Best Weed Management Practices for Winegrapes

Matthew Fatino

UCCE Subtropical Crops Advisor

San Diego and Riverside Counties

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Essentials of a successful IWM program

- Understand the ecology and phenology of your crop- wine grapes
- Understand the biology and phenology of the weed(s)
    - Correct identification!!
- Have a weed (pest) monitoring program, and utilize it
    - Help identify application errors, new pests, and potential herbicide/pesticide resistance

- Goal: manage/control weeds to eliminate (*reduce*) the weed seedbank

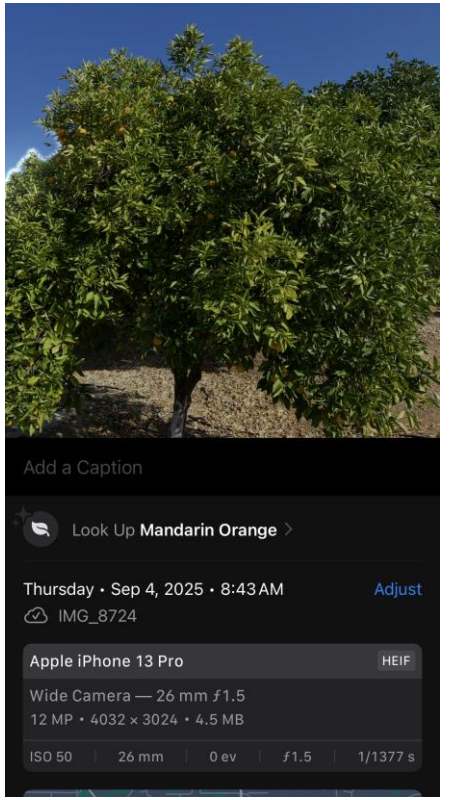
Best Management Practices for Weed Control in Crops (Vineyards)

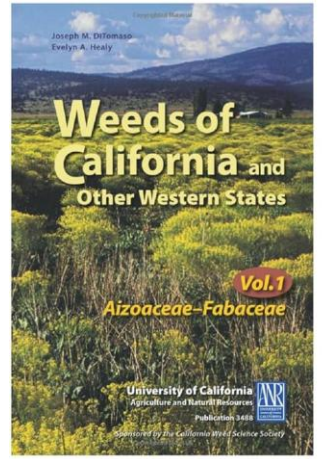
1.Keep and manage weeds that enhance the crop.

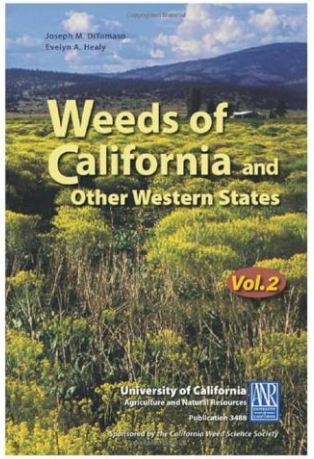
2. Control weeds that weaken the crop.

How to identify weeds (plants)

- Monocots (grasses)
- Dicots (broadleaves)
- Books
  - Jepson manual or dichotomous key (lol)
  - Weeds of the West; Weeds of California and other Western States
- Online tools
  - UC IPM, UC Weed RIC
- What do I use?
  - Smart phone







Why manage weeds?

1. Competition
2. Irrigation
3. Solar radiation/air movement
4. Pest harbors:
    1. Insect vectors
    2. Pathogens
    3. Vertebrates
5. Vineyard operation interference:
    1. Equipment
    2. Harvest
6. Crop quality
    1. Stinkwort

Competition: young vs mature vines

- Weeds directly compete with grape vines for space, sunlight, and nutrients.
- Especially relevant in young vineyards 1-5 years old

Irrigation

- Similar to competition for light and nutrients…
- Weeds can take water that would otherwise be available to vines
  - Disrupt irrigation scheduling i.e. deficit irrigation
  - Disrupt irrigation emitters and equipment

Restrict solar radiation and air movement

- Dense, tall weeds can block airflow through the vineyard
- Weeds can inhibit solar radiation and reradiation which can increase potential frost risk in frost prone areas.
    - 1-2 degree difference
- Increase humidity (disease pressure)

Pest harbors

- Insects and insect vectors
  - Three-cornered alfalfa hopper
  - GWS
  - Mealybugs
- Pathogens
- Vertebrates
  - Voles
  - Gophers

Run interreference

- Weeds can interfere in vineyard operations
- Slow or inhibit
  - equipment traffic down rows
  - hand harvest of crop
  - fertilizer or pesticide applications
  - irrigation repairs

How to choose best management practices?

