



MINNESOTA-WISCONSIN COVER CROP RECIPE

MCCC-126

Post Canning Crops: Use Oats with Radish

This publication is intended to provide a starting point for farmers who are new to growing cover crops. With experience, farmers may fine-tune the use of cover crops for their systems.

Introduction

A canning or processing crop such as green bean, sweet corn, or pea is harvested early or by midsummer and offers an excellent window to get adequate cover crop growth before any following crop. Cover crops following canning crops will protect soil from erosion and improve soil structure after heavy harvesting equipment is used to take off the canning crop. Some canning crops leave significant residual nitrogen (N) in the soil that is vulnerable to leaching, and a cover crop can retain that soil N for future crops. Since growers follow canning crops with any number of different rotations, a fast-growing species such as oats mixed with a light seeding of radish is a safe choice as both will winter-kill. With this combination, no spring termination is needed, and there is little chance of tying up N for the following year.

Planning and Preparation

- **Planning**—Educate yourself. Go to field days, learn from farmers who are currently planting cover crops, read about cover crops, check out cover crop research results from local universities, and work with your local Natural Resources Conservation Service (NRCS) and Soil and Water Conservation District (SWCD). Identify your goals in planting a cover crop as these will drive many decisions. Start small, and choose a field that has low weed pressure to create the best conditions for success. Consult with your crop insurance representative to ensure planned practices will not affect your insurance coverage.
- **Canning crop management**—Follow best management practices regarding fertility and weed management, and make sure to notify the canning company that you're planning on a cover crop after a canning crop harvest.
- **Residual herbicides**—Commonly used herbicides can negatively impact cover crop establishment, so check the history of herbicide application for your field.

Oats can tolerate many preemergence and postemergence herbicides. However, if the oats/radish biomass is to be grazed or used for feed or forage, you must follow the rotational crop restrictions listed on the label of any applied herbicides. Rotational restrictions should be checked for herbicides used in the current and previous cropping season if the cover crop is to be grazed or used for feed or forage. (See Using Herbicides and Cover Crops in Corn and Soybean in Resources.)

- **Seed purchase**—Order cover crop seed early from a reputable source. If you grow your own, get it tested for germination, purity, and weed seed. Named varieties can produce more growth and have more predictable development, but they are usually more expensive than VNS (variety not stated) seed. Use good quality seed that has been cleaned and tested for germination and weed seed contamination. Utilize local sources of seed as much as possible to help prevent the introduction of invasive noxious weeds such as Palmer amaranth.
- **Fertility or manure**—Fall fertilizer incorporation could damage the cover crop and destroy any structure gained, so plan to apply any needed fertility after the cover crop has winter-killed. If manure will be applied in the fall, use low-disturbance injectors to minimize damage to the cover crop.

Summer/Fall Field Work

- **Timing of cover crop planting**—After canning crop harvest, some light tillage may be necessary to create a seedbed for the cover crop. Using a leveling tool such as a vertical tillage bar with an air seeder on top allows for tilling and seeding the cover crop at the same time. Try to time seeding when rain is in the forecast, or if you use irrigation, you can water in the seed for reliable establishment.
- **Planting method**—Drill the seed to a depth of 0.75 inch, or broadcast the seed with a shallow incorporation to less than 1 inch to allow for good seed-to-soil contact and enhanced establishment.



Figures 1 and 2: An oat-radish mixture planted Aug. 25 in Dakota County, MN, pictured on Sept. 24 (left) and on Oct. 14 (right). (Ashley Gallagher, Dakota SWCD)

- **Seeding rate**—For oats, a minimum seeding rate of 21 lbs./acre of pure live seed (PLS) is suggested when seed is drilled or incorporated. The seeding rate should be increased to a minimum of 45 lbs./acre of PLS if broadcast. For radish, the rate is 1.2 lbs./acre if drilled or incorporated, and 1.7 lbs./acre if broadcast. These rates are based on a mixture of 70% oats–30% radish. If another ratio is desired, rates should be adjusted using the Minnesota Cover Crop Design Tool (see Resources).
- **Tillage**—No fall tillage is needed. The oat/radish residue will freeze, then decompose over the winter, and a cash crop such as field corn or soybeans can be no-tilled into the residue if you wish. While full-width tillage may be used in the spring, this will reduce soil structural improvements the cover crop provided over the winter.
- **Future considerations**—An oat/radish mixture is promoted here as the entry-level cover crop mixture post-canning crop. In future years, you may consider grasses that survive the winter (e.g., winter rye or triticale) for spring erosion control or legumes (e.g., crimson clover, which winter-kills, or red clover, which survives the winter) to supply N to the next cash crop. However, both of these options will have separate considerations and management recommendations. Use the Cover Crop Selector Tool (see Resources), or visit with local representatives of NRCS or Extension for more specific information on seeding other species.

Spring Work

- **Scouting**—In the spring, scout the remaining cover crop residue, and note whether any oat seed that remained dormant over the winter begins to sprout in the spring. Any grass-target herbicide should take care of these escapes.

- **Cash crop planting**—Most modern row planters are fully capable of planting corn or soybeans into residue from a dead oat/radish cover crop. Row cleaner attachments may be beneficial. Check planting depth and seed furrow closure shortly after beginning to plant in case any planter adjustments are needed, such as increasing down pressure to move through increased residue.
- **Scouting after planting**—After planting, scout for emergence and population as well any insect, disease, or weed pressure.

Resources

University of Minnesota Extension Cover Crop website, z.umn.edu/cover-crops

Cover Crop Selector Tool, <https://mccc.msu.edu/selector-tool> — available from Midwest Cover Crops Council, www.mccc.msu.edu

Minnesota NRCS Resources, including Minnesota Cover Crop Design Tool, https://www.nrcs.usda.gov/wps/portal/nrcs/mn/technical/ecoscience/agronomy/nrcs142p2_023671/

USDA-NRCS Cover Crop Termination Guidelines, <https://www.rma.usda.gov/en/Topics/Cover-Crops>

Using Herbicides and Cover Crops in Corn and Soybean (University of Minnesota Extension), <https://extension.umn.edu/cover-crops/using-herbicides-and-cover-crops-corn-and-soybean>

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The Midwest Cover Crops Council (www.mccc.msu.edu) aims to facilitate widespread adoption of cover crops throughout the Midwest by providing educational/outreach resources and programs, conducting new research, and communicating about cover crops to the public.

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