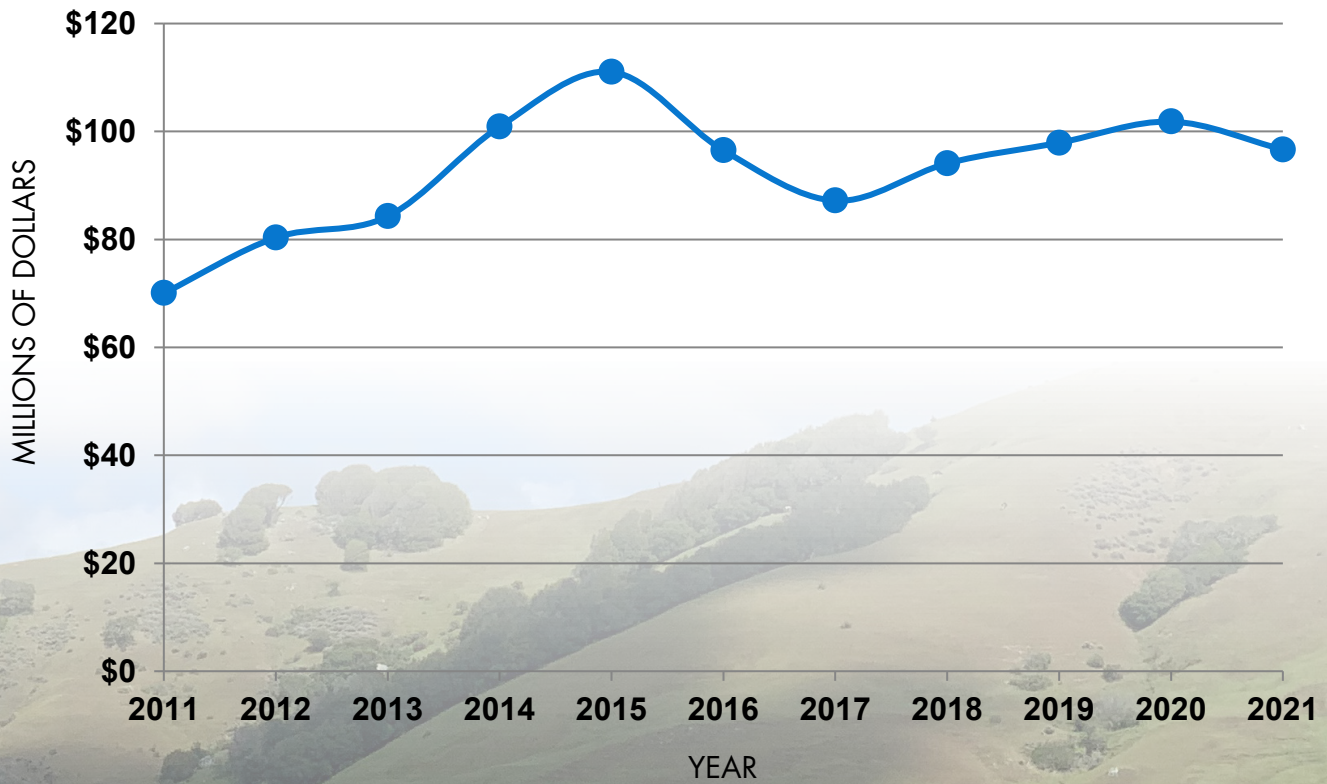




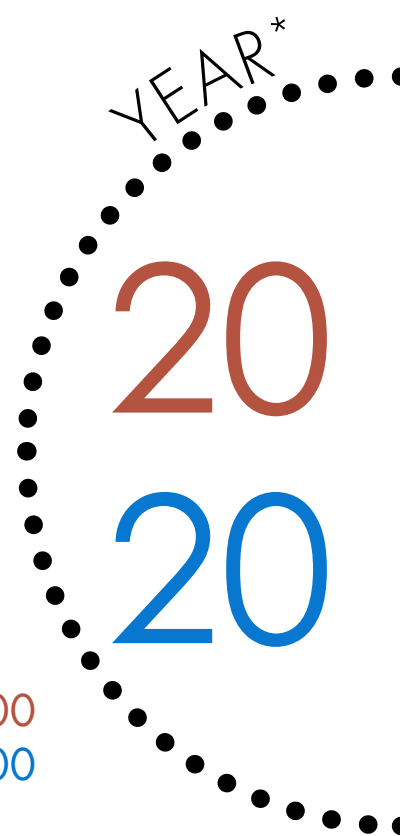





Photo by Department Staff: Dairy cows grazing on pasture in Petaluma.

