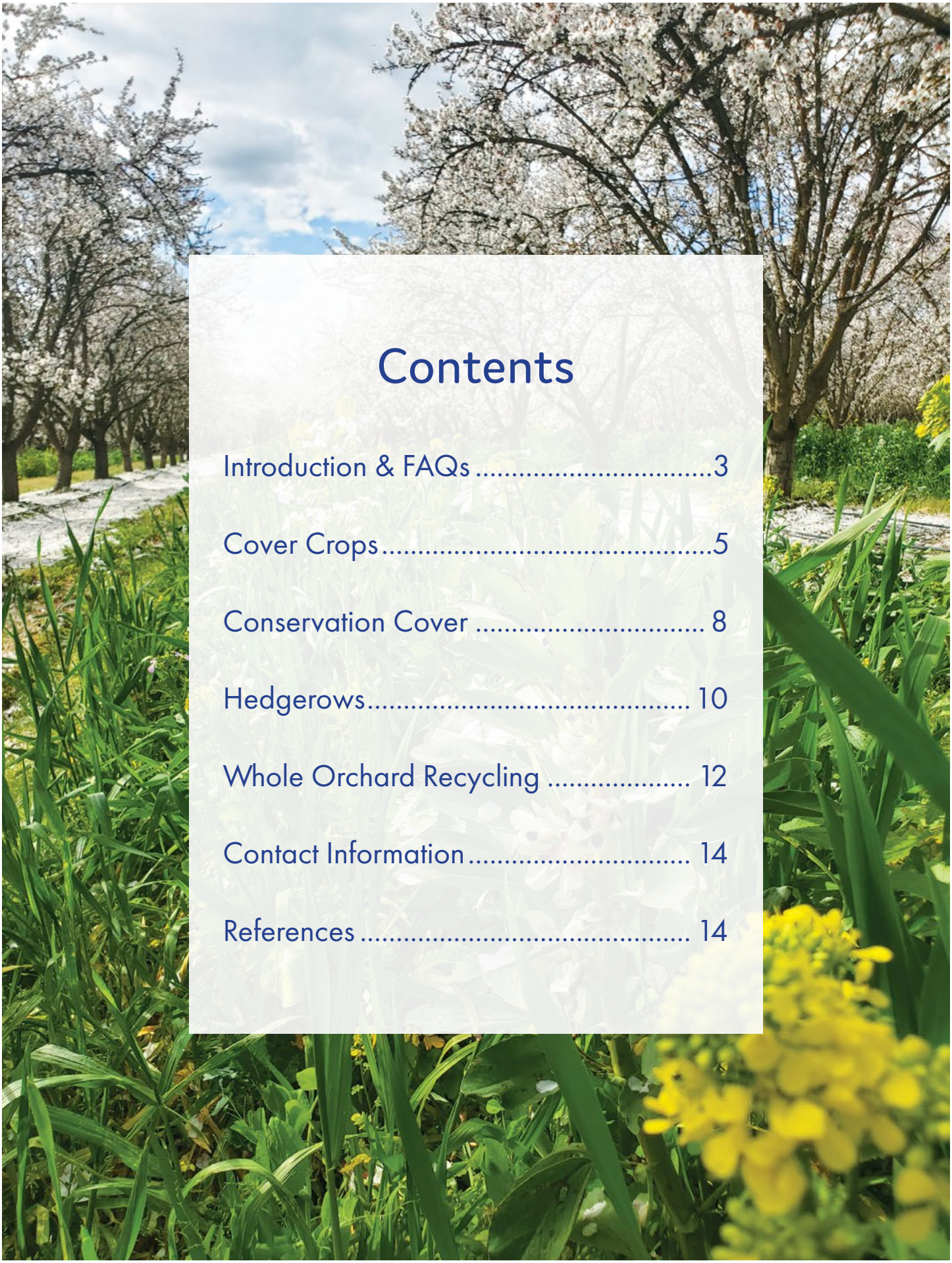
Power in Partnership

BLUE DIAMOND GROWERS

Blue Diamond's Climate-Smart Grant (CSG) Guidebook 2024



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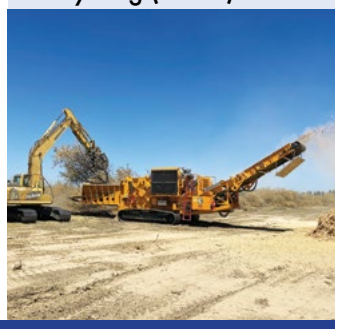
Introduction & FAQs

