REDUCING PESTICIDES IN SURFACE WATER

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CCC Pest Management Continuing Education Class

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REDUCING PESTICIDES IN SURFACE WATER

How do they get in water?

REDUCING PESTICIDES IN SURFACE WATER

How do they get in water?

- Drift
- Runoff

REDUCING PESTICIDES IN SURFACE WATER

What can you do about it?

- Reduce volume of runoff
- Reduce what's in the runoff

REDUCING **IRRIGATION** RUNOFF

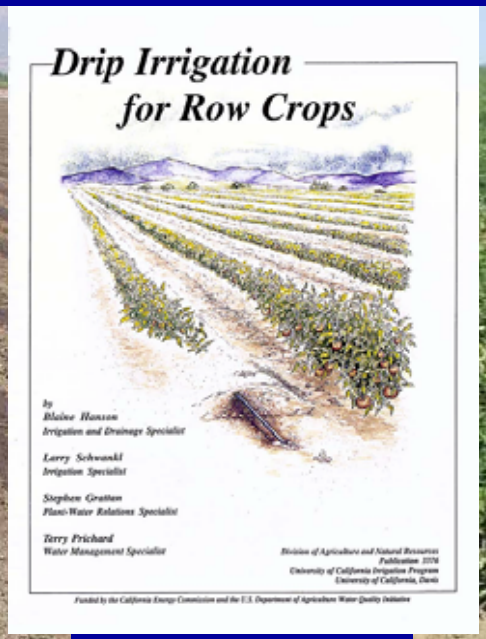
Sprinkler Systems: application rate < soil infiltration rate

- Adjust set time
- Reduce nozzle size

Stand Establishment

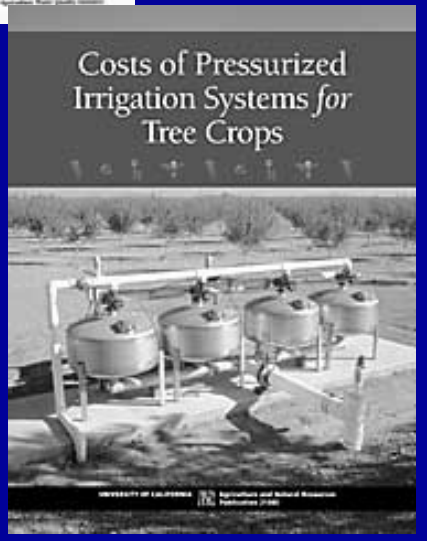
REDUCING **IRRIGATION** RUNOFF

Drip irrigation after stand establishment for annual crops



REDUCING **IRRIGATION** RUNOFF

Low volume irrigation – drip, microsprinklers for trees & vines



REDUCING **IRRIGATION** RUNOFF

Flood or Furrow Irrigation:

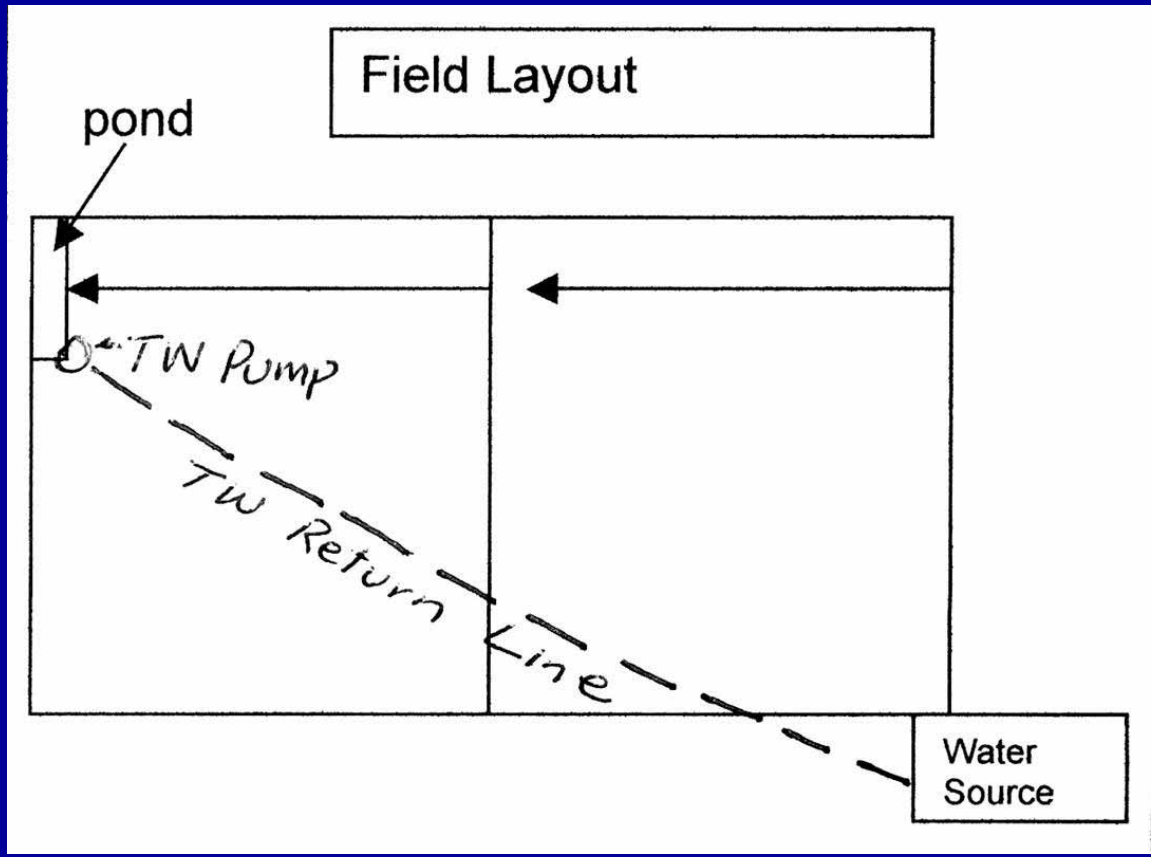
runoff is needed for good distribution uniformity

REDUCING **IRRIGATION** RUNOFF

Flood or Furrow Irrigation
Tailwater return system

ADVANTAGES

- Better irrigation efficiency
- Better distribution uniformity
- Lower water costs
- Less monitoring at night



REDUCING **IRRIGATION** RUNOFF

Flood or Furrow Irrigation
Tailwater return system

DISADVANTAGES

- Costs: Installation, maintenance, operation
- Land out of production
- Management to avoid groundwater contamination

"Reducing Runoff from Irrigated Lands - Tailwater Return Systems"
by Schwankl, Prichard, and Hanson, UC ANR Publication, free

REDUCING **IRRIGATION** RUNOFF

Flood or Furrow Irrigation

Polyacrilamide (PAM)