Livestock & Aquaculture

		# of Head	\$ / Head	Dollar Value
↓ -13%		13,900	\$1,000	\$13,900,000
		14,245	\$1,124	\$16,011,000
↑ 10%		11,300	\$255	\$2,881,000
		13,209	\$199	\$2,629,000
↑ 6%		Poultry figures include poultry fryers and chicken and duck eggs for consumption.		\$22,601,000
				\$21,265,000
↑ 119%		Aquaculture figures include oysters, mussels and clams.		\$8,208,000 ^A
				\$3,750,000
Total Value:				\$47,590,000
				\$43,655,000



Livestock Products

		Production	\$ / Unit	Dollar Value
↓ -8%		1,097,000 CWT	\$30.60	\$33,568,000
		1,058,597 CWT	\$34.54	\$36,564,000
↑ 7%		137,400 CWT	\$17.20	\$2,363,000
		134,675 CWT	\$16.37	\$2,205,000
↓ -12%		29,700 lbs	\$0.98	\$29,000
		30,366 lbs	\$1.09	\$33,000
Total Value:				\$35,960,000
				\$38,802,000

* 2021 data is presented in red above; 2020 data is presented in blue below.




^A Aquaculture value based on report prepared by California Department of Fish and Wildlife.

^B "Conv." means conventional (not organically certified)




Totals may not add due to rounding.

21
20

Field Crops

	Acreage	Total Tons	\$ / Ton	Dollar Value
 ↓ -49% Hay ^C	1,250	1,320	\$145	\$191,000
	1,124	2,734	\$136	\$373,000
 ↓ -43% Silage ^D	1,430	10,300	\$60	\$615,000
	1,651	19,301	\$56	\$1,073,000
	Harvested Acreage		\$ / Acre	Dollar Value
 ↓ -33% Pasture	154,000		\$55	\$8,470,000
	154,000		\$81	\$12,628,000
Total Value:			\$9,276,000	\$14,074,000

Fruits, Vegetables & Nursery

	Acreage	Total Tons	Dollar Value
 ↓ -34% Fruits & Vegetables	221 ^E		\$2,657,000
	380		\$4,006,000
 ↓ -4% Wine Grapes	188	322	\$899,000
	195	260	\$938,000
 ↓ -25% Nursery Products ^F	6.43		\$274,000
	7.02		\$365,000
Total Value:			\$3,830,000
			\$5,309,000

^C Values include Rye Hay, Oat Hay, Oat Seed and Vetch Seed.
^D Much of the hay and silage is not sold, but used on the farm - value determined by the feed equivalent.
^E Following the USDA National Agricultural Statistics Service methodology for Acreage Harvested, acreage harvested and planted repeatedly during the year is counted each time. Harvested acreage for 2021 Fruits & Vegetables represents 190 planted acres.
^F Values include Nursery Stock and Cut Flowers.



Sustainable Agriculture Activities

LIVESTOCK PROTECTION PROGRAM

The Marin County Board of Supervisors continues to support and allocate cost-share funds for the Livestock Protection Program to eligible agricultural producers who qualify for non-lethal depredation improvements and practices. Recognized non-lethal control methods include the use of protection animals (e.g., livestock guardian dogs, llamas, etc.), electric fencing, and scare devices, which are eligible for cost-share funds to support ranchers. The Department administers annual verification inspections for cost-share funding for ranchers participating in this program.

Over the past year, 21 ranchers participated in the Livestock Protection cost-share program to help build and repair fences, purchase and support protection animals, and use scare devices to protect animals from predators. Protected animals include sheep, poultry, goats, cattle, water buffalo, and alpacas. The total funds expended to support our ranching community from July 2020 to June 2021 was \$37,646.



Photos by Department Staff (from top): electric fencing helps protect a flock of laying hens; a livestock protection dog guarding sheep; and new woven wire fencing.

INTEGRATED PEST MANAGEMENT

Integrated pest management (IPM) is a common-sense approach to pest management that uses a variety of methods and tools to control pests. IPM programs focus on preventing pest problems through cultural and biological measures, although pesticides may be part of an IPM program. The goal is to eliminate or reduce pesticide applications wherever possible and take reasonable measures to ensure that the long-term prevention or suppression of pests has minimal negative impact on human health, non-target organisms, and the environment.

