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USING WINTER COVER CROPS ON A CALIFORNIA PROCESSING VEGETABLE OPERATION

SOIL HEALTH MANAGEMENT PRACTICE TEMPLATE

AMERICAN FARMLAND TRUST (AFT)

How to use this template: AFT developed this template to assist farmers like you in the successful adoption and use of cover crops in a processing vegetable operation in California. The first five sections of this template are here to help you identify key issues with your current soil health, as well as list your current farm management. Section 6 lists simple and short technical management recommendations that you can use to successfully implement cover crops on your farm. Finally, section 7 provides an example of farm operations that you can use as guidance.

This template was partially based on an AFT's Cover Crop Demonstration Case Study conducted at Bullseye Farms in Yolo County, California. This farm trial focused on implementing cover crops in permanent vegetable beds producing processing tomatoes and cucumbers. See the published case study report here. See all the other cover crop case studies and other resources here. QR codes are provided at the end of the document for all embedded links.

1. **In-Field Soil Health Assessment**: *A good place to start is to conduct an In-Field Soil Health Assessment of your farm/field. This qualitative assessment is a visual evaluation of your soil that you can conduct on your own. See this video guide for instructions on how to conduct this assessment. For additional instructions on this assessment, see the NRCS Technical Note or contact your local NRCS office.*

   Describe here the results and observations from your In-Field Soil Health Assessment. This information provides insight into what resource concerns and constraints in soil function you may have. Example: evidence of soil erosion, ponding, low soil cover, etc.

2. **Resource Concerns Identified** *based on your In-Field Soil Health Assessment. Use the decision tree on page 16 of the NRCS Technical Note, or in the References and Resources section below.* Example: compaction, soil organic matter depletion, etc.

3. **Soil Health Management Objectives.** *List 1-3 objectives based on your field assessment and the knowledge you have about your farm.*

4. **Farm Equipment Inventory.** If you will be sharing this with an agricultural service provider, they will need a list of your equipment. *List your farm equipment here. This information is considered in designing an approach to adopting soil health management that maximizes the use of equipment you already have, where possible.*

5. **Existing Soil Health Nutrient Management Strategies.** If you will be sharing this with an agricultural service provider, they will need this information to build a workable plan for adopting soil health management on your current management. *Describe crop rotation, fertilizers, soil amendments, soil sampling, (nutrient or soil health lab tests), tillage, etc*

6. **Management Considerations while using cover crops.** *What follows is a list of technical management recommendations that can help guide you in the process of using cover crops.*

Always consider what your goals are when choosing cover crop species and management approaches. There are many resources and tools to help you determine which is the best cover crop species to use, and how to manage it for your goals. See some cover crop decision tools:

- Cover Crop Decision Tools – Western Cover Crops Council – This tool will let you find cover crop species that fit your geographic location, current field conditions, and soil health goals.

- Cover Crop Nitrogen Calculator – Precision Sustainable Agriculture – This tool will let you estimate the amount of Nitrogen and cover crop residue left on the field after termination, and when you can expect Nitrogen to be released over time.

- Managing Cover Crops Profitably- Sustainable Agriculture Research and Education (SARE) - This book provides in-depth guidance on cover crop management and individual cover crop species recommendations.

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Trying out cover crops for the first time:

Planning your cover crop

- Always start in a small field and expand the cover crop area as you get more comfortable with this practice.
- A mix of winter vetch and winter peas may work well for a starting cover crop. Small grain cover crops are also recommended, such as triticale and barley; however, some farmers report struggling with the incorporation of the roots of these crops if they get too large in the spring, so be cautious. Different cultivation methods may work better to manage high cover crop biomass.
- Non-leguminous cover crops can tie up nitrogen in advance of your cash crop. This is especially risky with crops that are planted very soon after cover crop termination. You may need to apply additional Nitrogen fertilizer when establishing your cash crop.

Sourcing and planting your cover crop

- Order high-quality cover crop seed early (sometimes they run out).
- Using drills and planters is the preferred option for successful seeding of cover crops. Broadcast seeding with light cultivation can also be effective. Seeding rates are usually higher when broadcasting or aerial seeding.
- Planting early enough in the fall ahead of rainfall is critical for cover crop germination and establishment.

Terminating your cover crop

- Terminate cover crops by chopping and light tilling or disking about two to four weeks before planting your cash crop in the spring.