- Applied at the beginning of the irrigation
- Reduces sediment in the runoff

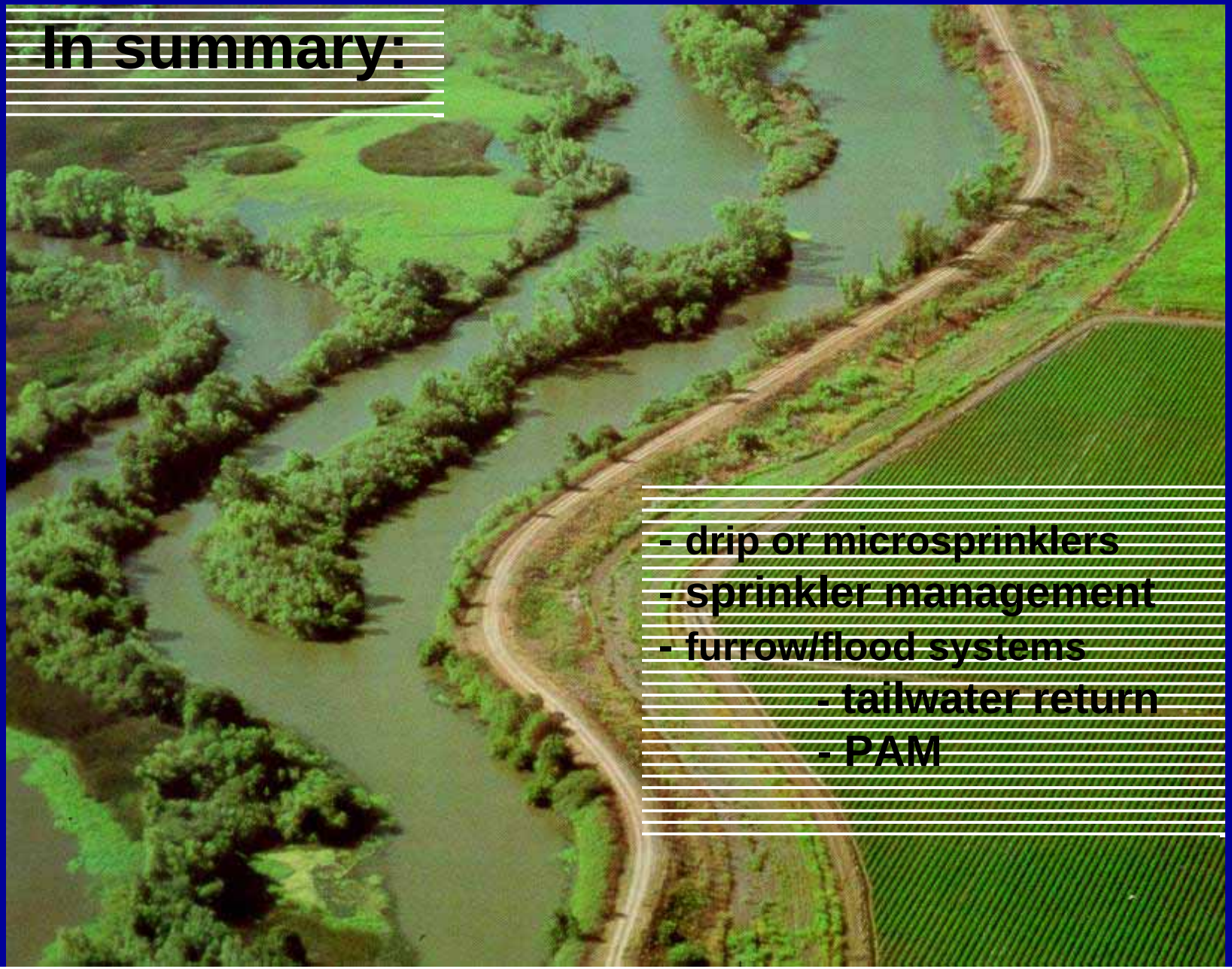
REDUCING **IRRIGATION** RUNOFF

Flood or Furrow Irrigation

Polyacrilamide (PAM)

- Only pesticides strongly attached to soil particles are reduced
  - pyrethroids tend to adsorb
  - OP & carbamates more soluble
- References:
  - "*Pesticide Selection to Reduce Impacts on Water Quality*", UC Publication 8119, free
  - UCIPM website, Water Tox database, free