The Department recommends Integrated Pest Management strategies for long-term pest control such as the use of cultural, biological, and mechanical control methods (with chemical control as a last option).

PROTECTION OF THE ENVIRONMENT

The Department oversees the use of pesticides in Marin County and operates a Pesticide Use Enforcement program that includes a permitting process for restricted pesticides as well as education and assistance for pesticide users. While reviewing, collecting and analyzing data and records associated with pesticide sales and use, our Department also monitors pesticide use applications, investigates pesticide-related citizen complaints, and conducts pesticide-related illness investigations. The ultimate goal of this program is to ensure the safe and effective use of pest control methods in order to protect public health and the environment, while strongly promoting the production of healthy, safe food and fiber through sustainable practices.

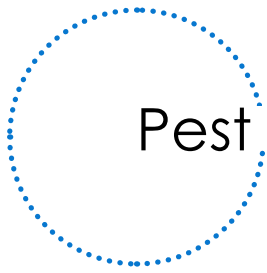
PEST PREVENTION, DETECTION & EXCLUSION

Pest prevention encompasses several activities aimed at preventing the introduction and spread of exotic pests in Marin County.

Pest detection is the systematic search for exotic pests outside of a known infested area. The goal is to find infestations of harmful exotic pests as early as possible and eradicate them before eradication becomes biologically or economically infeasible.

Pest exclusion focuses on preventing the entry and establishment of exotic pests and limiting the intrastate movement of newly discovered pests. Marin County inspectors monitor all primary pathways of pest entry into the county including nurseries and points of entry such as UPS and FedEx package terminals.

Do these activities really work? Yes! According to the California Department of Food and Agriculture, studies show a direct correlation between agricultural inspections and lowering invasive species infestations. For every dollar spent on pest prevention, detection, and exclusion, an estimated \$14 are saved in later control costs and economic losses. Preventing the introduction and spread of exotic pests in Marin County also significantly reduces the potential use of pesticides if one or more of these pests were to become established and needed to be managed.



Pest Prevention Programs

PEST EXCLUSION

In 2021, inspectors conducted 15,458 incoming plant quarantine inspections. Plant shipments were monitored at FedEx, UPS, retail nurseries, aquatic supply stores, and post-entry quarantine sites. Sixty-two rejections of plant material were made to protect Marin’s agriculture and environment. Additionally, the Department performed 11 Spongy Moth (formerly known as Gypsy Moth) inspections of household goods from infested states.

The following A-rated insects were intercepted in 2021:

COMMON NAME	SCIENTIFIC NAME
black thread scale	<i>Ischnaspis longirostris</i>
boxwood scale	<i>Pinnaspis buxi</i>
coconut scale	<i>Aspidiotus destructor</i>
lesser snow scale	<i>Pinnaspis strachani</i>
magnolia white scale	<i>Pseudaulacaspis cockerelli</i>
mango shield scale	<i>Milviscutulus mangiferae</i>
pacific mealybug	<i>Planococcus minor</i>
red wax scale	<i>Ceroplastes rubens</i>
rufous scale	<i>Selenaspis articulatus</i>
sansevieria scale	<i>Parlatoria proteus</i>

PEST DETECTION

In 2021, Inspectors from the Marin County Department of Agriculture and the California Department of Food and Agriculture placed and serviced 1,689 traps for exotic insect pests. In total, 19,634 trap inspections were conducted, with most traps being checked every two weeks from May to October. Targeted pests include: Mediterranean Fruit Fly, Oriental Fruit Fly, Melon Fly, Spongy Moth, Japanese Beetle, Glassy-Winged Sharpshooter (GWSS), Light Brown Apple Moth, Asian Citrus Psyllid, European Grapevine Moth, and Invasive Shothole Borer. Traps are strategically placed within the county on or near preferred hosts. For example, GWSS traps are placed in nurseries and urban areas, and Mediterranean Fruit Fly traps are placed in fruit trees.

GLASSY-WINGED SHARPSHOOTER

The Glassy-Winged Sharpshooter, *Homalodisca vitripennis*, is a very serious threat to California agriculture. First observed in the state around 1990, it's now found in the entire counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura, and portions of Fresno, Imperial, Kern, Santa Barbara, and Tulare counties. GWSS is a particular threat to vineyards due to its ability to spread *Xylella fastidiosa*, the bacterium that causes Pierce’s disease in grapevines. Pierce’s disease is lethal to grapevines and significant resources are committed annually to find effective treatments and produce Pierce’s Disease-resistant grape varieties. GWSS also spreads other diseases to a variety of agricultural and ornamental plants, having the potential to substantially impact California’s agriculture and environment if left unchecked.

