

“Ag Plastics”

This term refers to the array of plastic products and packaging used in agricultural production and sales. Most have a short useful life.

Dairy Silage Bags • Bunk Silo Covers • Polytwine • Bale Wrap • Bale Net • Maple Syrup Tubing • Irrigation Drip Tape • Greenhouse & Hoophouse Covers • High Tunnels • Seedling Plug Trays • Plant Pots • Mulch & Fumigation Films • Tarps • Bird Netting • Pesticide & Dairy Chemical Containers • Bags for Seed, Feed, Fertilizer, Peat & Potting Mix • Bee Hives & Frames • Aquaculture Supplies • Row Covers • Low Tunnels

Plastic products are often lighter to lift and transport, less fragile, safer to use, and have a higher production efficiency than the concrete, glass, ceramic and other materials they have replaced over the past several decades.

What is plastic?

Plastics are solid materials that can be molded, pressed, or extruded into a variety of forms and shapes.

In recent times, natural gas and other forms of non-renewable fossil fuels have been the raw material for most plastics.

But plastic can also be made from renewable, bio-materials. These are called **bioplastics**.

E.g., the first plastic—developed in 1855 by the Englishman Alexander Parkes (the product was called Parkesine)—was synthesized from cellulose, which is the main component of plant cell walls. Parkesine was used in place of ivory.

Recent R&D has led to development and commercialization of **bioplastics** that are synthesized by bacteria. Bioplastics are also made from fermented sugar and other bio-based materials.

There are two major categories of plastics: **thermoplastics**, which melt and can be remolded when heated, and **thermosets**, which do not melt before charring or burning.

How is plastic film used on dairy farms?

In vegetable production?

In landscaping?

- On dairy farms, plastic film is used to wrap and cover forage (animal feed) so that it doesn't degrade and spoil. Products used for this purpose include "bale wrap," "bunk silo covers," and "silage bags."
- In both vegetable production and landscaping, a very thin plastic film is used as a mulch to suppress weeds and/or warm the soil. A thicker film is used to cover greenhouses, hoopouses and high tunnels.

What do farmers do with waste plastic when it is no longer useful on the farm?

Some farmers take their waste plastic to their local transfer station (the “dump”) and pay a tipping fee of about \$70/ton to have it put in a landfill or waste-to-energy facility.

Others bury the plastic in the field, stash it out of the way or burn it on-the-farm.

Up until now, very little ag plastic has been recycled.

What new products can be made out of recycled ag plastics?

Look at the samples in this display!

Recycled ag plastics are being made into roofing shingles, sidewalk pavers, parking garage bumpers, decking lumber (and other specialty, non-weight-bearing lumbers), and turned back into a crude oil.

Because of the colors of ag plastics (most are white or black) and because they may have residues of soil, plant debris, silage or chemicals, recycled ag plastics cannot be used as feedstock for products with strict color or other technical requirements.

What is a “Big Foot Baler” and why is it used by the Recycling Ag Plastics Project?

Loose plastic takes up a lot of space, so it makes \$\$ sense to compact it before transporting it any distance. The “BigFoot Baler” can compact 1200 lbs of plastic film into a 40” cube in less than half an hour. About 30 such bales can be stacked and loaded into a tractor trailer for cost efficient shipment to markets for processing into new products.

Are all ag plastics made from the same kind of plastic?

There are more than 2000 types of plastic resins (*i.e.*, plastic materials with different chemical structures).

Primary types of plastics used in agriculture:

LDPE (#4): low density polyethylene, used to make film;

HDPE (#2): high density polyethylene, a flexible hard plastic used for pesticide and dairy chemical containers, irrigation and maple tubing, nursery pots, etc.;

PP (#5): polypropylene, a brittle resin used for smaller nursery pots, and

PS (#6): polystyrene, used for planting plugs and trays.

Is it OK to burn waste plastic in a back field on the farm?

No! It's bad for human health and the environment.

Open fires generate pollution: highly toxic dioxins, small particulates that settle in the lungs, and heavy metals.

Emissions from open fires on farms deposit near the source of food and animal feed. For people in the US, food is the primary exposure pathway for dioxins.

No! It is illegal to burn plastic on farms in most states in this country and elsewhere.

What about Pesticide Containers?

The Ag Container Recycling Council (ACRC) has developed protocols for handling pesticide containers for recycling. Containers must be clean (triple-rinsed) and dry, with labels and caps removed.

Take a look at the ACRC website: <http://www.acrecycle.org/>

ACRC coordinates a network of contractors who collect and grind plastic pesticide containers before selling the regrind to processors to make into approved and appropriate products (most recycled pesticide containers are made into drainage tile).

Contact Ron Perkins, ACRC Executive Director, for details: office phone 540-463-7377; mobile 540 784-9403.