REDUCING **IRRIGATION** RUNOFF



REDUCING **STORMWATER** RUNOFF

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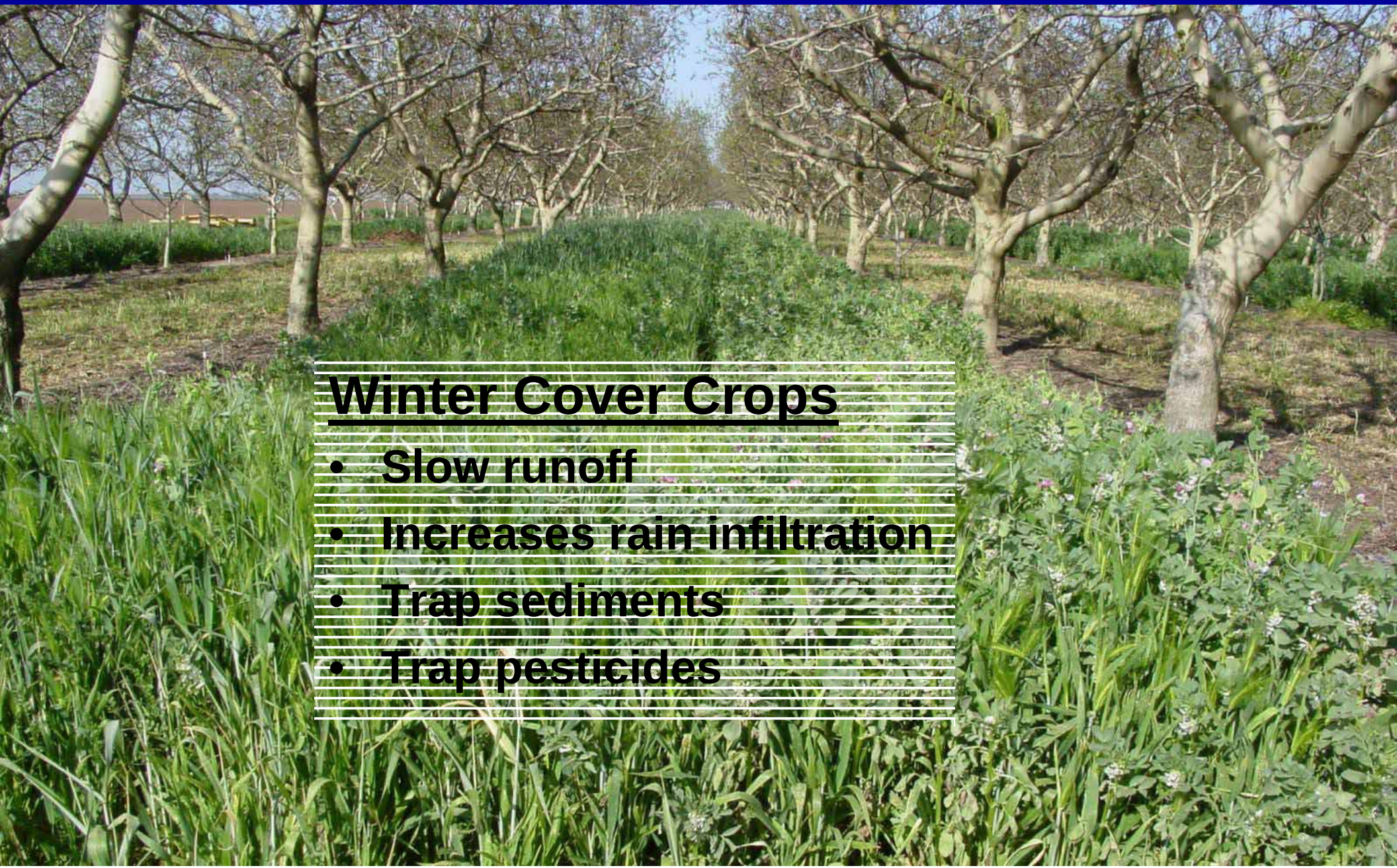


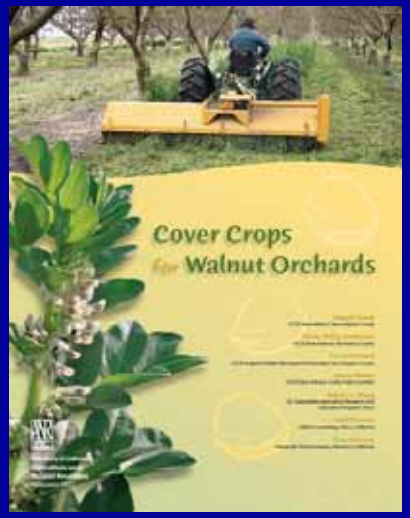
Winter Cover Crops

- Slow runoff
- Increases rain infiltration
- Trap sediments
- Trap pesticides

REDUCING **STORMWATER** RUNOFF

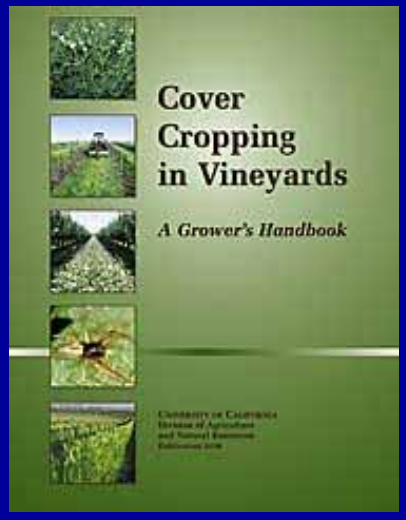
Winter Cover Crops

- Select the right cover
  - Weeds work!
- Manage it for your crop
- References:
  - Covercrops for California Agriculture, No. **21471**



