EQUIPMENT

Plastic, Drip-Layers, and Other Mulches

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SECTIONS

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INTRODUCTION

Plastic and Drip-Layers

Rolls of plastic that are 3 or 4 ft wide can be applied to the ground in rows with machines that lay the plastic flat on the ground, or can pack soil into raised beds. This film blocks weeds and can warm the soil for earlier or later production. Black plastic is most common and least expensive. The black plastic should be rolled out tight to the soil to create a mechanical transfer of heat from the sun to the soil. Infrared black plastic can be used to block all wavelengths of light except infrared, which plants and weeds don't use. This allows some solar energy to still heat the soil directly by passing through the plastic, but still prevents weed growth. White plastic with black on the reverse side is sometimes used for brassicas and onions, which do not need warm soils. Clear plastic allows the most light and heat, and allows for early seedings of sweet corn, but it must be vented or removed to avoid killing the crop from solarization. Weeds can also proliferate under clear plastic. Silver plastic is sold to prevent thrips and aphids. Other colors are sold with supposed benefits.

Once a plastic film is covering the soil, it holds moisture in the soil as long as it remains unpunctured. So, mulch-laying is commonly done in the spring when soil moisture levels are higher. Mulched beds are left alone until they are planted, holding spring moisture into the summer. Conversely, with a plastic film water infiltration from rain or overhead irrigation is prevented from reaching plant roots. So, drip tape is deposited under the plastic at the same time the mulch is laid.

The mulches need to be removed each year but are not easily recyclable because of how dirty they are. However, mulches can be made out of soil biodegradable materials that can be chopped up and tilled into the soil and will degrade over a four year period. Oxo- or photo-degradable films are designed to break down regular polyethylene plastic with catalyst materials that are mixed into the plastic itself. They essentially break down into microplastics. No soil biodegradable mulch has been approved for organic systems.

Plastic and drip-tape layers are made by companies like Rain-Flo, Reddick, Holland Transplanter, Mechanical Transplanter, and Buckeye Tractor Company. These machines most commonly shape one row at a time, but some models can shape three rows at a time with a high powered tractor. Most of the companies also sell plastic and drip tape that works best with those machines. Soil biodegradable mulch products include Bio360, BioAgri, EcoFilm, and others.

Other Mulches

Mulch type and timing can vary a lot! The challenge with the mulches below is applying them and keeping them applied in windy environments. Some handy tools that growers have found work best are chains, conduit, layflat hose filled with sand or pebbles, and sandbags.

Some growers like to use permeable woven polyethylene landscape fabric in large rolls. They roll it out and use a wand burner to melt holes for plants in some pattern. The burner is fired, extinguished, and then the hot metal tube is used to burn the hole. This cauterizes the cut and prevents the woven material from fraying. The mulch can be rolled up and stored to use again for a few years, and both overhead sprinklers and drip tape can be used to irrigate crops through the material.

Straw mulches work well but often become weedy from stray seeds in the straw. Growers have found that a base layer of paper or cardboard mulch under straw is more successful than straw alone.

Tarping with an impervious plastic material over a large area has become popular, but is not a true mulch unless it is left in the field while crop plants are growing. Tarps are frequently used to cover up soils in the fall or spring, to starve out weeds and as a termination step for cover crops.

After a few weeks, the area under the soil is ready for planting and the tarp is removed. With permanent bed systems, tarps can be cut into strips that fold up in the row middles, and unfold to overlap the beds like scales or shingles. With this method they are acting as a mulch for the row middles.

Living Mulches

Living mulches are live plants used to fill space between and around rows of crops. Like most biological systems, this is an attractive yet difficult system to perfect without careful fertility and irrigation dosing and placement for crops to offset the proportion of resources that the living mulches use.

How To Get Started

Start by talking to someone doing what you hope to do.

Perhaps go online and look up implements that you think would fit the scale of your operation, read their manuals and watch their instructional videos.

Then, go to a trade show or equipment dealership or a grower that has a lot of different things to learn more about its operation, support, and maintenance. Look for auctions and individuals selling used online.

SECTION 1

Plastic, Drip-Layers, & Other Mulches

Primary Considerations

- Determine what equipment you have for towing a bedder or mulch/drip-layer. They all require a three-point hitch for depth and draft control, but do not require power as they are ground-driven. Landscape fabric and tarps can be hand-applied.
- Do you grow individual rows of this and that all jumbled together all season long? Consider laying all your plastic in the spring and transplant or seed into it sequentially. You can lay out different colors for different crops and planting windows to moderate heat. When using cover crops between a complicated series of plantings, consider how tarping can be used to hold moisture, combat weeds, and terminate cover crops.

Process for getting started

- Define your market goals and how much area you might need to plant at a time. Does the size or shape of that area change throughout the year? This would help determine what amount and types of plastic you would need.
- Talk to a mentor.
- Research equipment online.
- Visit a trade show or dealership.

PLASTIC, DRIP-LAYERS, & OTHER MULCHES

COMMON QUESTIONS

01 How do I lay a plastic mulch and collect it up at the end of the season?

Specialized rollers are used to lay plastic tightly over the soil, along with drip tape. Most growers choose to invest in a machine for this. There are also machines that can lift and roll up old plastic, but many growers do this by hand.

02 How do I plant into mulches?

A method for landscape fabrics is described above. For rows of plastic mulch beds, it is common to use a tool to poke holes to place seeds or plants. Some of these devices are just hand tools, and others are more advanced machines for efficiently transplanting seedlings with less strain on your body.

03 Will weeds come through a mulch?

Some weeds will come through, including nutsedge and some strong perennial weeds. But, most weeds will not receive the signals to germinate until holes are made in the plastic for planting, or by accident (animals, hail, cultivation, hot oil from a tractor, etc). Most weeding will be reduced to between the bedded rows and for pushy weeds coming through the planting holes.

04 Isn't it good to keep the soil covered with living green plants, including weeds?

Growers have a wide range of tolerances for weeds and crop productivity. On the one hand, weeds are a part of the natural world striving to reclaim itself and reestablish stable soil microbiomes. On the other hand, weedy plants growing in and among your target crop plants often compete with the crop in some fashion, and mulching reduces that potential. Some plants, commonly sold as cover crops, are easy to establish and manage and can be used as between row-mulches or as vegetation to cover soil between crops, with less of a potential to build a weed seed bank.

05 Does plastic mulch harm the environment?

Traditional plastic mulch, oxo-degradable mulches, woven landscape fabrics, and tarps are made from polyethylene plastic, which degrades through physical and chemical means into smaller and smaller pieces of plastic. It never really goes away. Growers can attempt to recycle regular plastic mulch, but most recyclers will not take it unless oil prices are very high. True biodegradable mulches are made from compostable materials that microbes can consume over a period of about half a decade.