In 2023, Blue Diamond was awarded a five-year grant from the USDA for $45 million to support growers implementing climate-smart farming activities. This Guidebook is informational resource for Blue Diamond growers interested in the grant program. This voluntary program allows Blue Diamond member growers or those who farm on a Blue Diamond orchard to receive an incentive payment and no cost plants or seeds when implementing one or more of the following activities after program launch (**Application dates vary by practice**):

ELIGIBLE PRACTICES			
Cover Crops	**Conservation Cover, "Bee Pasture"**	**Hedgerows**	**Whole Orchard Recycling (WOR)**
			
MATERIAL COSTS			
No cost seeds provided by Project *Apis m.*	**No cost** seeds provided by Project *Apis m.*	**No cost** plants provided by Pollinator Partnership	Consult local providers
IMPLEMENTATION INCENTIVE *			
Up to $35/acre*	**Up to $50/acre***	**Up to $8/linear foot***	**Up to $900/acre***
IMPLEMENTATION INCENTIVE EXAMPLES			
Cover crops planted on at least every other row of a 100-acre orchard: ≤ $3,500	Conservation cover planted on 4% of 100 acres (primarily on idle or fallow land, in or next to orchards): ≤ $200	Hedgerows planted around an orchard in a 300 foot row: ≤ $2,400	WOR implemented for a 100-acre orchard: ≤ $90,000

What is required?

1. Participation in Blue Diamond's Orchard Stewardship Incentive Program (OSIP) for the 2023 crop year bluediamondgrowers.com/forms/
2. Registration of your farm and orchards with the USDA Farm Service Agency offices.sc.egov.usda.gov/locator/app?state=ca&agency=fsa
3 Completion of a grant agreement for the specific Climate-Smart practice.
4. A completed application, all requested materials, and approval from Blue Diamond (***note***: you will be notified when we receive your application and when review is complete)
5. Proof of implementation to show you have completed the activity
5. Adherence to all practice program requirements and rules (see link to guide on the right)

Where do I learn more and how do I sign up?

- More information can be found on the Blue Diamond Growers webpage under *Grower Resources* > Climate-Smart Grant, or bluediamondgrowers.com/climate-smart-grant
- The application link is located at bit.ly/bdg-csg
- Email jbains@bdgrowers.com or contact your Regional Manager with additional questions. bluediamondgrowers.com/meet-your-partners/

How many of these practices can I implement on how many acres?

A grower can participate in all activities offered—there is no limit on the number of practices one grower can implement. Acreage allowable for this program varies by practice, plant material, and funding availability. Growers will be approved up to a defined number of acres (depending on the activity) and then approved for additional acreage upon further review. The funding amounts are on a first-come, first-serve basis, and Blue Diamond will support as many acres as possible until funding is exhausted. Please review the "Rules and Regulations" for more details on the Blue Diamond Growers webpage: bit.ly/bdg-csg

Who is eligible?

All almond orchards with a Blue Diamond Crop Agency Agreement are eligible to participate, subject to meeting the other requirements and qualifications of the program. This means an owner or renter will be eligible if the orchard has a Blue Diamond contract. The orchard must currently be planted to almonds. Participation is voluntary.

What is the process to apply and participate?

The grower (person implementing the practice) must apply to Blue Diamond and be approved for the funding prior to practice implementation. The process is as follows:

1. Blue Diamond application review and approval for participation
2. Signed recipient agreement
3. Grower to receive technical assistance on implementation, seeds or plants, and guidance for proof of practice implementation
4. Grower implements practice
5. Grower submits proof of practice implementation
6. Grower is then reimbursed for implementation costs at the qualified incentive rate

The application is available here: bit.ly/bdg-csg

How and when will reimbursements be administered?

Reimbursements will be sent to growers after proof of implementation is provided to Blue Diamond and grower activities are processed as complete. *This should take anywhere between 2 to 4 months.*

Can I seek additional grant funding?

Yes. There are funding programs available to "stack" on top of the CSG. Stacking is when you combine more than one source of grant funding for the same practice. Funding sources will vary by region but always make sure you do not accept any other federal funds for the same practice on the same field.

Please reach out to Blue Diamond for more information: jbains@bdgrowers.com

Can I apply to receive grant funding annually?

Yes. Growers may participate every year. All activities are subject to acreage limits specified per contract in the "Rules and Regulations" available on the Blue Diamond webpage: bit.ly/bdg-csg. **Note**: Only Cover Crops can be done on the same field more than once.

When, where, and how can I begin seeking funding?

Growers are encouraged to begin their application as soon as they know they would like to implement one, or more, of the eligible practices. The application can be found at bit.ly/bdg-csg. You will be notified by Blue Diamond within 2 weeks after submitting an application.

Is this program mandatory?