Creative Cover Crops for Perennial Farming Systems

Creative Cover Crops for Annual Farming Systems



REDUCING **STORMWATER** RUNOFF

	% reduction in runoff volume
1999	40
2000	75
2003	50
2004	43

REDUCING **STORMWATER** RUNOFF

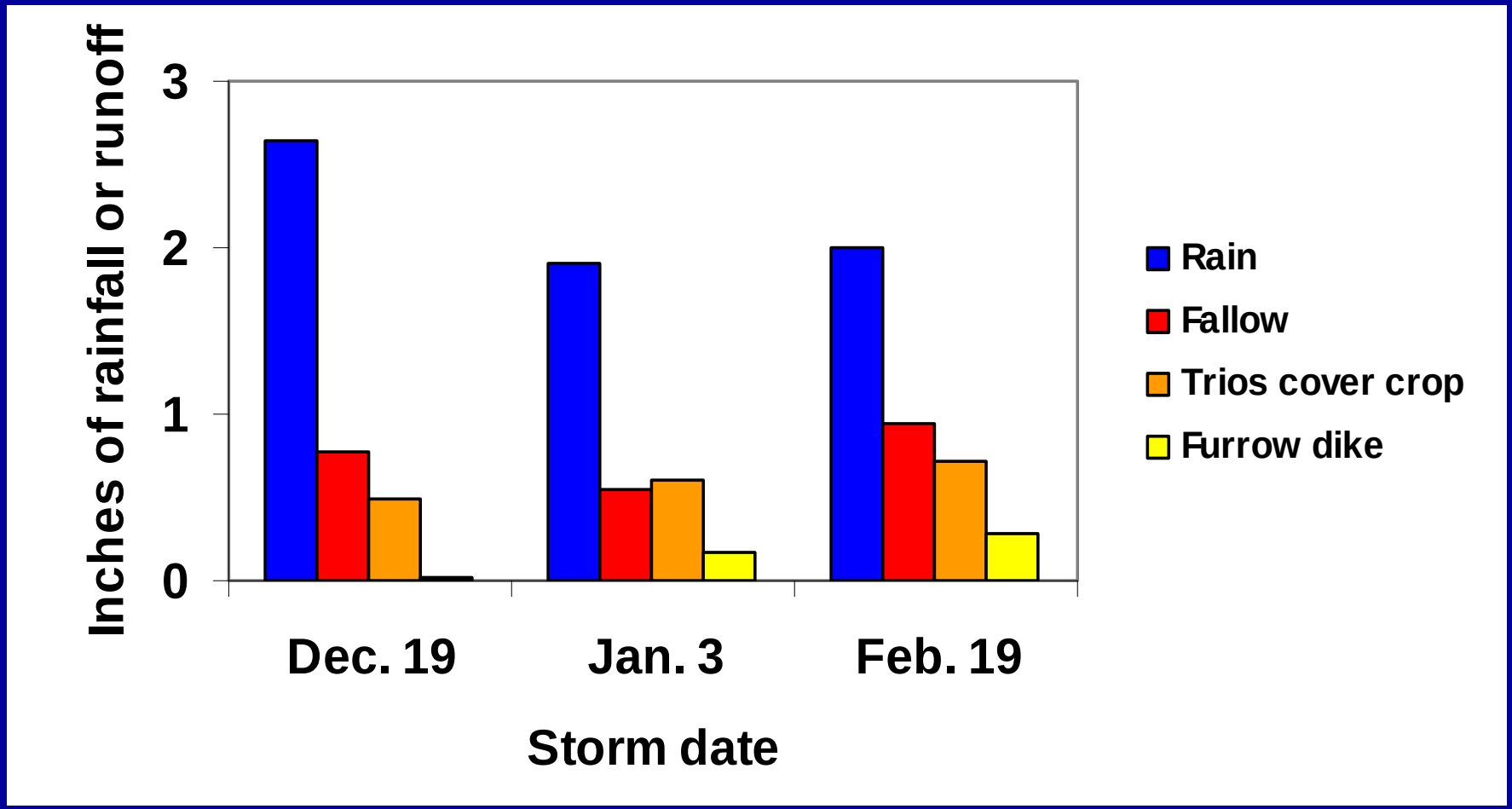
Low biomass cover crops - for early planted annuals

