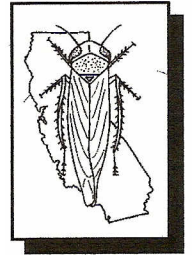


# BEET CURLY TOP VIRUS MONTHLY REPORT



## **CURLY TOP VIRUS CONTROL PROGRAM**

2895 N. Larkin, Suite A  
Fresno, CA 93727  
PHONE: (559) 294-2031  
FAX: (559) 294-2037

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Report for March 2021

### **Program Wide Update**

- A dry, cool winter has resulted in an unusually low over-wintering beetle leafhopper (BLH) population across the San Joaquin Valley's (SJV) western foothills. Limited precipitation in January, February, and March spurred growth in seasonal grasses and led to healthy host plant vegetation in Kings and Fresno Counties.
- Surveys conducted in the western foothills across Fresno County between February 22 and March 5 consistently observed ideal BLH vegetation conditions, yet minimal BLH activity. Most surveys counted between zero and one (0-1) adult BLH per 10 net sweeps. Low (0-1) BLH counts were observed in the SJV during a tomato field and roadside vegetation survey conducted in Fresno County between Five Points and Mendota.
- Surveys conducted in Kern County near Taft and Maricopa between February 22 and March 12 saw minimal BLH activity. However, unlike in Fresno County, the BLH host vegetation observed in these surveys was stressed and very dry. Most adult BLH counts remained between zero-to-one (0-1), with surveys near Field #47 (see maps on pages 3-4 for field numbers and locations) one-to-three (1-3) adult BLH per 10 sweeps.
- **March 9: First BLH Nymph** seen in Field #24, Kings County. Only one (1) BLH nymph was counted during this survey; no additional BLH nymphs were observed at this time in other survey areas.
- March 8-12: Adult BLH populations remained low (0-3 per 10 sweeps) across the western foothills survey areas.
- Roadside surveys were conducted in Stanislaus and Merced Counties during the week March 9-12, with another on March 17 along HWY 152. These surveys observed green vegetation primarily composed of seasonal grasses, with filaree, mallow, and peppergrass spread throughout. No BLH (0) were found during these surveys.
- Heavy rain fell across the SJV the week of March 14-20. The precipitation brought up new host vegetation across Fresno, Kings, and Kern counties, including foothills to the east of Bakersfield, beyond the historical BLH over-wintering range, where limited, but notable BLH activity was observed.
- **Despite ideal host vegetation in most survey areas, as of March 31, 2021, the Curly Top Virus (CTV) Control Program (Program) has not observed treatable populations of BLH.** Surveys will continue to monitor BLH across the SJV's western foothills, fallow fields, and roadsides. Unless more rain falls on the western foothills over the upcoming weeks, Program staff expect host plant die off to be

widespread in the next 10-14 days.