To prevent the introduction of this leafhopper into Marin County, department staff inspect incoming nursery plant shipments containing GWSS host plants from infested California counties. In 2021, a total of 1,345 shipments were inspected for GWSS, with no viable egg masses or live finds. Detection traps are strategically placed throughout the county to monitor for this unwanted pest.



SUDDEN OAK DEATH

Marin County continues to be infested with Sudden Oak Death (SOD) and Ramorum blight, the diseases caused by the plant pathogen *Phytophthora ramorum*. SOD has resulted in widespread dieback of various forest tree species, and Ramorum blight affects the leaves and twigs of susceptible forest and nursery plants. While the California bay laurel tree has been shown to be the primary predictor of *P. ramorum* in forests, mortality in tanoak and manzanita has been recorded in sections of the Mt. Tamalpais watershed, with a noticeable absence of California bay laurel, inferring that tanoak and possibly manzanita have caused the inoculum to spread.

Tree mortality in wildland and urban/wildland interface areas causes dramatic changes in the landscape, affecting ecosystems, increasing fire and safety hazards, and decreasing property values. Hosts of *P. ramorum* include various native woodland trees and understory plants, as well as assorted ornamental nursery plants. State and federal quarantines regulate the movement of host nursery stock, and ongoing research is being conducted to help production nurseries continue to mitigate the risk of spread.

On certain oaks such as Coast Live Oak, *P. ramorum* causes potentially lethal trunk cankers; on other hosts it causes leaf or twig blight, which is rarely lethal. Tanoaks may have both trunk cankers and leaf dieback. Unlike oaks, some hosts (e.g., California bay laurel) are not killed by this pathogen; instead these hosts act as a vector, allowing inoculum to spread through natural or artificial means (i.e., rainwater, soil, infested nursery stock) under moist conditions. Oaks have been found to be terminal hosts, becoming infected by pathogen spores produced on leaves of nearby plants.

UC Berkeley sponsors annual citizen science SOD blitzes in many California counties, including Marin. Visit https://nature.berkeley.edu/matteolab/?page_id=5906 for more information.

Prevention is the only treatment to protect trees from *P. ramorum*. Best preventative practices include keeping trees healthy to maintain their natural defenses, pruning overstory California bay laurels, and strategically utilizing phosphonate treatment products. For more information about diagnosis, distribution, and best management practices, please visit:

<http://www.suddenoakdeath.org>.

BIOLOGICAL CONTROL

Biological pest control is the use of pests' natural enemies to help suppress pest populations to economically and environmentally acceptable levels. Once the control agent becomes established, management is generally self-perpetuating, potentially eliminating or reducing the need to use pesticides.

The following are pests found in Marin and some of the methods that have been used to control them:

PEST	BIOLOGICAL AGENT
Gorse	Gorse Mite, Seed Weevil
Bull Thistle	Bull Thistle Gall Fly
Yellow Star Thistle	Peacock Fly
Scotch Broom	Stem Boring Moth
Ash White Fly	Parasitic Wasp
Italian Thistle	Seed Weevil



Invasive Weed Management

JAPANESE KNOTWEED ERADICATION PROGRAM

Japanese knotweed (*Fallopia japonica*) continues to threaten parts of Marin County. First documented in the winter of 2011 along Lagunitas Creek, Japanese knotweed now occurs on state, federal, and private lands in and along both Lagunitas and San Geronimo Creeks. In 2018, the Marin Knotweed Action Team (MKAT) was created. This coalition of various land managers includes the Marin Resource Conservation District, Marin County Parks, Marin Municipal Water District, State Parks, National Park Service (Point Reyes National Seashore and Golden Gate National Recreation Area), One Tam, UC Cooperative Extension Marin, and the Marin County Department of Agriculture. MKAT is leading the effort on eradicating Japanese knotweed from these watersheds.

This invasive plant is classified as an A-rated pest by the California Department of Food and Agriculture, which is the highest and most serious pest rating. Japanese knotweed is considered one of the top 10 most aggressive, destructive and invasive plants in the world!

