



University of California

Agriculture and Natural Resources | Cooperative Extension

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THANK YOU to all the amazing Grower Collaborators for Hosting the variety trials and to Kamprath Seed for the seed donation for Demonstration Plots.

Submitted by:

Sarah Light
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Sutter-Yuba and
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Visit Demonstration Plots ~ Cover Crop Varieties in the Sacramento Valley

Sarah Light, UCCE Agronomy Advisor, Sutter-Yuba and Colusa Counties

Stop by and take a look at the cover crop demonstration plots planted at seven locations in the region. Cover crop species including legumes, brassicas, and grasses were planted to demonstrate regional variety performance. Site location, planting date, visit by date (earliest possible termination), and site observations are on the next page. All sites are easily accessible and open for observation.

Cover crops were hand-seeded using a Cole Planet Jr. push planter. Seed depth was adjusted as possible, though this planting method is a bit coarse compared to a drill seeder. While a drill seeder would provide better seed to soil contact than this hand-seeding method, poor varietal performance can be mostly attributed to fall and winter weather. Some sites have visible geese damage. The Q + A with Tom Johnson from Kamprath Seed (pgs 3-4) details challenges around winter cover cropping in dry years and how to get the most out of your cover crops this season. With one exception, demonstration sites were planted into dry soil in advance of fall rains. Cover crop plots at all sites have been slow to grow, weed competition is heavy at several sites, and some varieties have failed completely. Brassicas and grasses appear to generally be performing better than legumes. Clovers had poor to no emergence at several sites. *Please stop by to take a look for yourself throughout the next few weeks!*



COLUSA COUNTY



Save the Date ~ Virtual Field Day

Winter Cover Cropping in the Sacramento Valley

Presented by

UC Cooperative Extension and the Colusa County RCD

Wednesday March 24th, 2021 ~ 10am-noon

Register here: <http://ucanr.edu/sacvalleycovercrop>



Two Cover Crop Demonstration Sites funded by the CDFA UCCE cover crop trials will be presented, and other relevant regional cover crop information will be provided.

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E-mail: selight@ucanr.edu

Website: <http://cesutter.ucanr.edu/SacramentoValleyFieldCrops/>

Instagram: [@sacvalleyagronomist](https://www.instagram.com/sacvalleyagronomist)

YouTube: [The Soil Health Connection](https://www.youtube.com/channel/UCSoilHealthConnection)

Site 1: River Road, Colusa, CA

Planting Date: 12/2/20

Visit by: 4/15/21

Field Notes: Heavy weed pressure. Brassicas have good biomass and closed canopy. Moderate to good emergence for grasses but weed pressure heavy and low biomass. Legumes have very poor to fair emergence and low to no biomass so far.

Directions: 39.2258290,-121.9956540

Field plots are visible on the right side of River Road coming from Colusa. Turn in to drive road at coordinates and plots are immediately on R side. Field is planted into half cover crop and half wheat.

Site 2: S. Meridian Road, Meridian, CA

Planting Date: 11/24/20

Visit by: 4/7/21

Field Notes: Brassicas are growing well and outcompeting weeds. Most grasses look well-established and some have closed the canopy. Legumes have poor to moderate emergence, poor stand establishment, and heavy weed competition.

Directions: 39.0810450,-121.8798330

Coming from the N: turn right off S. Meridian Road at the drive road N of the ditch (not on the orchard side). Drive up to the first turn on R hand side. The plots are in a field planted to fava bean.

Site 3: Highway 45, N of Millers Landing, CA

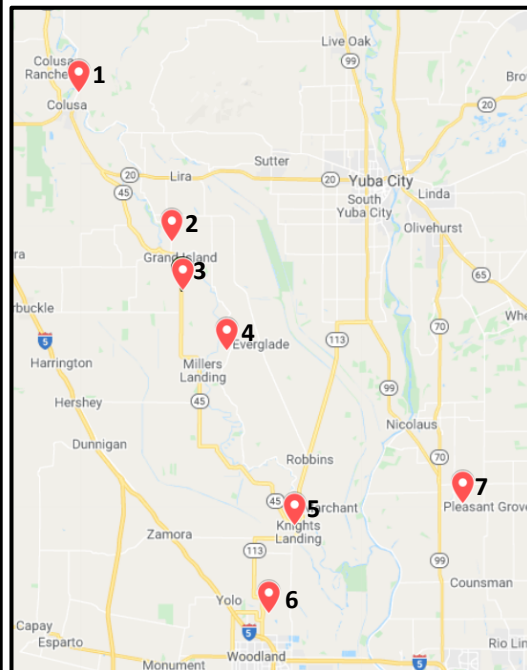
Planting Date: 12/1/20

Visit By: 4/15/21

Field Notes: Low weed pressure. Brassicas have good biomass and closed canopy. Moderate to good emergence for grasses but biomass is still developing. Legumes have poor to good (including clovers) emergence but all biomass is low so far.

Directions: 39.0342840,-121.8660560

Plots are in the corner of the field next to the orchard on Highway 45. Park by the gate between field and orchard and walk behind to see plots. Field is planted to wheat.



Site 4: Fasig Road, Cranmore, CA

Planting Date: 11/25/20

Visit By: 3/1/21

Field Notes: Brassica development is poor including low to no emergence, with little biomass growth. Grasses have moderate emergence but low biomass so far. No visible clover in plots. Other legumes have moderate emergence but low biomass to date.