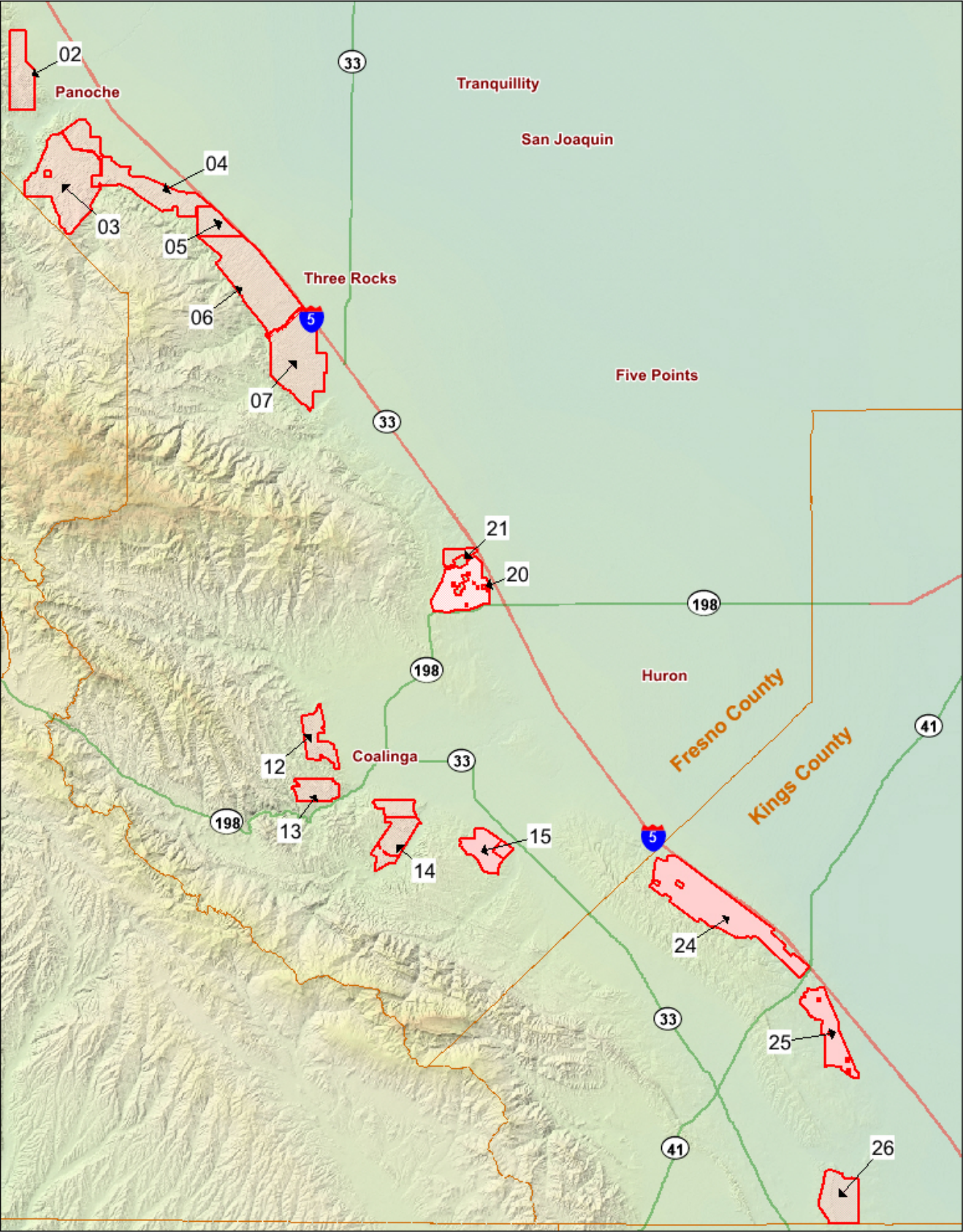
- Below are the CTV pathology results for samples collected between February and March 2021. **So far, there has only been one (1) CTV-positive BLH sample, and zero (0) CTV-positive plant samples.**
- The Program has received a few sticky traps from tomato fields from Pest Control Advisors (PCA) in the SJV. The traps contained very low numbers of BLH: one trap with zero (0) BLH, two traps with one (1) BLH, and one trap with two (2) BLH. All BLH pulled from these traps tested negative for CTV.
- For questions regarding current and past CTV Program Reports, please contact Sam Krasnobrod, the CTV Program Environmental Scientist, at [sam.krasnobrod@cdfa.ca.gov](mailto:sam.krasnobrod@cdfa.ca.gov) or (916) 823-1169.