No. The CSG program is not mandatory. It is a voluntary program for Blue Diamond members.

What are the rules and regulations for this program?

The full rules and regulations, including how to provide proof of implementation for each practice, can be found by clicking the "Rules and Regulations" link on the Blue Diamond Growers Climate-Smart Grant resources page, or by following the link bit.ly/bdg-csg. Rules and regulations are subject to change, to align with USDA and/or market requirements.

Cover Crops

Cover Cropping is the practice of planting a temporary crop in the orchard middles, typically flowering and/or nitrogen-fixing species, after harvest with termination in late winter/early spring. Several species can be used as cover crops with each one chosen to serve a specific need.

The CSG grant is offering growers no cost seed and an implementation incentive of $35/acre. The same incentive rate is offered when growers plant cover crop in every or every other row.

Potential Cover Crop benefits are briefly described below. Potential benefits may not occur immediately but occur over time as soil adapts to cover crops. Please see the citations listed on page 14 to learn more information about the potential benefits:

Water Conservation: Improved soil infiltration and reduced runoff (Gomes et al. 2023)

Soil Health: Reduced compaction, greater aeration, stable aggregation, and water holding capacity. (Gomes et al. 2023)

Pollinator Health: Flowering cover crops can provide forage material in the spring to support honeybees (Wauters, V. & et al. 2023)

Pollinators: Cover crops support stronger honey bee colonies and greater populations of native pollinators by providing forage during and after almond bloom (Alaux 2010)

Air Quality: Reduction of dust in orchard middles (Blanco-Canqui 2015)

Economic Benefits: Depending on the seed mix use, it is possible for increased nitrogen availability to occur from nitrogen fixing species such as clovers (Jahanzad 2016)

There may be challenges associated with cover cropping, noted below:

Timing: Cover crops must be planted following harvest, with best results observed with an October planting (**note:** Project *Apis m.* will work to ensure seed is provided before October)

Establishment: Cover crops are intended to be planted before fall/winter rains begin to allow for best chance at successful germination(**note:** hedgerows may be more suitable in water-restricted areas)

Equipment: Cover crops must be either seeded using a drill or broadcast using a spreader

Orchard Sanitation: Growers may consider planting every other row to ensure they can complete orchard sanitation

Pests: Certain cover crop mixes may harbor unwanted pests, such as gophers

Other considerations:

Frost Protection: This is an active area of research. Growers should manage their orchard floors in the way that best suits their needs and operation

Bee Visitation in Almond Bloom: Research shows that honeybee productivity is not negatively impacted by cover crops. Honeybees will seek almond nectar and pollen first, as it is a superior nutrition source. However, bees desire a diversified diet and will seek out alternative forage sources. Cover crops are an effective way to keep bees "local" in your orchard by providing alternative nutrition sources (Nino, Elina, 2016 and 2017)

Implementation: There is little prep work required for planting cover crops in almond orchards in the Fall. This is because preharvest preparations create a ready seed bed. Cover crops perform best when planted in early October. This planting date allows for the cover crop to become established in time to take advantage of winter rains and for early flowering species to bloom in time for almond bloom

Termination: In typical years, it is recommended that you terminate cover crops in April after honeybee colonies have been removed. Termination in April also allows for enough time for the plant biomass to break down before harvest

Practice requirements:

Growers should review the NRCS Cover Crops CPS (340) for more information. Please review the NRCS Standard here: bit.ly/NRCS_CPS

Proof implementation:

Growers will be required to provide proof of practice implementation which may include, but is not limited to, a signed form stating practice was implemented and a possible on-site review to confirm practice was implemented. Proof of implementation is required to initiate the incentive payment.

Proof of implementation is essential to ensure compliance with grant agreement terms and allow for adequate measurement, reporting, and verification of program reporting by Blue Diamond and its growers.

Additional funding resources:

There are funding programs available to "stack" on top of the CSG. Stacking is when you combine more than one source of grant funding for the same practice. Funding sources will vary by region but always make sure you do not accept any other federal funds for the same practice on the same field. The Grower is responsible for ensuring it does not enroll in multiple federal programs for funds for the same practices on the same field.

Contact program staff if you have any questions.

How do I learn more?

For more Information on cover crops in almond orchards, please contact Project *Apis m.* Contact information can be found on page 13. Please see the citations on page 14 for research publications showing the benefits of cover crops.

Visit almonds.com/almond-industry/orchard-management/cover-crops-and-forage for cover crop best management practices.