Lodi Rules

Low Input Viticulture & Enology (LIVE)

Demeter Certified Biodynamic

Sustainability in Practice (SIP)

Certified California Sustainable Winegrowing

Certified Organic

Leadership in Energy & Environmental Design (LEED)

- What is your management philosophy?
  - Organic
  - Conventional
  - Sustainable
  - Regenerative
  - Biodynamic
  - Or others
- Strategies
  - Tillage
  - Herbicides
  - Grazing animals (sheep)
  - Hand labor

Prevention

- Sanitation
  - Equipment – soil!
  - Soil amendments – compost, mulch, etc.
  - Plant stock
  - Personnel – shoes, clothes, tires, etc.
- Field selection
  - Some fields with high populations of certain weed species may need additional management prior to planting

Cultural Practices

- Irrigation
  - Irrigated or dry farmed vineyard?
  - Drip emitters
- Cover crops
  - Whatever you plant should be less disruptive than the natural weed population or the weed you are trying to manage
  - In-row vs Under-vine

Cover crops

- Oats: tolerant of wet, heavy, low pH soils, not as cold tolerant
- Barley: cheap, fast growing, competes w weeds
- Cereal rye: most cold tolerant cereal
- Peas: many species options
- Bell bean: large taproot | tall, not suited for frost prone areas
- Vetch: many species option, high biomass
- Zorro Fescue
- Clover: rose or subterranean
- Bur medic
- Blando Brome
- Mustard

Cover crop cont.

- Till:
  - Disc in
- No till:
  - Flail mowing
  - Rotary mowing
  - Roller/crimper

- Be prepared to deal with added complexity

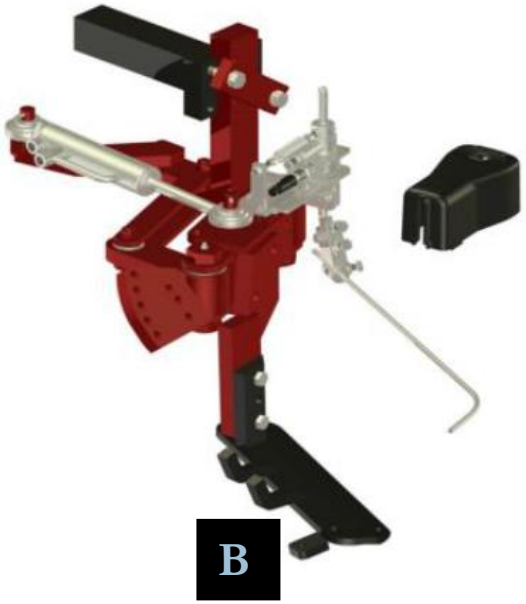
Physical Management Strategies

- Mowing
- Tillage
- Flaming
- Hot air implements
- Electrical Weeder
- Smart Sprayers

Mowing

- Late winter and early spring
- In row and undervine

A



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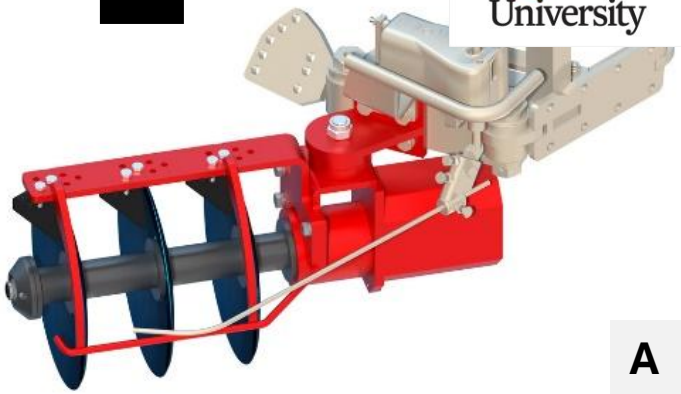
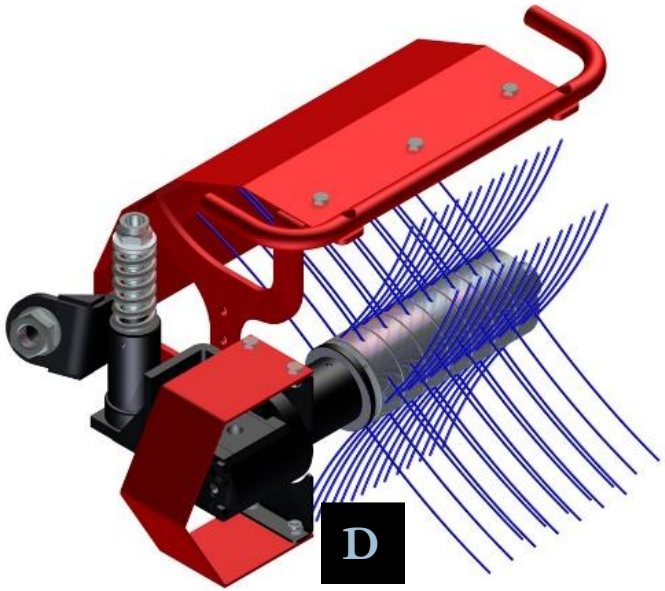