## Pathology Results

- **February & March:**
  - Kern County Sample Results
    - BLH: **1 Positive**; 0 Negative
    - Plant: 0 Positive; 2 Negative
  - Fresno County Sample Results
    - BLH: 0 Positive; 3 Negative
    - Plant: 0 Positive; 20 Negative
  - Kings County Sample Results
    - BLH: 0 Positive; 0 Negative
    - Plant: 0 Positive; 4 Negative

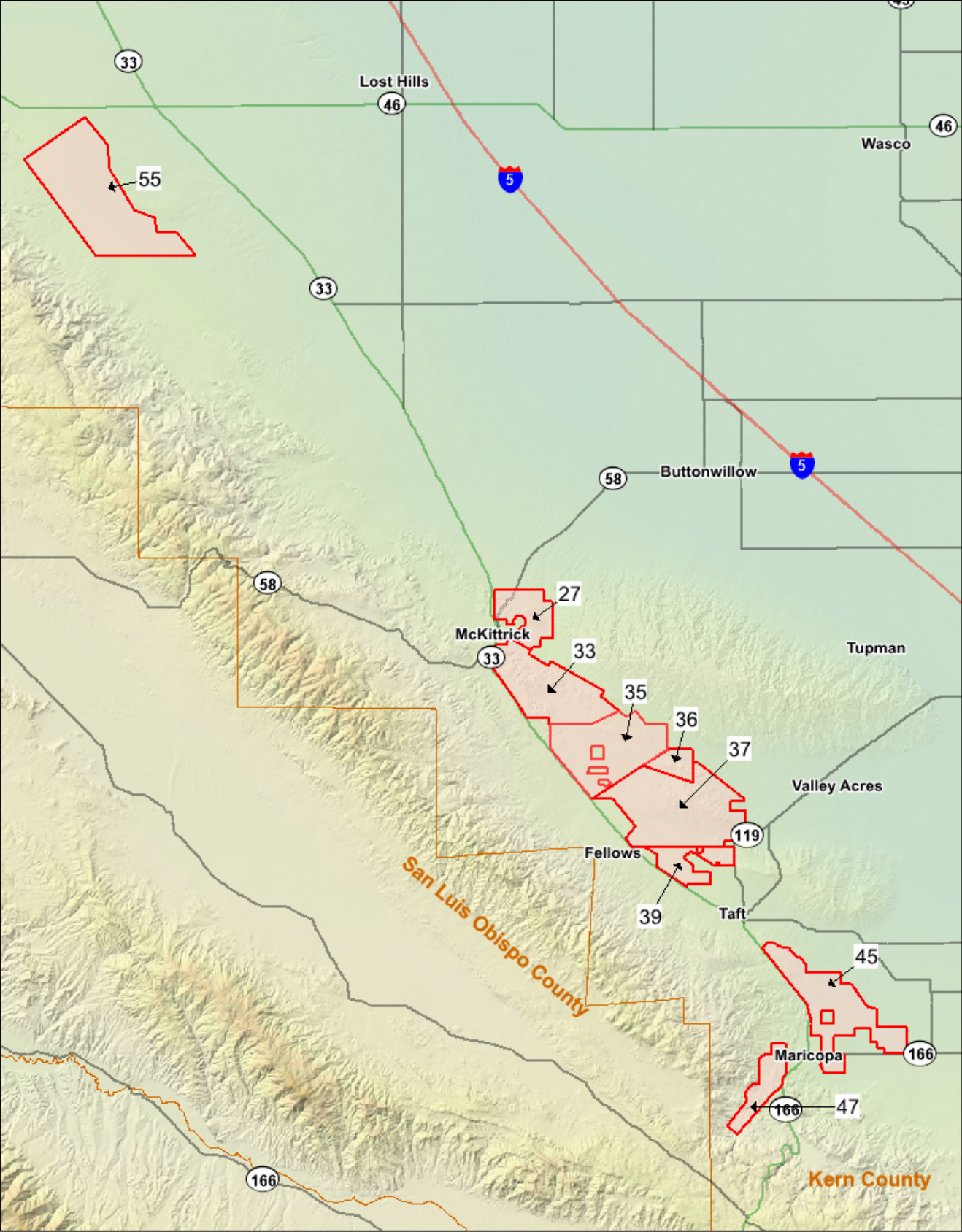
**Maps of Surveyed Areas and County Reports on Following Pages**