Conservation Cover

Conservation Cover utilizes perennial, vegetative, plants to prevent soil erosion, capture water on idle or fallow land, that can provide several year-round benefits pollinators and other beneficial insects. Conservation cover is intended to be a permanent installation, typically on fallowed, idle, or marginal land. Conservation cover is meant to be minimally managed for weeds to preserve the wildlife benefits and mitigate cost.

The CSG is offering growers no cost seed and an implementation incentive up to $50/acre.

Conservation benefits are briefly described below. Potential benefits may not occur immediately, but over time as cover is established. Over time, benefits may come in the form of increased natural insect enemies, native pollinators, healthier managed pollinators, improved soil and water management. Please see the citations listed on page 14 to learn more information about the benefits:

Water Infiltration & Quality: Improved infiltration (Schlautman 2021)

Soil Erosion: Prevents erosion and sedimentation (Schlautman 2021)

Pollinator Health: Flowering plants can provide pollinator forages and provide habitat nearby orchards (Wauters, V. & et al. 2023)

There may be challenges associated with conservation cover, noted below:

Pests: Certain plant species may provide habitat for both beneficial insects and pest predators. However, depending on size, management, and other factors, it can also serve as a habitat for pests, such as gophers

Weed Management: Controlling weeds in the first two years is critical to the success of the stand establishment. Weed control prevents weeds from taking over an area and gives desired plants time to establish and suppress weeds on their own

Other considerations:

Selecting conservation cover or mix that meets your goals, planting, and a plan for weed management are the major items to consider for your land. Consider the following when conceptualizing your conservation cover:

- Idle or fallow land or possibly marginal areas that can be converted
- Weed management strategy

Early fall, before the rainy season, is the optimal timing to plant conservation cover. This allows for the seed to germinate and become established before the winter season where many species will turn their energy to root development. This creates a stand that is established and more developed to handle the hot and dry conditions in summer.

Practice requirements:

Growers should review the NRCS Conservation Cover CPS (327) for more information. Please review the NRCS Standard here: bit.ly/NRCS_CPS

Proof implementation:

Growers shall provide proof of practice implementation which may include, but is not limited to, a signed form stating practice was implemented and a possible on-site review to confirm practice was implemented.

Additional funding resources:

There are funding programs available to "stack" on top of the CSG. Stacking is when you combine more than one source of grant funding for the same practice. Funding sources will vary by region but always make sure you do not accept any other federal funds for the same practice on the same field. The Grower is responsible for ensuring it does not enroll in multiple federal programs for funds for the same practices on the same field.

Contact program staff if you have any questions.

How do I learn more?

For more Information on conservation cover in almond orchards, please contact Project *Apis m.* Contact information can be found on page 13. Please see the citations on page 14 for research publications showing the benefits of conservation cover.

Visit almonds.com/almond-industry/orchard-management/cover-crops-and-forage for conservation cover best management practices.

Hedgerows

Hedgerows are permanent, perennial plantings that are usually composed of woody shrubs and trees that provide several year-round benefits to the orchard, pollinators, and other beneficial insects. Hedgerows are typically planted in the fall so that roots can establish over winter. A number of species can be used for hedgerows, including drought tolerant plants that become self-sufficient as they become established.

The CSG is offering growers no cost plant material and an implementation incentive up to $8/linear foot.

Hedgerow benefits are briefly described below. Potential benefits may not occur immediately, but in time as your hedgerow becomes established. Please see the citations listed on page 14 to learn more about the benefits.

Water Conservation: Provides benefits to water quality and infiltration (Earnshaw 2018)

Soil Health: Large root systems can hold soil from eroding, as well as fixing nitrogen (Earnshaw 2018)

Pollinator Health: Can provide floral resources (pollen and nectar) throughout the year depending on species (Aviron 2023)

Air Quality: Can provide barriers to dust and wind that may be harmful to you or your orchard (Earnshaw 2018)

There may be challenges associated with hedgerows, noted below:

Establishment: Planting sites must be free of weeds before planting hedgerows to prevent competition for resources

Irrigation: Irrigation is essential for the first 3 to 5 years to support hedgerow establishment. After establishment, plants can succeed without supplemental irrigation in normal rainfall years

Other considerations

Timing: Hedgerows are most successful when planted in the fall, as roots will establish over the winter season. However, hedgerows can be planted throughout the year with sufficient irrigation and care

Practice requirements:

Practice Requirements: Growers should review the NRCS Hedgerowe planting CPS (422) for more information. Please review the NRCS Standard here: bit.ly/NRCS_CPS

Proof implementation:

Growers shall provide proof of practice implementation which may include, but is not limited to, a signed form stating practice was implemented and a possible on-site review to confirm practice was implemented.