Small patches of knotweed can quickly grow to infest large areas of land in and along waterways, over time making creek banks more vulnerable to erosion, clogging waterways, and reducing habitat quality for fish and wildlife. It's an aggressive colonizer that outcompetes native vegetation by emerging early, growing fast, and preventing seedling regeneration. It can grow through cracks in street pavement, concrete, and other hardscapes, including home foundations and septic systems. As a result, land managers are not only concerned about the ecological threat this species poses, but also about the damage it can do to homes and property.

Much great work has been done on state, federal, and private lands to manage and treat these knotweed populations. However, in order to eradicate this species in Marin, continued coordinated action must be taken



before the infestation becomes more widespread.

MKAT has worked closely with dozens of streamside private property owners along San Geronimo Creek since fall 2018. The goal has been to educate them on the serious threat Japanese knotweed poses, get permission to survey their property, and treat any infestation that is found with the consent of the owner. Mechanical removal of this weed has proven to be ineffective. Attempting to manually remove plants stimulates their growth, which causes spread. Rhizomes (underground stems) have been documented to extend 23 feet horizontally and 10 feet deep.

Japanese knotweed sites range in size from newly deposited, single stem plants to mature stands of Japanese knotweed larger than half a tennis court. Over half of the sites surveyed in Marin in 2018 were less than the size of a car parking space. Based on the experiences of other land managers in northern California and Washington state, three to five years of treatment may be needed for larger sites with less and less herbicide being used in each subsequent year as the populations are reduced in size and number.



Of the 74 sites on private lands that were treated in previous years (2018-2020), 30 sites had no detectable aboveground stems in 2021, while 44 sites did have stems present (though the height and number of stems were significantly reduced). In addition to these 74 sites and 2 sites that have never been treated, twelve new sites (ranging from one to ten stems) were found in 2021 during a streambank survey from Creamery Road in San Geronimo to the Inkwells in Lagunitas. Thirty-three of the total 88 sites were not treated as there were no visible stems present at the time of treatment and four sites were not treated due to lack of permission. The remaining 51 knotweed sites were treated in August 2021. The total treatment area in 2021 for 51 sites was 0.33 foliar acres. Herbicide use for all 51 sites in August 2021 included: 2.4 ounces of Habitat, 2.3 ounces of Competitor (adjuvant), and 9 ounces of Roundup Custom.

MKAT is continuing to educate and work with four property owners that have declined treatment to manage Japanese knotweed on properties with streamside knotweed. To date, there are also two additional properties with Japanese knotweed near the residence (not near the stream) that also have declined treatment. More information about Japanese knotweed can be found at <https://ucanr.edu/sites/MarinKnotweedActionTeam>.

MARIN/SONOMA WEED MANAGEMENT AREA

The Marin/Sonoma Weed Management Area (MSWMA) is a cooperative organization fighting weeds and invasive plants in Marin and Sonoma Counties. Established in 1999, the group includes representatives from federal, state, county and city agencies, private industry, and landowners.

MSWMA reconvened Fiscal Year 2019-20 as a result of the California legislature approving \$2 million in state-wide funding in Spring 2019 for weed projects across California. MSWMA had not officially met since 2015 due to the lack of state funding to support weed projects. Going forward the California Department of Food and Agriculture has a baseline amount of \$3 million for noxious weed control and research through California's Biodiversity Initiative.

MSWMA's goals include improving the effectiveness of local weed management efforts, increasing public awareness of invasive weeds, advancing responsible land stewardship practices, and working collaboratively with partner organizations by sharing resources and knowledge to manage and/or eradicate invasive weed populations. MSWMA helps control weeds across land ownership boundaries by uniting landowners with public agencies and providing an opportunity to share resources in mapping, planning, and treatment strategies.

Visit the Marin/Sonoma Weed Management Area website at <https://www.cal-ipc.org/solutions/wmas/marin-sonoma-wma/>. Information can also be found at <https://www.marincounty.org/depts/ag/weeds>.

Marin Organic Farming & Ranching

MARIN ORGANIC CERTIFIED AGRICULTURE

The Marin County Department of Agriculture is accredited by the United States Department of Agriculture (USDA) as an official organic certification agency.

For twenty years, Marin Organic Certified Agriculture (MOCA) has served local agricultural producers who employ organic farming and ranching practices, and seek formal certification under USDA's National Organic Program. Organic production systems strive to achieve agro-ecosystems that are socially, economically, and environmentally sustainable. Organic farming emphasizes greater cooperation with nature without reliance on synthetic inputs.