BCTV March Survey



March 2021 Surveyed Area Maps produced by Frank Herrera

BCTV March Survey



March 2021 Surveyed Area Maps produced by Frank Herrera

## County Reports:

### Fresno County

- Field #4, 2/22/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - Vegetation throughout the field was ideal, with filaree, peppergrass, and *Plantago* present. *Plantago* was widespread and accounted for 40 percent of host plant vegetation, while filaree accounted for 50 percent. Stress was evident on the peppergrass. Despite ideal conditions, BLH activity was low throughout the field.
    - Update\* 3/23/21
      - High winds led to suboptimal survey conditions; survey team instead focused on evaluating host vegetation conditions.
      - Filaree and peppergrass showed advanced signs of stress in the 80-90 percent die off range. *Plantago* die off was in the 70-75 percent range with all plants having flowered. Die off expected to occur at an increased rate due to high winds and temperatures in the 80's.
- Field #15, 2/22/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - BLH over-wintering activity remained extremely low. Filaree made up approximately 90 percent of BLH host plants. Some of the filaree had started to turn colors (from green to red), indicating stress.
    - Update\* 3/22/21
      - Adult BLH count: 0 per 10 sweeps
      - Nymph: 2-3 per 10 sweeps
      - Observed nymphs were in their second instar. Recent rains left the majority of southwest facing slopes covered entirely with non-BLH host vegetation, adding to the already low BLH counts.
- Field #14, 2/23/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - Conditions were identical to Field #15 surveyed 2/22/21.
    - Update\* 3/23/21
      - Adult BLH count: 0-1 per 10 sweeps
      - Nymph: 0-1 per 10 sweeps
      - Vegetation conditions were much greener than they were in February. Some of the southwest facing hills had ideal BLH conditions, while much of the area was covered with dense vegetation not suitable for BLH.
      - **See Fig. 3**
- Field #3, 2/22/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - Host plant vegetation growth was at ideal stage for BLH activity. However, despite this, BLH activity remained low.
    - Update\* 3/4/21
      - Adult BLH count: 0-1 per 10 sweeps
      - Nymph: N/A
      - Vegetation had begun to show stress, considered ideal conditions for BLH activity. Annual grasses have started to out compete host plants.
    - Update\* 3/8/21
      - Adult BLH count: 0 per 10 sweeps
      - Nymph: N/A

- Vegetation throughout the field showed signs of stress, with overall filaree stress at 50-75 percent. *Plantago* was flowering.
      - **See Fig. 1**
    - Update\* 3/16/21
      - Adult BLH count: 0-1 per 10 sweeps
      - Nymph: 0-1 per 10 sweeps
      - Filaree, peppergrass, and *Plantago* were all present along southwest facing slopes. Filaree and peppergrass were showing signs of advanced stress, while *Plantago* was still in the process of flowering.
- Field #12, 3/3/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - Although the BLH host vegetation habitat looked ideal, there was very limited BLH activity. Program personnel detected some isolated bands of *Plantago* mixed in with the filaree in this area.
- Field #13, 3/4/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - BLH vegetation consisted of approximately 90 percent filaree and 10 percent *Plantago*. Unlike some sites where vegetation had already shown stress, most of this area's host vegetation remained relatively green.
- Fields #5-7; 3/2/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - Vegetation developed throughout these three fields with high concentrations of filaree, *Plantago*, and peppergrass. Host plant vegetation conditions were ideal for BLH population development; however, BLH counts averaged less than one per 10 sweeps. Signs of stress were visible in both filaree and *Plantago*.
    - Update\* Field #7, 3/25/21
      - Adult BLH count: 0-1 per 10 sweeps
      - Nymph: 0-1 per 10 sweeps
      - Very low BLH counts despite ideal vegetation conditions. No indication of BLH populations migrating or spreading to other areas of the field. Overall insect activity was low with only a few non-target pests observed during survey. With higher temperatures and winds projected for the next ten days, staff expect to see major changes to vegetation.
- Field #2 & 3, 3/4/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - Host plant vegetation throughout the two fields were identical, with ideal conditions found on southwest facing slopes, flats, and hilltops. Filaree and annual grasses were present throughout the fields while *Plantago* can be found on all southwest facing slopes. Filaree had begun showing signs of stress in the 60-70 percent range, while *Plantago* showed stress in 20-30 percent range.
    - Update\* 3/16/21
      - Adult BLH count: 0-1 per 10 sweeps
      - Nymph: 0-1 per 10 sweeps
      - Filaree and peppergrass were showing signs of advanced stress, while *Plantago* was still in the process of flowering.
- Fields #20 & 21, 3/18/21
  - Adult BLH count: 0 per 10 sweeps
  - Nymph: 2 per 10 sweeps\*

