

# FROST SEEDING RED CLOVER

-a low-cost, high-return practice for building nitrogen, soil health, and weed suppression



OGRAIN

Klaas Martens, Lakeview Organic Grain in Penn Yan, NY



## ACT NOW - The window is open!

Frost seeding works best in late winter, when the soil is still cycling through freeze-thaw cycles. In most of the Northeast and Midwest, that window falls in **late February through mid-March**. Broadcast your seed before the soil warms and stays thawed.

### What is frost seeding?

Frost seeding is the practice of broadcasting small seeds, primarily legumes like red clover, directly onto frozen or near-frozen ground without any tillage. As temperatures swing above and below freezing in late winter, the soil surface naturally heaves and settles, gently pressing seeds into contact with the soil. No drill, no tillage, just timing.

It is most commonly used to establish a cover crop or forage legume into a standing winter grain (wheat, rye, spelt, oats), where the open canopy lets light reach emerging seedlings while the grain protects the young plants.

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As long as we had a good catch of red clover, 60% or better, there was **no response to additional nitrogen** beyond the red clover. It supplies 100% of the nitrogen that we need for that corn crop.

Klaas Martens of Lakeview Organic Grain, Penn Yan, NY

## Why it's worth it



### Full Nitrogen Supply

A good clover stand can provide 100% of the nitrogen needed for the following corn crop. No additional nitrogen fertilizer needed.



### Soil Health

Builds organic matter, improves soil structure, increases water-holding capacity, and protects bare soil from erosion after grain harvest.



### Weed Suppression

Dense clover cover leaves no space for weeds to establish. Klaas prefers dealing with vigorous clover over a flush of weeds.



### Income + Forage

“Rocket fuel for dairy cows.” Red clover can be grazed or harvested as high-quality hay, adding income while closing the nutrient cycle.

# How to Frost Seed Red Clover

## 1 Choose the Right Window

Broadcast when soil is still frozen but temps are starting to climb above freezing. You need a few freeze-thaw cycles after seeding to work seeds in. **Typical timing: late February to mid-March.** Avoid deep snow or rain in the forecast.

## 2 Select Your Seed

**Medium red clover for the Northeast/upper Midwest; crimson clover further south.** Source high-quality, locally adapted seed whenever possible. Ask neighboring farmers or your local seed supplier.

## 3 Set Your Rate

**Seed at 8–12 lbs/acre.** This accounts for natural attrition and ensures a good stand. Going a bit heavier is fine, seed cost is low relative to the benefit. (For context: 2 lbs/acre would theoretically be enough if every seed germinated, but real-world conditions demand more.)

## 4 Apply

**On foot:** Walking one mile while spreading 9 ft = ~1 acre. Works well for smaller fields or muddy conditions.

**Tractor-mounted or side-by-side:** Narrow your spread in windy conditions. Use GPS guidance to avoid gaps; you'll see them all season if you lose your place.

**Drone (where regulations allow):** An emerging option with growing adoption; can cover ground quickly and access wet fields without compaction.

## 5 Monitor & Harvest

**Target:** 60%+ clover coverage at grain harvest time. If your grain struggles and clover fills in strongly, that's the cover crop doing its job. The one real caution: harvest grain promptly when it's ripe, a vigorous clover stand in a short-straw variety can create combining challenges if you wait. After harvest, clover can be grazed, cut for hay, or left to build nitrogen for next season's corn.



### Watch the Full Video

Klaas Martens walks through his complete frost seeding approach: timing, variety selection, application methods, and more.



[uworganic.wisc.edu/frost-seeding-red-clover-with-klaas-martens/](https://uworganic.wisc.edu/frost-seeding-red-clover-with-klaas-martens/)

### Want to learn more or ask a question?



[blogs.cornell.edu/scslabnewyorksoilhealth.org](https://blogs.cornell.edu/scslabnewyorksoilhealth.org)



**Matthew Ryan**  
[mrr232@cornell.edu](mailto:mrr232@cornell.edu)

This frost seeding factsheet is based on a video interview with Klaas Martens conducted by Kristen Loria (Cornell Sustainable Cropping Systems Lab) and edited by the UW Extension Organic Agriculture Program.