

Row Covers

Polyester row covers have been available for about 20 years. They are often called floating row covers because they 'float' on top of the crops they're designed to protect. They offer many advantages:

1. Row covers **retain heat**, which enhances plant growth and **earlier yields** in cooler regions.
2. Row covers **reduce wind damage**.
3. Row covers are an effective - and least toxic - form of **pest control** (see box below).
4. Row covers can **protect delicate crops from light frosts**.
5. Row covers can **protect crops from insect-borne diseases**.

Floating row covers are available in various weights ranging from 0.3 ounces to 2 ounces per square yard. The heavier the cover, the more degrees of frost protection it affords. Sizes range from widths of 1 yard to 60' and lengths of 20' to 2,550'. Wider row covers are more labor efficient as there is less edge to bury per covered area. Durability of the row cover is related to weight, type of material, and the additives used.

Lightweight Row Covers

The lightest floating row covers are used primarily as insect barriers. These floating row covers can protect crops such as cabbage and broccoli from **loopers** and **cabbage worms** by excluding the egg-laying moths. Eggplant, radishes, and other favorites of the **flea beetle** are easily protected by floating row covers. Crop rotation in fields or beds planted under row covers is still necessary since overwintering insects from a previous crop can emerge under the cover. The disadvantage to the lighter floating row covers is that they are easily damaged by deer, dogs, or other animals, and are seldom reusable. The lightest row covers have a negligible effect on temperature and light transmission.

Medium Weight Row Covers

Medium-weight covers are the most commonly available. Medium weight row covers are commonly used to enhance early maturity, increase early yields and total yields, improve quality, and extend the season. They admit 75-85% or usable light.

Row covers protect crops from a wide variety of pests, including:

- Cabbageworms
- Flea beetles
- Squash bugs
- Colorado potato beetles
- Root maggots
- Leaf miners
- Deer
- Rabbits
- Birds
- Cucumber beetles
- Army worms
- Grasshoppers
- Squash vine borers

Floating row covers or low tunnels?

Row covers supported by wire hoops are called "low tunnels." Low tunnels require more labor than floating row covers, but can offer additional advantages:

1. Protect tender exposed growing tip of crops such as tomatoes and peppers;
2. Reduce abrasion caused by covers rubbing against leaves in wind;
3. Prevent localized frost damage in areas where leaves touch frozen covers.

Support hoops are commonly made from 10 gauge galvanized wire. The wires are cut to 65-75" long. Each end is inserted about 6" to 1' deep into the soil to form a hoop over a row or bed. Hoops are spaced 5' to 8' apart. The row covers are draped over the hoops and anchored along each edge with soil. Tunnels can be set by hand or with machines that resemble plastic mulch layers.

Heavy Weight Row Covers

Heavier row covers, those exceeding 1 ounce per square yard, are used primarily for frost and freeze protection. These row covers are also selected when extra strength and durability are required for extended-season use. The microclimate created by heavier row covers is similar to that created by medium weight row covers, but they can often be reused for 3-4 seasons or more. They admit only 50% or usable light.

Installation

Floating row covers can be installed by hand or by a variety of mechanical devices - often attached to a tractor. Floating row covers are often installed immediately after transplanting or direct seeding. The row covers are laid over the area and the edges weighted down or buried. Small-diameter concrete reinforcing bar (rebar), cut to manageable lengths, is excellent for weighting the edges. The row cover should have enough slack to allow for crop growth.

Pollination and row covers

- If the fruit or seed of a plant is not the harvested portion, then pollination is not needed for harvest. Examples include leafy vegetables such as lettuce, cabbage, or kale; root vegetables such as carrots or potatoes; and stem vegetables such as celery or chard.
- A few varieties of cucumber create seedless fruit without pollination. Pollination of these varieties actually degrades the quality. In the US, these are usually grown in greenhouses, where bees are excluded. These varieties can be grown under row covers, where they are safe from wilts vectored by cucumber beetle.
- Honeybees will forage under row covers that are open at the ends. Some other pollinators, like muscid flies, will not.
- Research is being conducted at the University of Kentucky to test small bumblebee hives under row covers for pollination.
- Row covers are usually removed at flowering for insect and wind-pollinated crops, such as melons and squash. They can be replaced after fruit set.

Disadvantages

- **Excessive heat** -- Temperatures above 86° F for more than a few hours can cause blossom drop of tomatoes and peppers. Higher temperatures later in the season may reduce quality of cool-season crops, necessitating row covers removal.
- **Wind damage** – If not anchored properly, row covers will tear or blow away in high winds.
- **Animal damage** – Animals will punch holes in row covers, especially if they are on hoops.
- **Disposal** – Lightweight row covers usually last only one season. Heavier covers can be reused for several years.
- **Out of sight, out of mind** – It is easy to not check plantings under row cover as often as one should. Both weeds and insects can get out of control under covers. Simply setting up a schedule for looking under the covers solves this.
- **Extra labor** – Any crop management that requires removal and replacement of the row cover takes much longer.

Web Resources

- By Janet Bachmann. 2005. Season Extension Techniques for Market Gardeners. ATTRA. <http://attra.ncat.org/attra-pub/seasonext.html>
- Barbara Pleasant. 2008. The No-spray Way to Protect Plants. Mother Earth News. <http://www.motherearthnews.com/Organic-Gardening/2008-02-01/No-spray-Way-to-Protect-Plants.aspx>



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