- \*BLH nymphs were only observed in one location in the survey field #21.
- Host vegetation remained green with minimal stress, and seasonal grasses have begun to take over the hillsides. This much vegetation has led to suboptimal conditions for BLH, with minimal activity observed.
  - Update\* 3/24/21
    - Adult BLH count: 0-1 per 10 sweeps
    - Nymph: 0-1 per 10 sweeps
    - Host vegetation remained similar, with some stress observed in peppergrass and filaree. *Plantago* continues to flower. BLH nymph populations remain low, though consistently observed throughout location.

## Kings County

- Fields #24 & 25, 2/3/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - Most of the area's BLH host vegetation consists of very short, sparse filaree, with early signs of stress. This year Program personnel are noticing very little *Plantago* and peppergrass germination.
    - **\*\*Update\*\* 3/9/21**
      - Adult BLH count: 0 per 10 sweeps
      - **Nymph: 1 per 10 sweeps**
      - Surveyed between I-5/HWY 41 and I-5/HWY 269. Aside from sweeping up occasional young grasshoppers, there was not much insect activity in general. **The first BLH nymph was observed.** It was swept up along a band of underdeveloped *Plantago* and was found to be extremely small in size, possibly entering its second instar.
    - Update\* 3/24/21
      - Adult BLH count: 0 per 10 sweeps
      - Nymph: 0-1 per 10 sweeps
      - This large area apparently received a considerable amount of precipitation, leading to denser and greener BLH host vegetation.
- Field #26, 3/1/21
  - Adult BLH count: 2 per 10 sweeps
  - Nymph: N/A
  - The Lost Hills region was dry, and the remaining vegetation was stressed. Filaree, *Plantago*, and peppergrass were all observed, though with only limited amounts of Peppergrass.
    - Update\* 3/15/21
      - Adult BLH count: 1-2 per 10 sweeps
      - Nymph: 1-2 per 10 sweeps
      - Overall vegetation remains stunted, stressed (burgundy color) due to cooler overnight low temperatures and only in flatter non-ideal locations for BLH activity. No re-emergence is occurring to date.