A	Rotary hoe
B	blade hoe
C	Cleaner blade
D	Rotary brush
E	Mower
F	French plow



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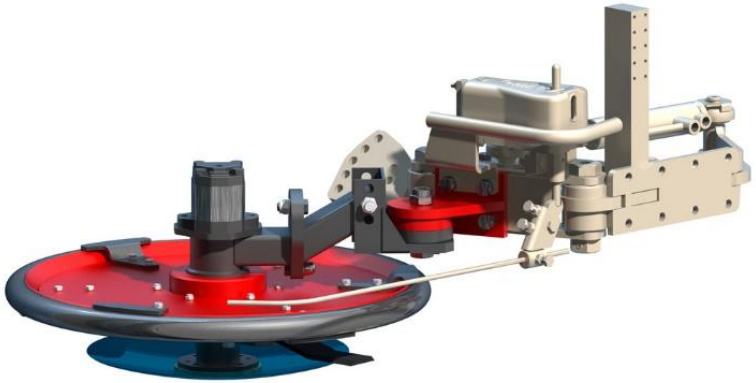

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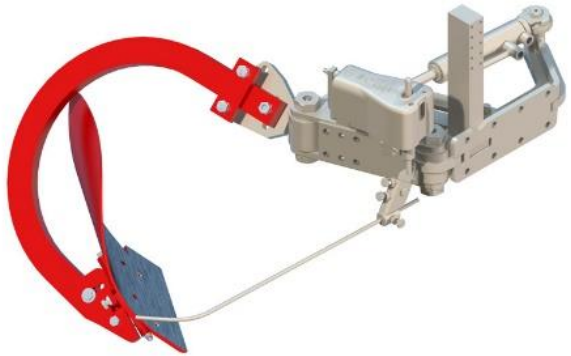