Additional funding resources:

There are funding programs available to "stack" on top of the CSG. Stacking is when you combine more than one source of grant funding for the same practice. Funding sources will vary by region but always make sure you do not accept any other federal funds for the same practice on the same field. The grower is responsible for ensuring it does not enroll in multiple federal programs for funds for the same practice on the same field.

Contact program staff if you have questions.

How do I learn more?

For more information on hedgerows in almond orchards, please contact Pollinator Partnership. Contact information can be found on page 13. Please see the citations on page 14 for research publications showing the benefits of hedgerows.

Visit pollinator.org/guides for region specific guides.

Whole Orchard Recycling

Whole Orchard Recycling (WOR) is the on-site grinding or chipping of whole trees during orchard removal, and incorporation of the chipped biomass into the topsoil prior to replanting.

The CSG is offering growers up to $900/acre for chipping, spreading, and incorporating activities.

Benefits:

WOR provides an alternative method of tree removal that may enhance both air and soil quality. UC-led research has identified significant advantages to WOR in increasing the health and productivity of the subsequent replanted orchard and soils while sequestering carbon, reducing GHG emissions, improving soil structure, and increasing water use efficiency. (Jahanzad 2020)

WOR benefits are currently being studied by researchers in California. Research findings show many potential benefits which are briefly described below.

Soil Health: Biomass recycling may improve soil fertility, porosity, and functioning and reduce compaction (Jahanzad 2020)

Tree Health & Disease: Early trials in orchards one and two years after replanting show that WOR does not negatively affect the severity of Prunus replant disease or the effectiveness of pre-plant soil fumigation (Holtz 2009)

Orchard Water Use: May improve water use efficiency (Jahanzad 2020)

Orchard Productivity: Over the course of a 9-year trial, almond yields showed an increase in yield and an increase in water-use efficiency (Jahanzad 2020)

Challenges:

Nutrient Management: the large volume of organic carbon incorporated into an orchard can significantly increase the carbon-to-nitrogen (C:N) ratio in soils. A high C:N ratio can cause soil microbes to immobilize any nitrogen available in the soils in order to balance out their sudden increase in carbon consumption. This may result in a temporary (usually 1 to 2 years) deficit of nitrogen available for trees subsequently planted in the orchard. To overcome this, growers will need to develop a nitrogen management plan that may use increased N fertilizer in the first 1 to 2 years after WOR to offset the high C:N ratio

Chipping & Spreading: It is recommended that chipped material be 4" or less. A chip size of 2" may be preferred for some, as it is a better size for faster material breakdown and realization of benefits. Spreading should be uniformly distributed throughout the whole orchard (avoid greater depths of chips below piles and shallower depths at the perimeter of the orchard). Uniform distribution will make management easier

Irrigation: Water will behave differently following WOR. Depending on how deep material is incorporated, water will flow differently, and irrigation systems and emitters should focus irrigation (and fertigation) within a couple of inches of the tree trunk to maximize uptake.

Other considerations:

Best practices recommend fallowing land for at least one year prior to replanting to let chips break down. If a grower plans to WOR in the fall and plant in the spring, there will be additional considerations for proper orchard and system management.

Practice requirements:

Practice implementation and standards will follow the NRCS will follow the California NRCS Practice Scenario which couples Woody Residue Treatment (CPS 384) with Soil Carbon Amendment (CS 3336). Note: This practice is relatively new and the applicable practice codes may change. Please consult with program staff or your local NRCS for the most up to date information.

Proof implementation:

Growers shall provide proof of practice implementation which may include but is not limited to a signed form stating practice was implemented, an establishment plan and success report, receipts of services/goods, labor hours involved, and/or geo-tagged photos showing practice implementation.

Further information on practice implementation will be provided to growers prior to the estimated implementation date. Proof of implementation is essential to ensure compliance with grant agreement terms and allow for adequate measurement, reporting, and verification of any environmental claims by Blue Diamond and its growers.

Additional funding resources:

There are funding programs available to "stack" on top of the CSG. Stacking is when you combine more than one source of grant funding for the same practice. Funding sources will vary by region but always make sure you do not accept any other federal funds for the same practice on the same field. The Grower is responsible for ensuring it does not enroll in multiple federal programs for funds for the same practice on the same field.

Contact program staff if you have questions.

How do I learn more?

Information on WOR in almond orchards is available from the Almond Board of California and UCANR. Please see page 15 for links to WOR implementation and research.

Visit almonds.com/almond-industry/orchard-management/whole-orchard-recycling for WOR best practices

Contact Information

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For research currently in progress, please visit:
https://www.almonds.com/almond-industry/orchard-management/whole-orchard-recycling

https://orchardrecycling.ucdavis.edu/

Power in Partnership

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