REDUCING **STORMWATER** RUNOFF

Furrow Dikes - for early planted annuals

REDUCING **STORMWATER** RUNOFF

Furrow Dikes - for early planted annuals

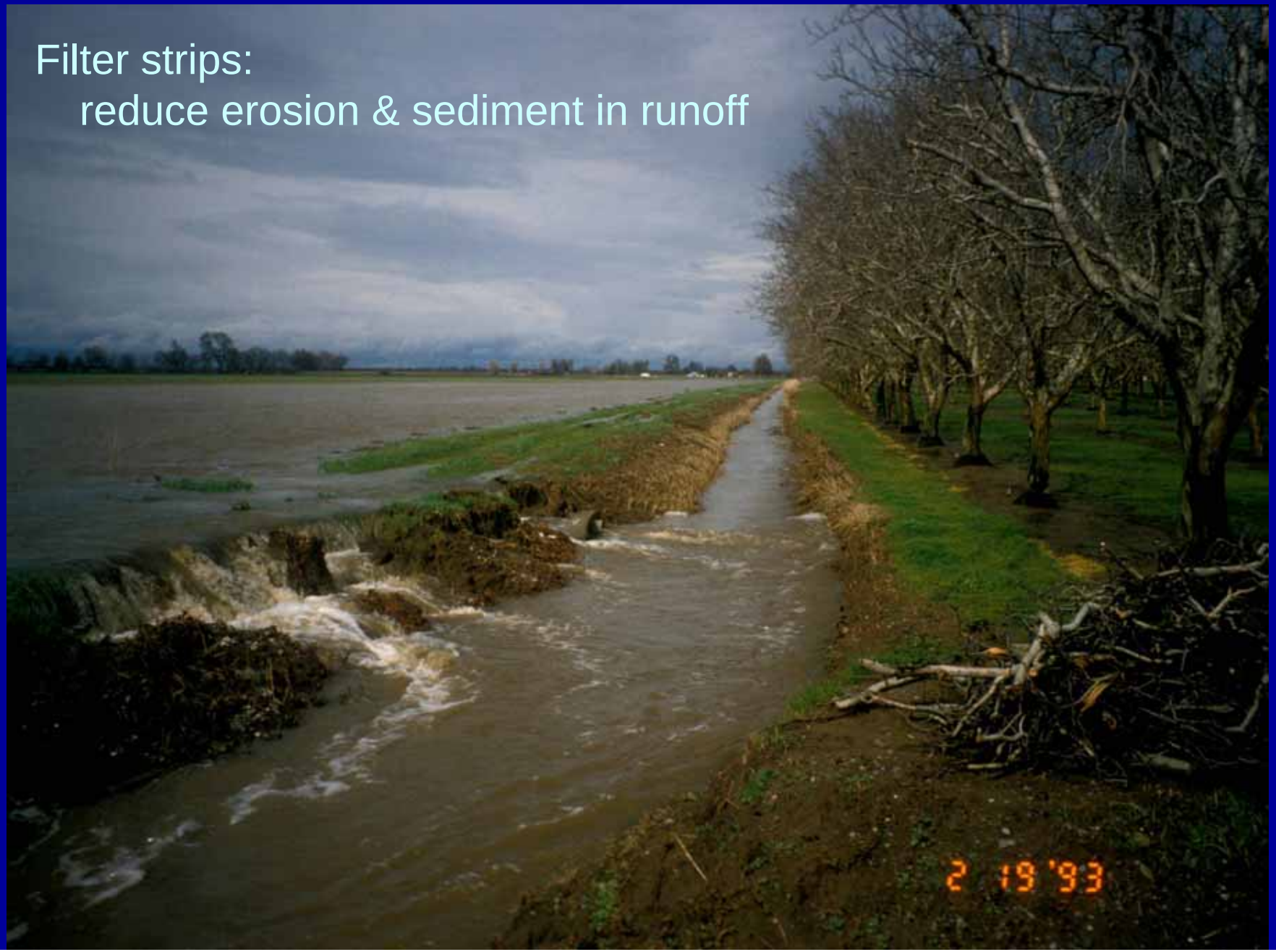


REDUCING **STORMWATER** RUNOFF

Vegetated ditches/Grassed waterways

Reduce sediment in the runoff

REDUCING **STORMWATER** RUNOFF



REDUCING **STORMWATER** RUNOFF

Chipping orchard prunings

REDUCING **STORMWATER** RUNOFF

Chipped orchard prunings

REDUCING PESTICIDES IN SURFACE WATER

In summary:

Runoff control options for irrigation season

- drip or microsprinklers
- sprinkler management
- furrow/flood systems
- tailwater return
- PAM

Runoff control options for winter season

- use cover crop and/or chips
- furrow dikes
- trap sediment with vegetation

REDUCING PESTICIDES IN SURFACE WATER

Adjust Pest Management Systems

to reduce the potential for contamination

- Pesticide selection
- Application timing
- Equipment improvements
- Proper application