Directions: 38.9755000,-121.8108610

Plots are on the R side of Fasig road coming from Cranmore Rd. Flags are visible from road. Take care when turning around at this site to avoid rutting and muddy drive road.

Site 5: Highway 45, Knights Landing, CA

Planting Date: 12/11/20

Visit By: 3/10/21

Field Notes: Heavy grass weed pressure in all plots. Grass and brassica cover crops have mostly emerged but have little biomass production and have not closed canopy. Legumes have no, to poor, to moderate emergence and low growth.

Directions: 38.8047480,-121.7251480. Entrance is on L side of 45 coming from Knights Landing at a sharp turn in the road. There is a blackberry patch on the R of drive road entrance. Field is across from empty lot.

Site 6: Best Ranch Rd, Woodland, CA

Planting Date: 12/4/20

Visit By: 4/15/21

Field Notes: Very heavy volunteer wheat in all plots. If emerged, many cover crops are not visible through wheat. Most brassicas have emerged and are visible but are not outcompeting wheat. Grasses not distinguishable from volunteer wheat. Some fava plants are visible, but most legumes either have poor emergence or are overshadowed by wheat.

Directions: 38.7193789,-121.7583787

Approaching coordinates, turn left at sign for "Lawley Ranch" before railroad tracks. Plots are ahead on left side near mulch pile.

Site 7: Howsley Road, Pleasant Grove, CA

Planting Date: 12/23/20* after rain

Visit by: 3/20/21

Field Notes: Very heavy weed pressure (including brassicas) in all plots. Difficult to distinguish planted cover crops from weeds. Poor to no emergence in many plots. Even varieties with moderate emergence have not produced much biomass or closed canopy.

Directions: 38.8261670,-121.5161890. From Hwy 99, follow Howsley Rd to coordinates. Entrance is on L side of road, next to a yard with farm equipment. Park on Howsley and walk up—Plots are a 3 min walk up on the L side.

Cover Cropping in Dry Years in California: Observations from 20 Years in the Field with Tom Johnson from Kamprath Seed

By Sarah Light, UCCE Agronomy Advisor Sutter, Yuba, Colusa Counties

We have had a very dry fall and winter. How has this affected our winter cover crops in the Central Valley? What have you seen in the field?

Overall, what I have seen is that cover crop development is 'delayed' everywhere except where it was irrigated or in parts of Northern California that got some of the spotty, limited rainfall in November.

The dry fall meant that most cover crops didn't get enough rainfall for germination until December, and then the plants emerged during the coldest and darkest period of the year, which drastically slowed their emergence to visible size. And it is still just February, so there haven't been as many growing degree days to get good cover crop growth.

How does this year differ from previous years? How is it the same?

In the 20 years I've been planting cover crop observation plots in California, the pattern of growth is always similar: emergence in November-December; the plants sit there for December-January; they start to grow in February; and grow tremendously in March and April.

What I am seeing, and always do in February into March, is a tremendous growth spurt going on right now; the plants are doubling in size every 2 weeks. Now they have soil moisture, warmer temperatures, and longer days. While for February they look like they are 'behind', they really aren't, they just got going later than usual. Annual plants have a tremendous ability to compensate for adverse conditions. Unfortunately, the weeds came up at the same time as what we planted, and since they are even more adapted to adverse conditions, we are seeing them thrive while our cover crops are catching up.

Given the adverse conditions of this year, what can growers do to still get soil health benefits from their cover crops?

It may be necessary to let the cover crop grow longer than you feel you can, given your crop rotation, in order to get the soil health benefits. It can be hard to balance biomass against economic crop scheduling and that will be an individual decision for each operator. The grower has to balance what soil health benefits they will get from more biomass against meeting a cash crop planting timeline, a cash crop that might require a really well-worked seed bed to be successful in establishment.

Six inches of top growth is going to equate to the same amount of below ground biomass, and in our climate, every little bit helps. It can be hard to calculate how long it may take for the soil to 'digest' cover crop biomass before cash crop planting, and unplanned weather issues can affect timely soil working. As we make our soils more biologically active, cover crop breakdown time can be faster, but much depends on soil texture, available equipment, and the cash crop requirements.

What advice can you offer for fall planting of cover crops in future years, given that precipitation cannot be predicted in advance?

For winter cover crops, the amount of total rainfall may not be as important as rainfall distribution. The typical or 'average' rain season in Northern California starts with a rainfall event in late October, then a

larger event in November, and then pretty much steady rain in December through March. However, this year's long, dry fall and early winter meant that ground could be worked, and planting operations could 'wait' until December, and that is what I observed happening throughout the state.

Since almost all the winter cover crops planted in California are rainfed, I would contend that having the seed in the soil before it rains is more advantageous to waiting for it to rain before planting, for several reasons:

- You will take advantage of ALL the rainfall you will get before you terminate the cover crop. There may even be enough soil moisture left from the cash crop, or available affordable irrigation water to cause germination.
- If/when we get that November rain, the seed will emerge sooner, not struggle with frost or gloomy, low sunlight days, and have longer hours of daylight to germinate and emerge.
- That first rainstorm may be sufficient, or followed by more rain, to keep you off the field for the rest of your 'window' to grow a soil improving cover crop. If you have your seed in the ground before the first rain, you won't miss your planting window.

If we want to use more winter cover crops in our rotational crops we will need to think more like dryland farmers, with a tweak to when and what we plant for our cover crops.

Anything else you'd like to add?

Even longtime cover crop users learn something new every year and no two years are the same.