

# Management and Termination of Insectary Cover Crop Mixes

California Plant Materials Center



## Study Overview

Permanent tree crops and vineyards in California are typically grown with soil kept bare. Insectary plantings to support pollinators and beneficial insects within these perennial systems require planting cover crops (NRCS 340) or conservation cover (NRCS 327, a 5-year practice). A lack of information about best practices for management and termination is one barrier to implementation. This study assessed the efficacy of management and termination methods for four insectary seed mixes recommended for use in almonds, vineyards, and walnut orchards.

In the fall of 2017, four mixes were broadcast seeded into prepared fields at an estimated seeding rate of 30-35 seeds per square foot. A cultipacker ensured good seed-to-soil contact and no irrigation was applied after planting or during the study. Over three years, assessments tracked mix composition, ground cover and reseeding from the 2017 planting. Planted species cover declined each year. The highest percentage of seeded species present at the end of the study was ~50% in the economical almond and walnut mixes, 40% in the vineyard mix, and less than 30% in the standard almond mix. Weed competition contributed to the decline in planted species cover. An early mow followed by a termination mow after cover crop seed set was the most effective treatment for weed reduction in this study. Termination by disking increased the incidence of legume species in the economical almond and walnut mixes, likely due to increased seed-to-soil contact of the larger legume seeds after the disking.

## Species Mixes for Study

Almond Standard

Almond Economical

Vineyard

Walnut

March 2018



April 2019



- Baby blue eyes
- California poppy
- Great Valley phacelia
- Chinese houses
- **Sweet alyssum**

- Baby blue eyes
- California poppy
- Great Valley phacelia
- Chinese houses
- Red maids
- Tidy tips
- Five spot
- **Sweet alyssum**
- **White mustard**
- **Blue flax**
- **Tillage radish**
- **Crimson clover**
- **Balansa clover**
- **Common vetch**

- Baby blue eyes
- California poppy
- Tidy tips
- California brome
- Elegant clarkia
- Great Valley Gumplant
- **Soft chess**
- **English marigold**
- **Blue flax**
- **Birdsfoot trefoil**
- **Tillage radish**

- Baby blue eyes
- California poppy
- Spanish lotus
- **White mustard**
- **English marigold**
- **Blue flax**
- **Winter pea**
- **Tillage radish**
- **Crimson clover**
- **Faba bean**
- **Common vetch**

Native Species  
**Non-native, Cover Crop Species**

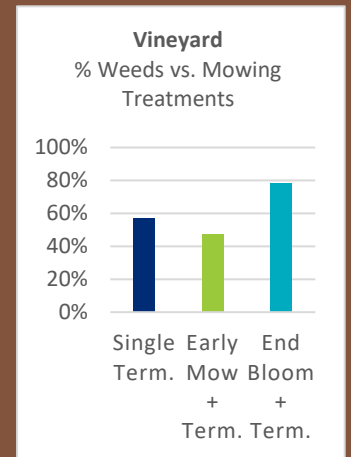
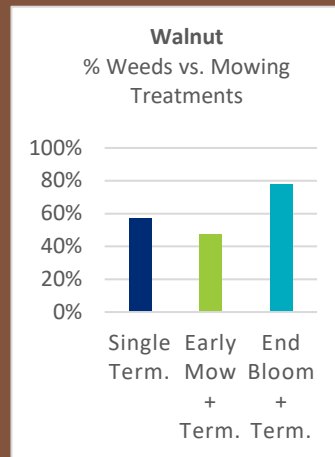
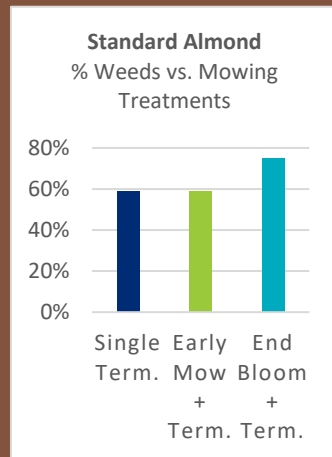
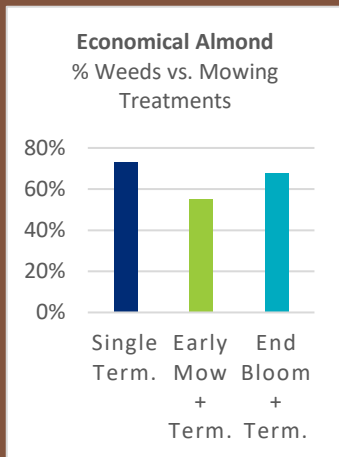
## Study Highlights

The Almond Economical Mix supported more forbs than the standard mix. Brassica species suppressed weeds, while pollinator species developed under the traditional cover crop.



An early mowing treatment followed by a termination mow was the most effective weed suppression treatment for all mixes.

Disking reduced weeds and increased forbs and legumes in both the almond and walnut mixes.



## Additional Information

For more information on this study, refer to the California Plant Materials Center's Final Study Report, [Efficacy of Management and Termination Methods for Insectary Cover Crop Mixes for Almond and Walnut Orchards and Vineyards in California's Central Valley](#).

More information on cover cropping in almond orchards can be found in the [Cover Crops Best Management Practices](#) created by the Almond Board of California.

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