REDUCING PESTICIDES IN SURFACE WATER

Adjusting Pest Management System

- Pesticide selection
- Resource: UC IPM Program

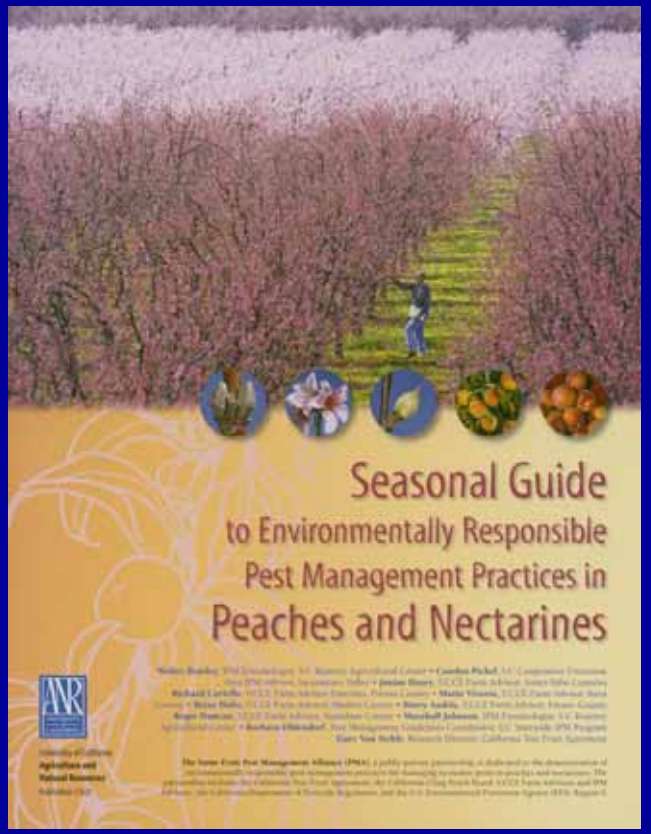
  www.ipm.ucdavis.edu

  – Pest Management Guidelines
  – Seasonal Guide Publications
  – On line Year-round IPM programs

Outline BMP

Link to list of effective control materials

Link to Watertox database for water quality info



REDUCING PESTICIDES IN SURFACE WATER

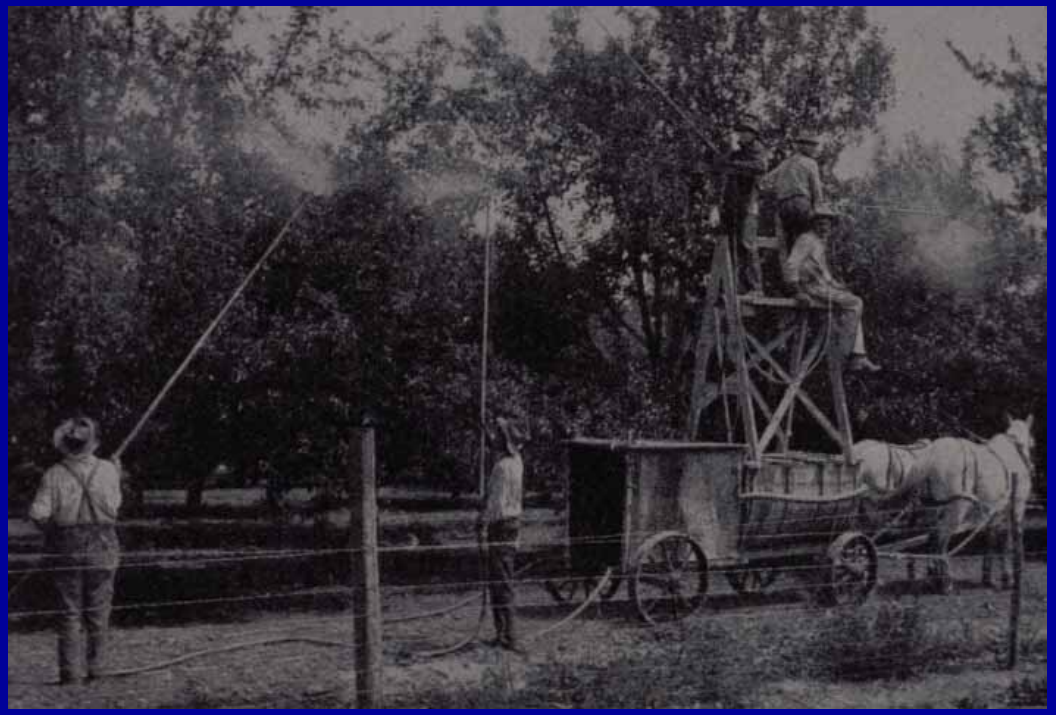
Adjusting Pest Management System

- Application timing
  - Avoid sprays before rain or irrigation
  - PTB: Dormant oil + BT/Success at bloom

