Sustainable Conservation

On-farm Recharge Pilot Projects Case Study

Grower: Christine and Erich Gemperle

Crop: Almonds

Location: Ceres, Stanislaus County

Site Conditions

- Acreage = 36.5 acres for recharge in a 40-acre field
- Crop type = Almonds
- 20 acres, crop age = 5 years
- 20 acres, crop age = 21 years
- Land IQ rating = Moderately good
- Soil Agricultural Groundwater Banking Index rating = Excellent

Water Supply

- Gravity flow water was supplied free of charge from Turlock Irrigation District (TID) as part of their flood risk reduction efforts. TID notifies grower when water is available for delivery.

Soil Health

- Cover cropping for 10 years, mix of clover and broadleaf mustards.

On-Farm Recharge Logistics

Labor needed:

- One person to monitor recharge events day and night. No tractor work was involved.
- 4 days at 18 hours per day = 72 hours
- $20/hour labor = $1,440

Field infrastructure:

- Fields are set up with 1 turnout per 5 acres for gravity flood irrigation.
- TID installed Rubicon Flume meters to measure water use

Field preparation and management:

- Very little preparation was needed because the farm maintained the flood irrigation system even after converting to dripline and micro sprinkler irrigation.
- Gate valves require lubrication.

Recharge Events

Total applied water:

Water applied January 12-15, 2023.

- 27.5 acre-feet over 36.5 acres, about 0.8 foot per acre

Water applied February 1, 2023.

- 16.5 acre-feet over 36.5 acres, about 0.5 foot per acre

Total water recharged:

- 43.9 acre-feet over 36.5 acres, about 1.2 foot per acre

For more information, contact: Rogell Rogers, Agronomist, Sustainable Conservation, at rrogers@suscon.org or 209-576-7729 x346.

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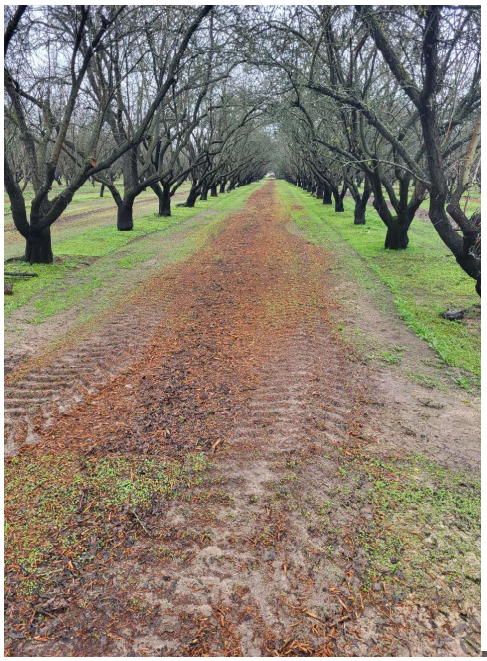
On-farm Recharge Pilot Projects
Case Study

Grower: Eric Harcksen

Crop: Almonds

Location: Ballico, Merced County

Site Conditions



- Acreage = 18 acres for recharge (control field 20 acres)
- Crop type = Almonds
- Crop age = Mixture of 21 years and 28 years
- Land IQ rating = Good
- Soil Agricultural Groundwater Banking Index rating = Good

Water Supply

- Water was supplied free of charge from Turlock Irrigation District (TID) as part of their flood risk reduction efforts. TID notifies grower when water is available for delivery.
- TID covered the electrical cost of $66.20 for pumping.

Soil Health

- Cover cropping mix of clover and broadleaf mustards.
- Shredded tree clippings spread across topsoil in the fall.

On-Farm Recharge Logistics

Labor needed:

- One person to monitor recharge events.
- 5 days at 12 hours/day = 60 hours
- $20/hour labor = $1,200

Field infrastructure:

- Water was pumped into the grower's existing underground flood system, which has valve gates every other tree row in the field.
- TID installed Rubicon Flume meters to measure water use.

Field preparation and management:

- Every 4 tree lines use 8- to 10-inch-high berms to enclose or hold water until water rose 6–8 inches.
- After water rose 6–8 inches, the valve was shut off and the next valve turned on to allow water to flow into the next set of four tree lines.

Recharge Events

Total applied water:

- Five applications were made during December 2022.
- 21.08 acre-feet over 18 acres, about 1.17 feet per acre

Total water recharged:

- 20.95 acre-feet over 18 acres, about 1.16 feet per acre (1.27 feet per acre with rain)

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On-farm Recharge Pilot Projects
Case Study

Grower: Eric Spycher

Crop: Almonds

Location: Bellico, Merced County

Site Conditions

- Acreage = 13 acres for on-farm recharge
- Crop type = Almonds
- Crop age = 7 years
- Land IQ rating = Excellent
- Soil Agricultural Groundwater Banking Index rating = Excellent

Water Supply

- Water was supplied free of charge from Turlock Irrigation District (TID) as part of their flood risk reduction efforts. TID notifies grower when water is available for delivery.

Soil Health

- Soil was amended with a cover crop and composting during the first three years of growth.

On-Farm Recharge Logistics

Labor needed:

- Three people to monitor recharge events (10 hours each person per day for 2 days = 60 hours) plus 1 person for 10 hours tractor work.
- $20/hour for 70 hours = $1,400

Field infrastructure:

- The original gravity flood system was divided into one underground water valve for every 8 plant lines.
- TID installed Rubicon Flume meters to measure water use.

Field preparation and management:

- Berms were installed to a height of 1.5 feet to flood 4 plant lines at one time.
- After reaching a head height of 7-8 inches, the berms were breached to direct water to move to the next set of 4 plant lines.
- 5-6 hours after the water was shut off, the water had completely infiltrated into the soil.

Recharge Events

Total applied water:

Water applied December 14-15, 2022.

- 16 acre-feet over 13 acres, about 1.2 feet per acre

Total water recharged:

- 15.99 acre-feet over 13 acres, about 1.2 feet per acre

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