***After a few years of trying cover crops*:**

- Consider using a roller crimper to terminate your cover crop for cover crop species adapted to this strategy. This can create a mat of residues that will provide effective weed suppression, while also minimizing temperature spikes and moisture loss, for your cash crop.
- Scout for insect pests as well as their predators that are getting established as a result of your cover crop. Before applying any pesticide, make sure you have hit the economic threshold to do so and that you are minimizing negative effects on beneficial insects.

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7. **Field Operations Template.** *What follows is an example of the field operations of a farm located in the Central Valley region of Northern California using cover crops. Use the last column to start planning field operations at your farm.*

Field Operation	**With Cover Crops**	**Your Farm**
Cover Crop Planting Method	Grain drill, 25 ft.	
Cover Crop Species	Bell beans (45%), winter pea (35%), and common vetch (20%)	
Cover Crop Planting Date	November 17	
Cover Crop Termination Date and Method	February 26 – Wilcox Performer terminates cover crop, tills, and prepares bed	
Tillage	April 8 – Light harrow cultivator	
Cash Crop Planting Date	April 13	
Cash Crop Harvest	August 18	

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References and Resources:

- Western Cover Crops Council
- Estimated Costs for a Winter Cover Crop in an Annual Crop Rotation (2022) UC Davis Department of Agricultural and Resource Economics, University of California Agriculture and Natural Resources Cooperative Extension. Estimated Costs for a Winter Cover Crop in an Annual Crop Rotation, Lower Sacramento Valley, 2022
- Cover Cropping and Conservation Tillage in California Processing Tomatoes (2012). University of California Agriculture and Natural Resources. Mitchell, J. P. et al. Publication 8404. Cover Cropping and Conservation Tillage in California Processing Tomatoes
- Building Soils for Better Crops Sustainable Soil Management 4th 4E – TUNED IN, LLC

QR Codes:

-  Published case study report
-  Other cover crop case studies and resources
-  In-Field Soil Health Assessment video guide
-  In-Field Soil Health Assessment Technical Note

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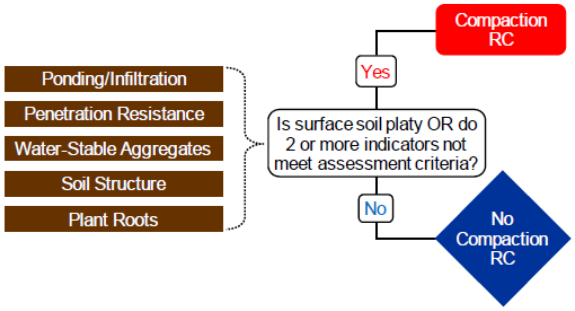
Cropland In-Field Soil Health Assessment Resource Indicator Decision Trees

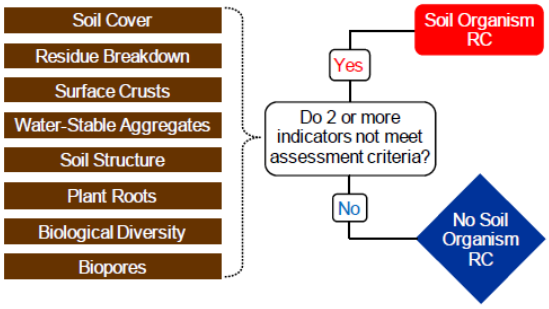
Compaction

Circle the indicators that do not meet assessment criteria during the evaluation and follow decision tree below to determine if the given resource concern (RC) is present. Document on worksheet.



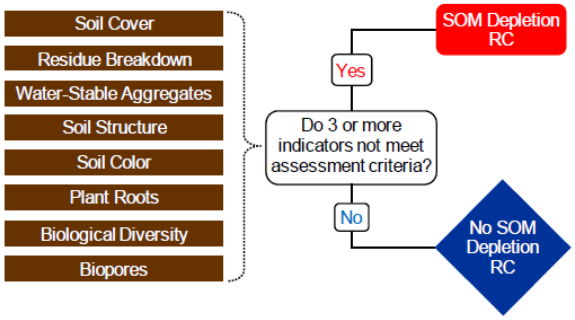
Soil Organism Habitat Loss or Degradation

Circle the indicators that do not meet assessment criteria during the evaluation and follow decision tree below to determine if the given resource concern (RC) is present. Document on worksheet.



Soil Organic Matter Depletion

Circle the indicators that do not meet assessment criteria during the evaluation and follow decision tree below to determine if the given resource concern (RC) is present. Document on worksheet.



Aggregate Instability

Circle the indicators that do not meet assessment criteria during the evaluation and follow decision tree below to determine if the given resource concern (RC) is present. Document on worksheet.