Consumer demand for certified organic products continues to increase, with an expectation by consumers that organic products are verifiable. MOCA was established in 2001 to provide a professional service to local individual and business operations engaged in the production and distribution of organically produced commodities.

The primary responsibilities of MOCA are to uphold the standards of the USDA National Organic Program, and document and verify operations' practices of sustainable agriculture. One of the most important benefits of the MOCA program is as a local resource that services the production of organic, value-added products by Marin's family farms.

In 2021, MOCA certified 50 operations as organic including 14 dairies, 5 beef and 4 poultry operations, 15 fruit/vegetable operations, and 3 cheesemaking operations. More than 32,000 acres of livestock feed including pasture, hay and silage were certified as organic. Thirty-two of the operations are located in Marin County. Sixteen operations are located in Sonoma County.

The remaining two operations are located in Riverside County and are managed by Marin-based operations to ensure a year-round supply of fresh produce in the local off-season.



CALIFORNIA ORGANIC PROGRAM

All organic producers in California must register with the California Department of Food and Agriculture's Organic Program. In 2021, there were 77 registered organic producers in Marin County, farming approximately 51,400 acres, and producing an estimated gross value of \$40,000,000. More than 97% of the acreage farmed organically is pastureland (approximately 49,900 acres).

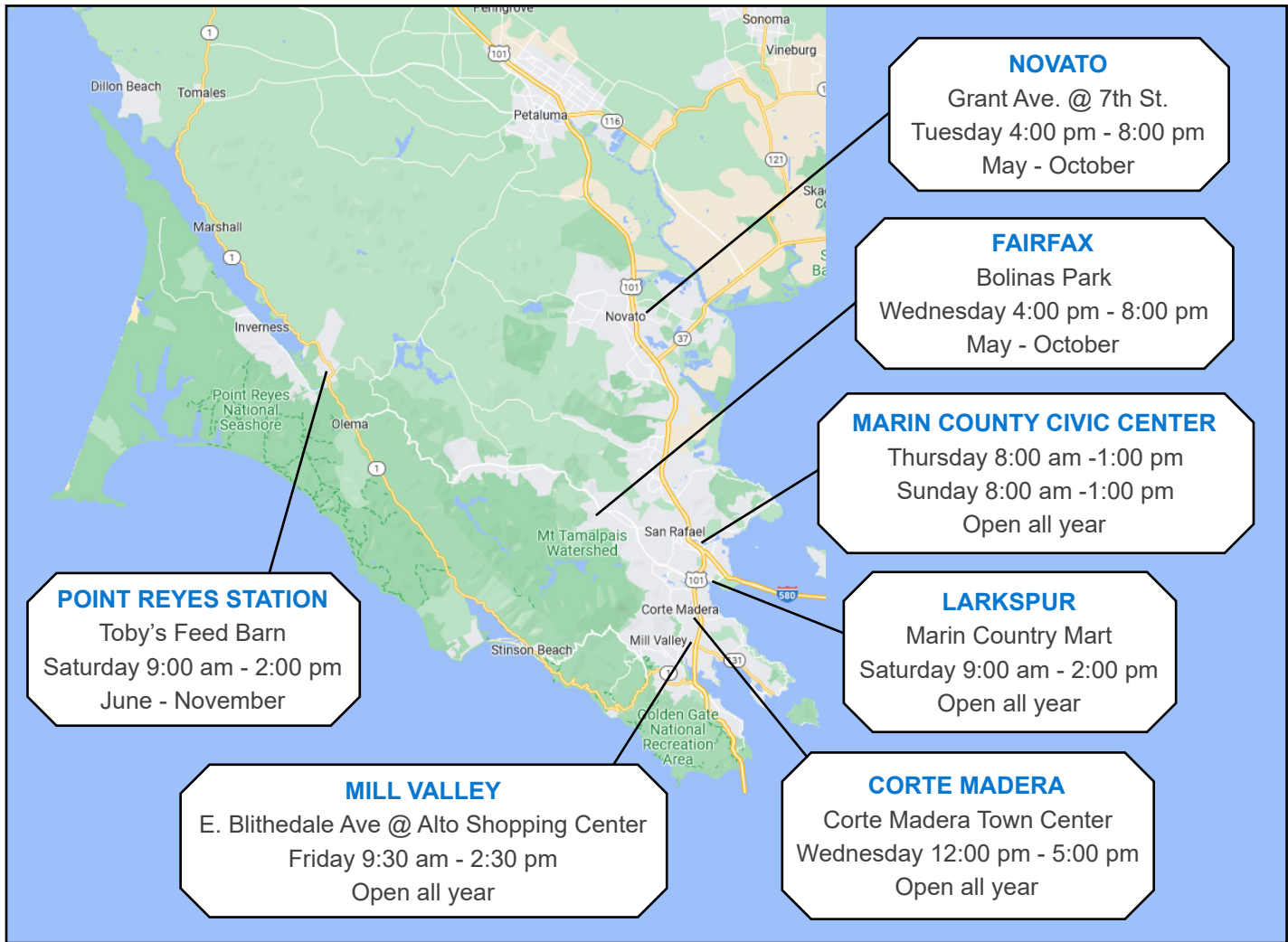
Beginning January 2017, changes to the Organic Food and Farming Act no longer require organic registrants in California to provide detailed commodity information and acreage to the state. Before these changes, the state and its counties had been collecting detailed information on specific commodities, their acreage and associated value. This allowed counties to evaluate the contribution of organic agriculture to the overall county economy and to ascertain the ratio of organic to conventional acreage. The total production acreage is now reported by registrant rather than commodity. For more information on the Organic Food and Farming Act, please visit the California Department of Food and Agriculture's State Organic Program website at <https://www.cdfa.ca.gov/is/organicprogram/>.