## Kern County

- Arvin, 3/23 & 3/25/21
  - Adult BLH count: 1-2 per 10 sweeps

- Nymph: 1-2 per 10 sweeps
- A scouting survey was conducted north east of Bakersfield, near Arvin. The east side of the valley hillsides observed less stress across observed host vegetation and some BLH activity. Overall, the BLH activity is still low (1-3 per 10 sweeps; 50 percent nymphs) with **one hot spot found (10-15 per 10 sweeps; 40 percent nymphs)**. The hot spot was found on 3/23/21 and rechecked 3/25/21. Staff will continue to monitor site.
- Field #27, 2/23/21
  - Adult BLH count: 0 per 10 sweeps
  - Nymph: N/A
  - Survey area remained dry, unaffected by the last rain event with no new host emergence found.
    - Update\* 3/9/21
      - Adult BLH count: 0-1 per 10 sweeps
      - Nymph: N/A
      - Survey conducted in the Taft area observed extremely dry terrain with very little BLH activity.
- Field #33, 2/23/21
  - Adult BLH count: 0 per 10 sweeps
  - Nymph: N/A
  - South facing slopes were covered in dry grass overgrowth that inhibited the emergence of host vegetation. Limited and stressed filaree was found on otherwise bare hilltops.
- Field # 39, 2/24/21
  - Adult BLH count: 0-1 per 10 sweeps
  - Nymph: N/A
  - Seasonal grasses inhibited growth in host plants across much of the region; filaree appeared stressed.
- Field# 55, 3/1/21
  - Adult BLH count: 2 per 10 sweeps
  - Nymph: N/A
  - The Lost Hills region was dry, and the remaining vegetation was stressed. Filaree, *Plantago*, and peppergrass were all observed, though with only limited amounts of Peppergrass.
    - Update\* 3/15/21
      - Adult BLH count: 1-2 per 10 sweeps
      - Nymph: 1-2 per 10 sweeps
      - Overall vegetation remains stunted, stressed (burgundy color) due to cooler overnight low temperatures and only in flatter non-ideal locations for BLH activity. No re-emergence is occurring to date.
- Fields # 35 – 37; 3/2/21
  - Adult BLH count: 0 per 10 sweeps
  - Nymph: N/A
  - The Taft region is dry, and the remaining vegetation was stressed. Filaree and *Plantago* were observed.
    - Update\* 3/22/21



- Adult BLH count: 0 per 10 sweeps
  - No increase in insect activity; decline in host vegetation health with stress visible across observed plants.
- 
- Field #45, 3/2/21
    - Adult BLH count: 0-1 per 10 sweeps
    - Nymph: N/A
    - Conditions similar to Field #36; dry with very stressed vegetation.
- 
- Field #47, 3/8/21 **Fig. 2**
    - Adult BLH count: 1-3 per 10 sweeps
    - Nymph: N/A
    - Conditions were dry, and filaree was dominant host plant with little-to-no peppergrass. No BLH nymphs were observed.



