

Info

Can windbreaks help with organic farming?

Working Trees



This hedgerow protects the adjacent crop from dust and reduces the risk of dust-induced mite infestations. (Photo by Rex Dufour, National Center for Appropriate Technology)

Agroforestry buffers can be used to help organic farmers maintain the integrity of their products. If there is a risk of crop or grazing land contamination from substances not allowed under organic regulations, whether it is a risk of pesticide drift or gene flow, organic producers must have buffer zones. According to USDA National Organic Program (NOP) regulations, these buffers will likely be required by the certifier in the following situations:

- The organic field borders a conventional field on which prohibited substances are used.
- The organic field borders a roadway to which prohibited substances are applied (usually to control weeds).
- The organic field borders residential housing in which prohibited substances are applied.
- The organic field has, or is immediately adjacent to, fencing that uses lumber treated with prohibited substances.

Fortunately, these buffers can be created with USDA assistance. To reduce chemical drift, landowners can work with USDA's Natural Resources Conservation Service (NRCS) to establish agroforestry conservation practices such as Field Borders (386), Hedgerow Planting (422), Herbaceous Wind Barriers (603), Windbreak/Shelterbelt Establishment (380), Riparian Forest Buffer (391), Conservation Cover (327), and others. (Reference numbers of NRCS Conservation Practices are in parentheses.)

Additional Benefits of Buffers

All of these practices can also be designed to have multiple benefits for the farm. This means that rather than solely acting as buffers to address NOP regulations concerning contamination, they may be able to create habitat for beneficial organisms (birds, pollinators, and the parasites and predators of crop pests), protect water quality, reduce soil erosion, create wind/dust breaks, provide habitat and cover for other wildlife, enhance aesthetic considerations, and even, create additional income opportunities if a harvestable crop is created in the buffer zone. Note, however, that if a crop is harvested from the buffer zone it will need to be harvested separately from the organic crop and the farmer must document that it was harvested, stored, and sold as non-organic.

Grasses, forbs, shrubs, and trees have different functions and characteristics within an ecosystem, and understanding their different functions can assist the landowner to better design a buffer that meets their objectives. In most situations, buffers designed to meet a grower's primary objective of reducing contamination risk can also meet several secondary objectives by including two or more of these groups of plants. For example, adding shrubs to a hedge of trees literally adds another dimension to buffers, and may address a landowner's desire to buffer their organic field, enhance aesthetic value, and support beneficial insects (predators, parasites and pollinators) by providing flowers of a range of shapes and sizes, with different bloom times and bloom durations.

This same buffer could also provide nesting and perch habitat for birds, including raptors, be used as wind-breaks and road dust barriers, provide ditch stabilization or revegetation, or create shade for stream cooling and fish habitat. For a list of the many benefits buffers also provide, see Table 1 in the recent publication, Conservation Buffers in Organic Systems: Western State Implementation Guide, <http://tilth.org/education-research/organic-conservation-program/wsare-project>.

Designing Buffers

If the organic certifying agency determines that a buffer is needed, they must also sign off on the design of the buffer, and according to the National Organic Program (NOP), buffer zones between organic crops and non-organic crops must be of sufficient size and structure to prevent drift or runoff of non-approved substances. Although there are no specific size requirements since this will depend on the local weather and topography as well as the type of drift or flow, typically a buffer zone is 25 to 30 feet wide.

Plants in the buffer should be selected to provide enough height, leaf area, and structural diversity to intercept anticipated contamination, especially pesticide drift, from adjacent conventionally managed land. For buffers with a high risk of frequent exposure to insecticides, a dense, tall barrier might provide the best protection, and the buffer design should focus on leafy canopy rather than nectar and pollen resources of beneficial insects.

The method of pesticide application (i.e., aerial application via plane, vs.

application by back-pack sprayer) will also be factored in by the certifying agency when determining the size and structure of a buffer zone, and what types of plants should be used. If controlling pesticide drift is the primary purpose of the buffer, avoid using plants that will attract pollinators to this area of concentrated pesticides.

Planting and Maintaining Buffers

To establish a successful buffer, the site must be prepared in advance to rigorously avoid weedy competition. This can be done a few different ways including soil solarization, dense planting, and mulching. The buffer must also be watered deeply and thoroughly for at least the first two to three years after planting to ensure that shrubs, trees, and perennials establish roots. If planted with native plants, the buffer will need much less water after those first two years. Buffers may require other forms of maintenance over time, which may include thinning, burning, pruning, grazing, transplanting, mulching, and more.

For more information on buffers, their purposes, and how to establish and maintain them, please see Conservation Buffers in Organic Systems: Western State Implementation Guide, a publication recently written by NRCS in partnership with Oregon Tilth.

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More information on the Web

USDA National Agroforestry Center nac.unl.edu

Conservation Buffers in Organic Systems: Western State Implementation Guide <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/crops/organic/>

Contact: USDA National Agroforestry Center, 402.437.5178 ext. 4011; fax 402.437.5712; 1945 N. 38th St., Lincoln, Nebraska 68583-0822. nac.unl.edu/

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