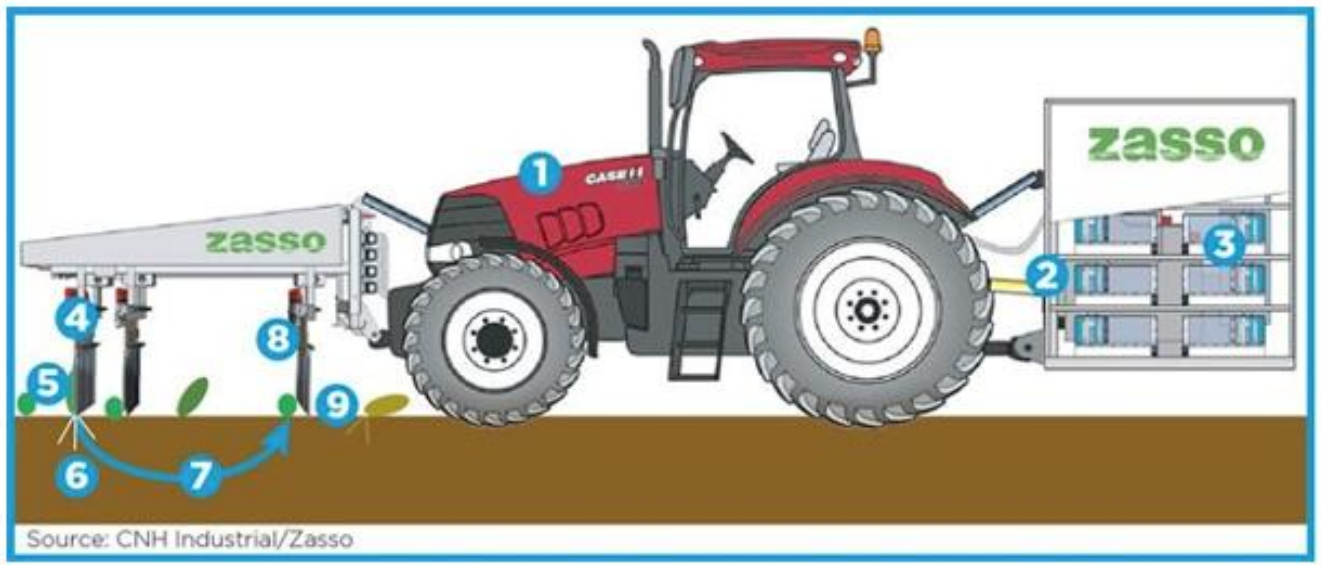
Flaming

Hot air blaster

Electric Weeder

The Mechanism

1. Tractor Engine
2. PTO Driven Generator
3. High Voltage Transformer
4. Applicator Electrode(s)
5. Target Weed
6. Root System
7. Surrounding Soil
8. Return Electrode(s)
9. Treated Weed