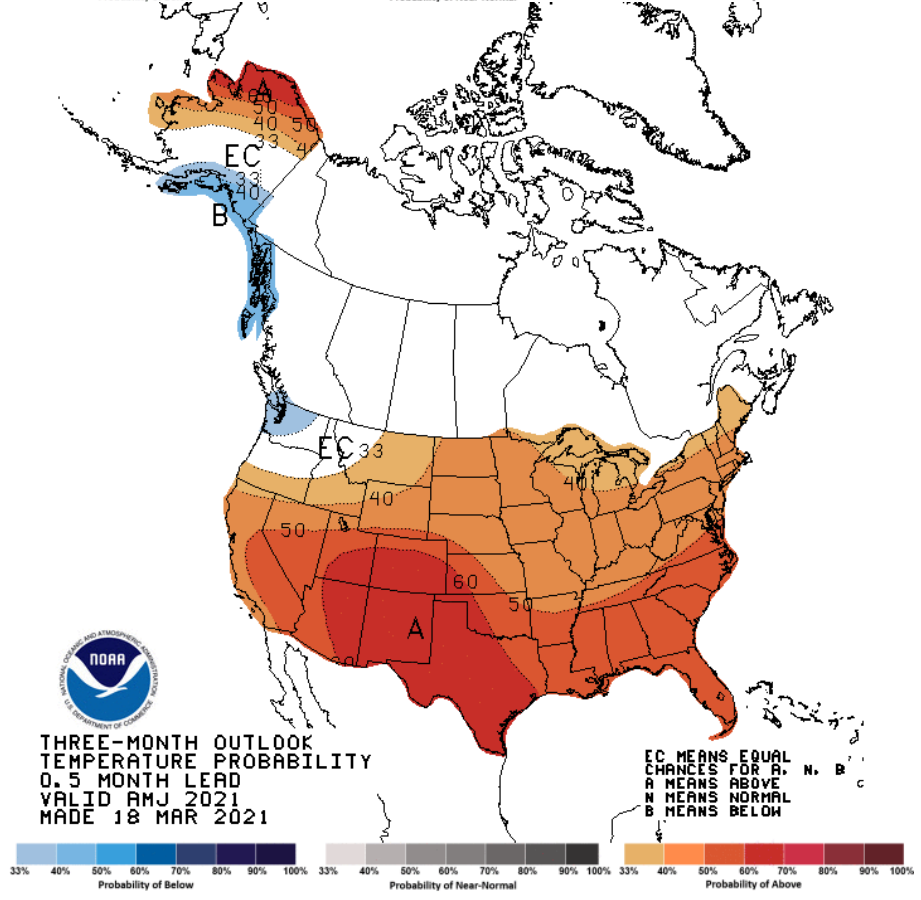
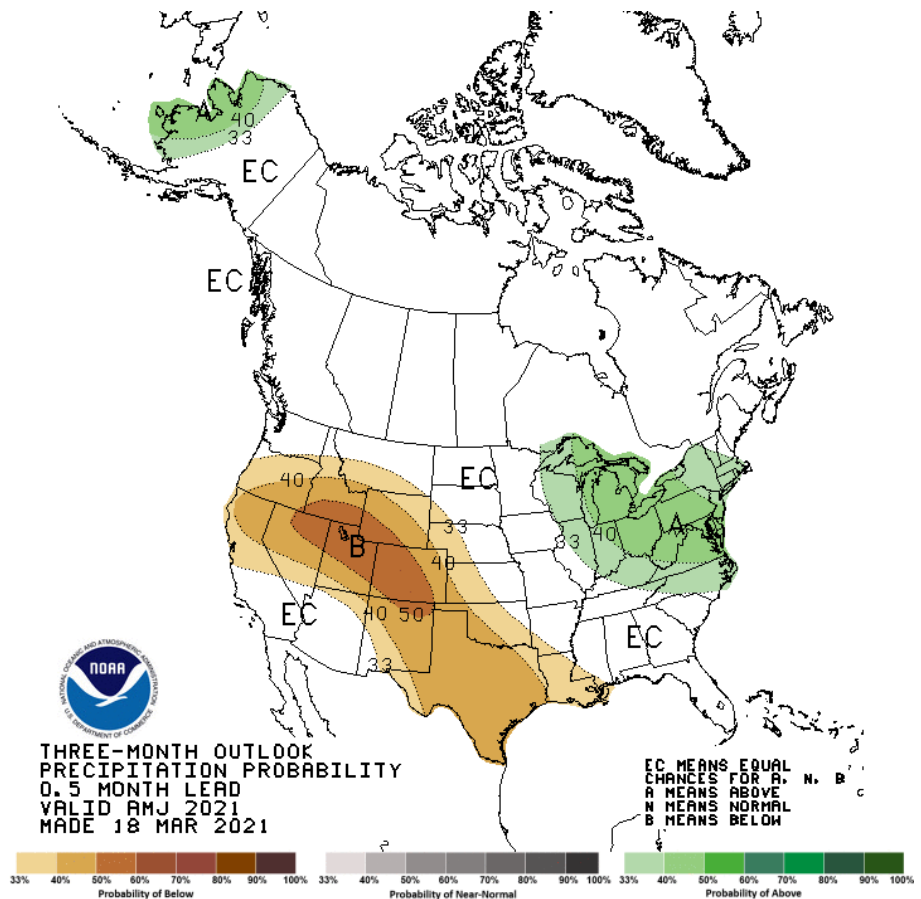
Fig. 1: Field #3. Photo taken 3/9/21 SK



Fig. 2: Carrizo Plain Kern County. Photo taken 3/8/21 JO



Fig. 3: Field #14 near Coalinga, Fresno County. Following heavy rain. Photo taken 3/23/21 SK



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