



Cover Crop Seeding Methods For Small Farms and Gardens

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Cover Crop Seeding Methods

Introduction

The most common seeding methods for cover crops in small-scale agriculture include:

- Broadcast seeding
- Broadcast with incorporation
- Direct seeding
- Interseeding

This document covers each method as well as considerations for soil moisture, fertilization, inoculation, and weed management.



Weigh seed to achieve a desired seeding rate



Ready with all the needed equipment and seed



Oats and field peas in row seeder hoppers



Broadcast Seeding

Broadcast seeding is accomplished by spreading the cover crop seed over an area (i.e. by hand or with a seed spinner).

Potential for low seed to soil contact can result in patchy and uneven germination. Increasing seed to soil contact and moisture availability can improve results. Helpful methods include firming the soil surface after seeding, irrigation, and/or adding a light layer of mulch or compost.

Broadcasting is an alternative to incorporation or direct seeding when high residue makes it difficult to bury the seed to optimal depths (i.e. with a rake or row seeder).

Some species are better adapted to broadcast seeding, especially smaller seeds. Refer to the “Surface Broadcast Potential” column on the **Indiana-NRCS Cover Crop Table for Small Farms and Gardens** for broadcast potential for each cover crop species.



Broadcasting by hand



Broadcasted seed into sweet corn residue plus compost mulch

Species	Type	Min. Germ Temp ⁴	Optimum Depth (inches)	Surface Broadcast Potential
Barley	Grass	35F	¾-1½	+
Buckwheat	Nonlegume Forb	50F	½-1	-
Clover, White/Ladino	Legume	42F	¼-½	+
Clover, Balansa	Legume	42F	¼-½	+
Clover, Berseem	Legume	42F	¼-½	+
Clover, Crimson	Legume	42F	¼-½	+
Clover, Red	Legume	41F	¼-½	+
Flax	Nonlegume Forb	?	?	?
Hemp, Sunn	Legume	68F	½-1½	-
Kale	Brassica	40F	¼-½	-
Millet, Japanese	Grass	65F	½-¾	-
Millet, Pearl	Grass	65F	½-1	-
Oats	Grass	38F	½-1	+
Pea, Field	Legume	41F	1-1½	-
Pea, Winter	Legume	41F	1-1½	-
Pea, Cow	Legume	58F	1-1½	-
Phacelia	Nonlegume Forb	37F	¼-½	?
Radish (Oil Seed)	Brassica	45F	½-¾	+

Excerpt from Cover Crop Table

Broadcast with Incorporation

Broadcast with incorporation is spreading the seed over an area and then using a tool to bury the seed to a desired depth. Refer to the **NRCS Cover Crop Table for Small Farms and Gardens** for optimum seeding depths for cover crop species.

Good seed to soil contact and moisture availability results in more consistent germination. Methods include firming the soil surface after seeding, irrigation, and/or adding a light layer of mulch or compost.

Adding a light layer of compost to the area prior to seeding and incorporation may decrease the depth of native soil disturbance and may reduce weed seed emergence.

Common tools for incorporation include a rake, rotary cultivator, tiller, and a power harrow or tiller with bed rollers or rolling baskets for depth control and to firm the bed.



Seed incorporation with a rake



Firming and mulching



Tiller Photo Johnnyseeds



*Power Harrow 1/2 Bed Roller
Photo BSCAmerica*



Rotary cultivator

Cover Crop Seeding Methods

Direct Seeding

Direct seeding in rows is accomplished by using row seeders or tools to create a furrow, plant the seed, and cover the furrow with soil.

Refer to the NRCS Cover Crop Table for Small Farms and Gardens for optimum seeding depths for cover crop species.

Good seed to soil contact and moisture availability results in more consistent germination. Methods include firming the soil surface after seeding, irrigation, and/or adding a light layer of mulch or compost.

Refer to "[Using Manually-Operated Seeders for Precision Cover Crop Plantings on Small the Small Farm](#)" document or manufacturer standards for planter setup recommendations.