REDUCING PESTICIDES IN SURFACE WATER

Adjusting Pest Management System

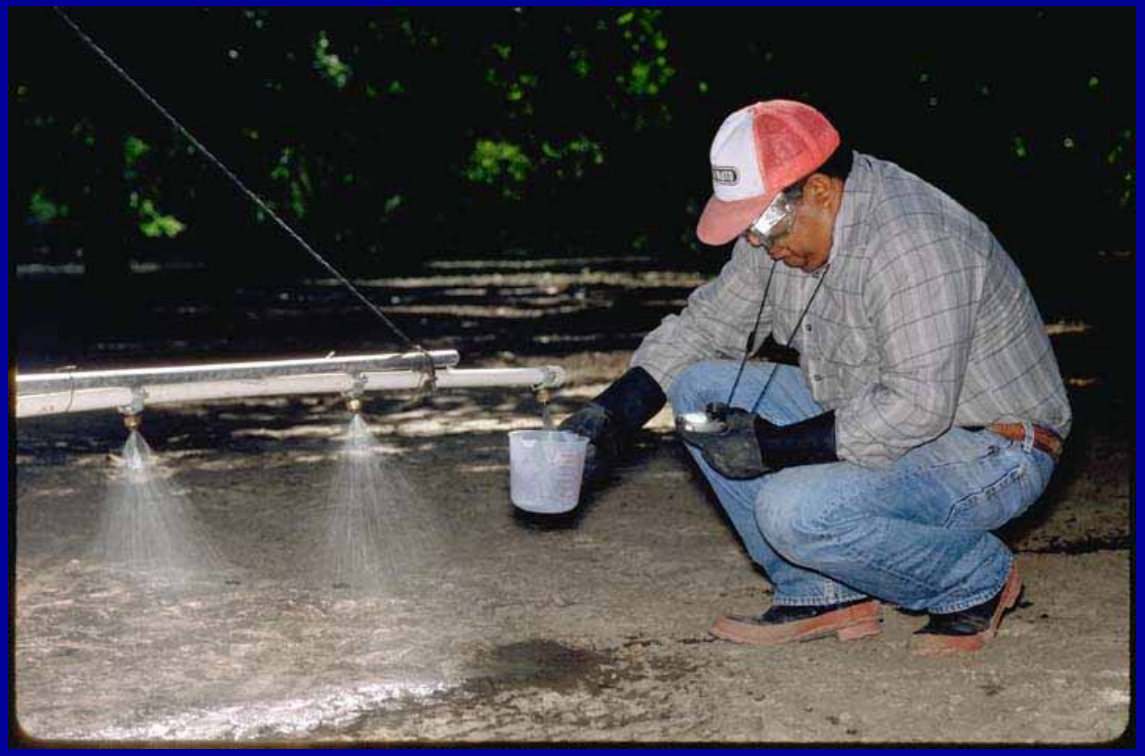
- Equipment improvements
  - Sprayer upgrades



REDUCING PESTICIDES IN SURFACE WATER

Adjusting Pest Management System

- Equipment improvements
  - Sprayer upgrade
  - Inspection, maintenance, calibration



REDUCING PESTICIDES IN SURFACE WATER

Adjusting Pest Management System

- Proper application
  - Wind speed/direction
  - No drift into waterways

REDUCING PESTICIDES IN SURFACE WATER

NRCS Financial Assistance Programs

Environmental Quality Incentives Program (EQIP):

- UC IPM Year Round Program - $125/acre
- Transition to Organic - $100/acre
- Substitute “softer” chemical for high risk - $30/acre
- VOC reducing spray technology - $30/acre
- Cost share for many other projects
  - Cover crops, grassed waterways, filter strips
  - Irrigation system improvements
  - Furrow dike implements, smart sprayers, etc.

APPLICATIONS DUE DECEMBER 1, 2006

925-672-4577 ext. 100

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Pest management options

- pesticide selection
- application timing
- equipment updates
- proper application

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