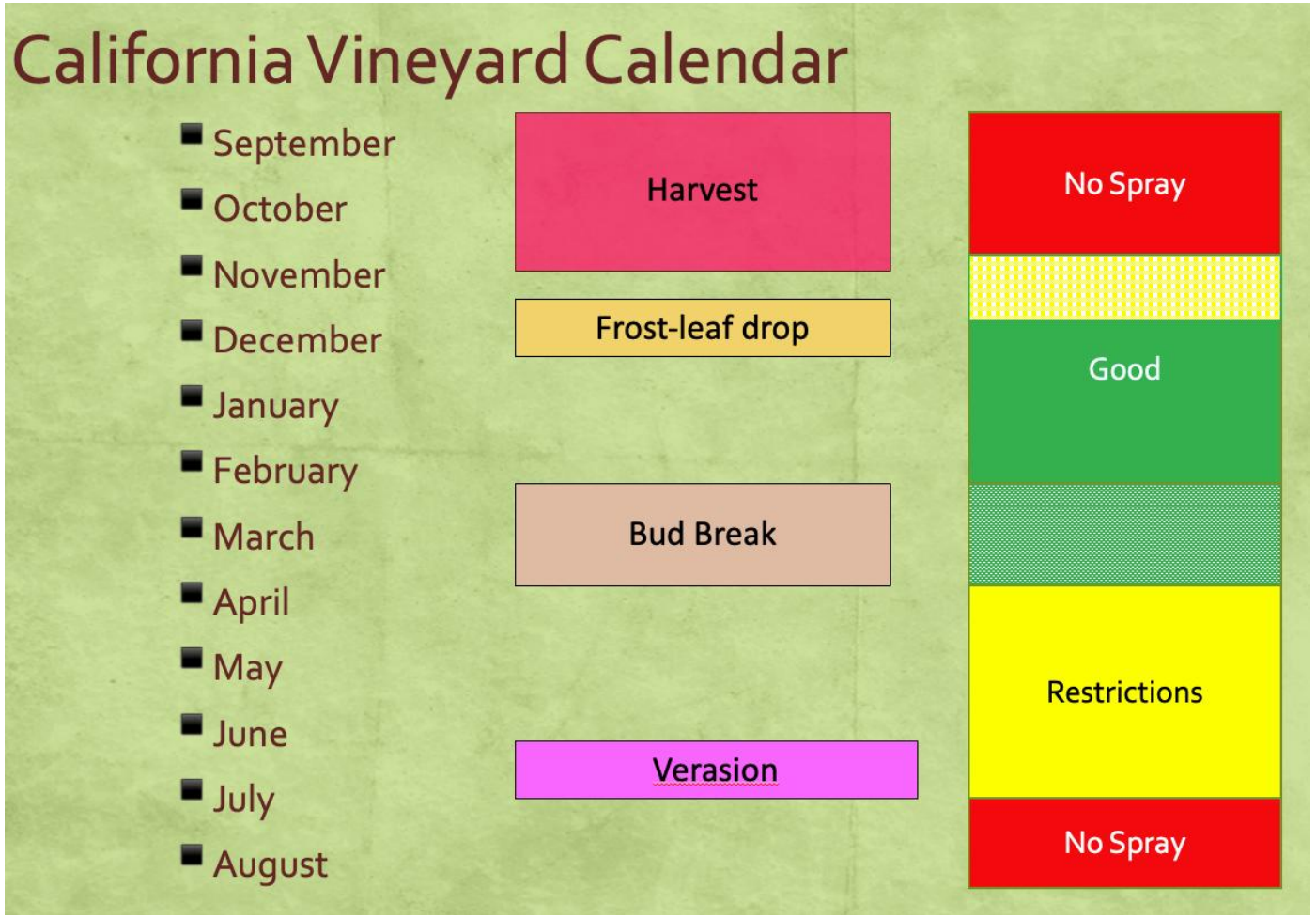
Source: Zasso.com

Cultivation continued

- Smart weeders
  - Organic herbicide sprays guided by cameras and machine learning
  - Contact herbicide sprays
  - Boiling oil sprays

Chemical Management

- Herbicides
- Conventional
  - Preemergence
  - Post emergence
- Organic
  - Post emergence



Biological tools

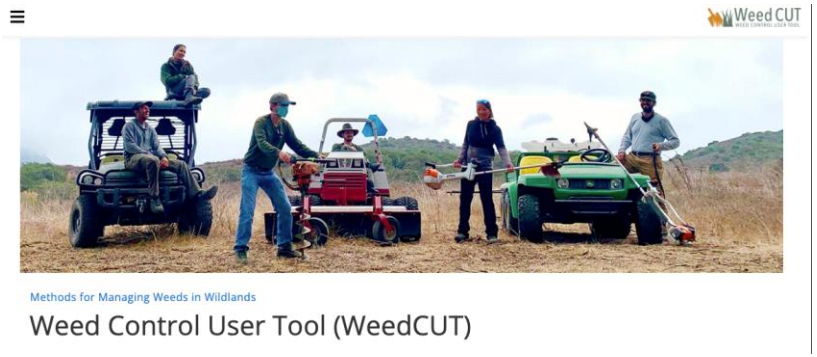
- Grazing animals and livestock
- Nutrient cycling
- Zero to little buffer zone needed
- Food safety issues

Integrated weed management

- Utilizing only a single management strategy will create a selection pressure against that strategy
- This will result in the weed population being dominated by a single or few weed species that are often very difficult to control
  - Can also lead to resistance
- There are no silver bullet practices
  - except Weed Slayer…

Resources

- UC IPM - University of California Integrated Pest Management
- WRIC - Weed Research and Information Center
- **WeedCUT – Weed Control User Tool**
- Cal IPC- California Invasive Plant Council



UC IPM | UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources | Integrated Pest Management Program

28th Annual

UCCE North Coast Virtual IPM Seminar

Tuesday, November 18th, 2025

07:45 am Log-on begins

08:00 am **Welcome and Introduction**

Cindy Kron, PhD, North Coast IPM Advisor, UC Cooperative Extension

08:05 am **Pesticide Use Monitoring Inspection (L&R)**

Matt Daugherty, Agricultural/Measurements Standards Specialist III, Mendocino County Department of Agriculture/Weights & Measures

09:00 am **Conventional and organic control tools for vine mealybug**

Kent Daane, Professor of Cooperative Extension, University of California, Berkeley

10:00 am **BREAK**

10:15 am **Pre-winter pathogen load and cold exposure impact overwinter recovery from Pierce's Disease of grapevine**

Andrea Brown, PhD Candidate, Rodrigo Almeida Lab, Department of Environmental Science, Policy, and Management, UC Berkeley

10:45 am **How grape varietal and pathogen genotypes shape Pierce's Disease outcomes in Calif**

Monica Donegan, PhD Candidate, Rodrigo Almeida Lab, Department of Environmental Science, Policy, and Management, UC Berkeley

11:15 am **Can spotted lanternfly transmit Pierce's Disease? Using microscopy to assess potentia acquisition of *Xylella fastidiosa* by spotted lanternfly**

Holly Shugart PhD, Assistant Research Professor, Department of Entomology, Penn State University

11:45 am **Predicting Spotted Lanternfly's ability to complete its development under California cli Conditions**

Melody Keena, Research Entomology Retired, US Forest Service

12:15 pm **Adjourn**

SIGN UP TO

Dates
November 18th &

Time
Log-on starting at
Presentations:
08:00 AM – 12:15

Contact
ckron@ucanr.edu

Location
Zoom

2 hours of Laws and Regs
6 hours Other
Pending Approval CEUs

8 hours IPM
Pending Approval
CCA units

Contact

- Your local UC Cooperative Extension Advisor!
- mfatino@ucanr.edu
- 949 466 6288

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