

## AGRICULTURAL PLASTIC PRODUCTS

### Differentiating products by resin & color—Characteristics that matter to recyclers

Many different products fit under the umbrella of **agricultural plastics**.

Farmers and the organizers of agricultural plastics recycling programs—*i.e.*, the people supplying used plastics to recycling markets—should be knowledgeable and clear about what products they have and which resin(s) the products are made from.

**Why?** Because agricultural plastic products differ in characteristics important to recyclers. Most recycling markets are particular about which resins they can accept for processing. Processors may also be picky about color and will almost certainly care about the level of contamination<sup>1</sup> in the loads of plastic they purchase and whether the plastic is rigid, a film or in some other form,<sup>2</sup> such as twine or netting.

The table on the next page lists agricultural plastic products alphabetically and identifies them by form, by the resin typically used to make the product, and by its usual color. When agricultural plastics are collected for recycling, the products listed in each row of the table should be kept separate from those in the other rows because they have different characteristics.

Depending on the manufacturer and product model, even products listed on the same row might be made from different resins. *E.g.*, irrigation drip tape and maple tubing are usually made from a mix of

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<sup>1</sup> In this context, *contamination* refers to anything in the load other than the plastic being marketed. Contaminants include moisture, soil, grit, stones, and vegetative debris. Levels of contamination vary by product (*e.g.*, mulch film and other plastics that touch the ground have more soil contamination) and by the way the plastic is handled and stored. Following recommended handling/storage practices can minimize contamination.

<sup>2</sup> The second column of the table, headed **F/R/O**, identifies and differentiates film plastics (F), rigid plastics (R) and forms that are neither film nor rigid, *e.g.*, flexible drip tape and polytwine (using O for other).

polyethylenes but sometimes from PVC. Even when these products look similar, they should be separated by resin type.

Refer to the FAQ **Identifying Common Plastics Used in Agriculture**<sup>3</sup> for simple tests and observational cues to help identify and differentiate among the common resins used for agricultural plastic products.

It is best to also separate a product group by color, even when other characteristics are the same. The reason is that clear and light-colored plastics generally have a higher value than dark plastic. This is because the range of options for the ‘next life’ of clear plastics is broader, in part because clear and light-colored plastics can be dyed to other colors more easily and economically than dark plastics. Mixing light and dark plastic together lowers the value of the entire load.

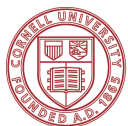
The exception to the rule “keep like with like” is that on occasion a recycling market will tell the supplier that it is OK to mix certain products in one load or even in one bale. *But a word to the wise:* keep products separated until you are *certain* that the load is going to the recycler who says the mixed load is OK!

This list of agricultural plastic products will evolve as new uses for plastics in agricultural production and packaging are developed and marketed, and new or different resins are used to make the products. If you know of a product that should be added to this list, or have other information about resins or colors, please send a note to [agplasticsrecycling@cornell.edu](mailto:agplasticsrecycling@cornell.edu).

Thanks to Nate Leonard, NYS Field Coordinator, NYS RAPP, Cornell University, for reviewing information in the Table. See the companion file **Agricultural Plastics in Pictures**, which illustrates many of the products listed in the Table (<http://hdl.handle.net/1813/42411>).

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<sup>3</sup> **Identifying Common Plastics Used in Agriculture**. Levitan 2016. <http://hdl.handle.net/1813/42332>



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Agricultural Plastic Products	F/R/O	Typical Resin	Usual Color(s)
Bags for wood pellets, peat moss, soil amendments, etc.	F	PE	white, some with print &/or black interior
Bags for feed, grain, birdseed, etc., from small to FIBCs (Flexible Intermediate Bulk Containers) (a.k.a. bulk bags, Super Sacks®)	F or O	Woven PP	white, some printed (note: separate all white from white/black & heavily printed bags)
Bale netting (a.k.a. bale net wrap)	O	PE or PP	translucent green or white or blue
Bale wrap	F	LDPE/LLDPE	white, less commonly green or other colors
Banana bunch bags	F	PE	blue
Biodegradable film	F	PE + additive	various
Boat wrap, blue	F	PE + colorant	blue
Boat wrap, white	F	PE + titanium dioxide	white
Bunker silo cover (a.k.a. silage sheeting) - <i>with</i> embedded layer of string webbing for reinforcement	F	LDPE/LLDPE, polyester, some with embedded EVOH layer	white exterior, black interior layer
Bunker silo cover (a.k.a. silage sheeting) - <i>without</i> embedded layer of string webbing for reinforcement	F	LDPE/LLDPE, some with embedded EVOH layer	white exterior, black interior layer
Dairy medicinal injectors, <i>e.g.</i> , dry cow infusion tubes	R	LDPE barrel, HDPE plunger	white with print
Drainage pipe	R	HDPE	black or white
Drums (typically 55 gallon container for soaps, sanitizers, etc.)	R	HDPE	various
Fumigation and solarization film (a.k.a. soil disinfection film)	F	LDPE/LLDPE	clear or green
Grape cover film (protection from rain)	F	LDPE/LLDPE	clear
Greenhouse, hoophouse, tunnel covers, perforated row covers	F	LDPE/LLDPE	clear or white
Floating row cover (cloth-like material, <i>e.g.</i> , Reemay™)	O	Non-woven PP or polyester	white
Horticultural mulch film	F	LDPE/LLDPE	black, less commonly white, clear, or other
IBCs (Intermediate Bulk Containers) (a.k.a. tote, pallet tank)	R	HDPE	translucent milky hue
Irrigation pipe	R	HDPE	black
Irrigation drip tape	O	PE, PVC	black
Irrigation polytube	F	LDPE/LLDPE	white
Maple tubing without fittings (fittings, connectors removed)	O	LDPE	blue or black or clear
Maple tubing, with plastic fittings (metal removed)	O	LDPE, with nylon or PC fittings	blue or black or clear
Nursery plant pots, seedling trays, etc.	R/O	HDPE or PE &/or PP	various
Oxygen/moisture barrier film ( <i>e.g.</i> , Silostop)	F	EVOH	translucent orange or with yellow-green tint
Pesticide containers (cleaned per ACRC protocols)	R	HDPE	various (see <a href="http://acrecycling.org">acrecycling.org</a> )
Plastic-lined paper sacks and paper-lined plastic sacks	O	Paper, PE	paper of various colors; plastic typically clear
Silage bags, tuber bags, bulk grain bags	F	LDPE/LLDPE	white exterior, black interior layer
Twine (a.k.a. polytwine, used to tie bales of livestock feed)	O	PP	various
Twine (cordage for tying tomatoes, other horticultural material)	O	PP	various
Water membrane pond liners (a.k.a. geotextiles)	O	PE or PP or EPDM synthetic rubber	black