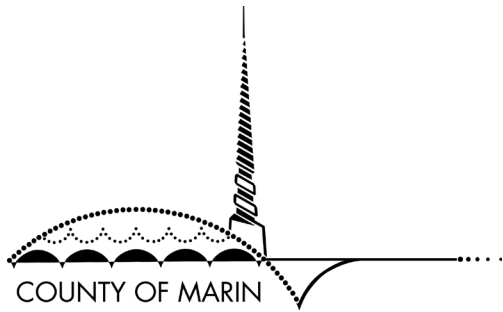
Marin Certified Farmers' Markets

Certified Farmers' Markets are community events bringing together farmers and consumers, offering the opportunity to meet certified producers and learn how and where food is grown. Farmers may only sell what they grow so consumers can rest assured the food is fresh and seasonal.

Marin's Certified Farmers' Markets showcase the diversity and abundance of local and regional produce. In 2021, 26 Certified Producer Certificates were issued to producers in Marin County, which allows growers to sell at the markets, and 10 farmers' markets were certified.

Check our website at <http://www.marincounty.org/depts/ag> to stay up to date with current market schedules.





DEPARTMENT OF AGRICULTURE, WEIGHTS AND MEASURES

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Promoting and protecting agriculture and environmental quality, and ensuring equity in the marketplace.

Staff Retirement: Hugo Abaurre

Inspector Hugo Abaurre retired in June 2021 after nearly 21 years of service with the Marin County Department of Agriculture, Weights and Measures. A native of Argentina, Hugo attended the National University of Cuyo where he studied Agronomic Science. He emigrated to the United States in 1991.

In 1993, Hugo was hired by the Los Angeles County Agricultural Commissioner's Office as a seasonal insect trapper. He worked there for two years before moving north to work as an Inspector for the Napa County Agricultural Commissioner's Office (CAC) beginning in July 1994. Hugo worked in a variety of agricultural programs including pest exclusion, biological control, and weed control.

Hugo began working for the Marin County Department of Agriculture, Weights and Measures in October of 2000. Over the decades, Hugo has worked in nearly every program within the department. He has sealed thousands of weighing and measuring devices including taxi meters and cattle scales. As the Glassy-winged Sharpshooter (GWSS) program lead, Hugo was responsible for training seasonal GWSS inspectors every year.

Since 1997, Hugo has been an expert in Geographical Information Systems (GIS), representing Napa at the first meeting (of many) of the Department of Pesticide Regulation's Permit Mapping Developers Group which aimed to integrate GIS as a component of statewide restricted material permit issuance. He received a commendation by the Napa County Board of Supervisors for assembling the foundation of a GIS program for use by all of Napa County's programs [at that time the Napa CAC was the only agency in Napa county using GIS]. His expertise continued into Marin where he digitized the county's farms and ranches into an agricultural parcel layer.

Hugo's friendly nature, eidetic memory, and expertise in all things agriculture, weights and measures will be greatly missed. We wish him all the best in his much-deserved retirement!