One technique is to broadcast small seed and then direct seed large seed on the same bed (i.e. Broadcasted oats followed by a one row seeder with field peas).

Row seeders and hand tools can be inefficient in hard or compacted soils. Shallow seedbeds or furrows can be prepared prior to direct seeding to facilitate the seeder's ability to move through the soil (i.e. rake, harrow, tilther, wheel hoe). An empty row seeder can also be used in less compacted soil to create furrows which then creates less resistance when planting in those furrows with seed.

Adding a light layer of compost can allow for direct seeding without disturbance. Soil moisture from prior irrigation or rain also allows for easier direct seeding without disturbance.



Direct seeding with a one row seeder



Direct seeding with a one row seeder



Direct seeded alternating rows of oats and field peas



Interseeding

Interseeding is accomplished by seeding the cover crop during crop growth.

A cover crop can be seeded early in the crop's growth stage or towards the crop's maturity depending on crop growth habit and cover crop growth habitat.

Growing cover crops simultaneously with crops can have poor results for certain crops due to impacts on air flow, water and nutrient availability, sunlight, and spacing.

Good cover crop candidates for interseeding include species that are tolerant of shade, low moisture, and low fertility.

Consider how an interseeded cover crop will impact harvesting techniques. A cover crop growing under spinach may not affect a home gardener who is carefully harvesting individual leaves. However, in a market farm situation, fast harvesting may collect unwanted cover crop vegetation along with the harvested crop.

Remove weeds under growing crops prior to interseeding cover crops for better success.

Interseeded cover crops can be broadcasted or direct seeded in rows between growing crops.



Cover crop interseeded under mature kale



Cereal rye and crimson clover interseeded in spinach



Crimson clover interseeded under mature tomatoes



Moisture Management

The best practice is to keep the soil moist through cover crop germination.

Seed to soil contact improves moisture availability and germination. A light layer of straw or other mulch on top of the cover crop seeding can help conserve moisture. A good rain or irrigation is advantageous. If seeding the cover crop into a layer of compost mulch, pay special attention to ensure that moisture is maintained.



Maintaining moisture

Fertilization

Typically there is no need to fertilize a cover crop. If the purpose is to scavenge excess nutrients, do not add more nutrients. Added nitrogen will actually decrease the effectiveness of legumes to produce nitrogen. Consider fertilization if the purpose is to grow a cover crop for biomass for weed suppression or forage. If the next crop needs fertilization or pH adjustments, it is possible to add the fertility during cover crop establishment or active growth, especially phosphorus and potassium.



Cover crops activate biology and enhance nutrient cycling; Examine legumes for nitrogen fixing bacteria nodules;

Legume Inoculation

Legume cover crops add nitrogen to the soil if the compatible nitrogen-fixing bacteria is present. Inoculate legume seeds with the rhizobial bacteria that is specific to the legume species before planting. A little water can help the bacteria stick to the seed. Keep the inoculant refrigerated before use to prolong its viability.



Nitrogen-fixing bacteria on legume nodules; Pinker nodules means more nitrogen;

Weed Management

Cover crops may not suppress 100% of weeds.

Proactive measures for weed control include:

- Ensure a weed-free seed bed before planting cover crops.
- Scout for weeds during cover crop growth.
- Perennials can often be pulled. Low lying annuals can often be lightly hoed at the soil surface or carefully flame weeded.
- Patch bare spots with mulch or reseed.
- If weeds are a major issue and cannot be sufficiently removed, consider terminating the cover crop early to prevent the development and spreading of weed seeds.
- Tactics such as stale seed bedding, tarping, zero seed rain, and other weed management methods can pair with cover crops to more fully manage weeds.
- Weed pressure should improve over time with cover crop use, especially when combined with additional weed suppressing practices such as no-till, reduced tillage, mulching, and strategic use of tarping.



Weed growth in a fall cover crop



Tarp to help terminate weeds



Increased cover crop biodiversity often increases weed suppression