

Reducing Dioxin Emissions by Recycling Agricultural Plastics: Creating a Viable Alternative to Open Burning

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Great Lakes Binational
Toxics Strategy Forum

Chicago, Illinois

Dec 6 2005



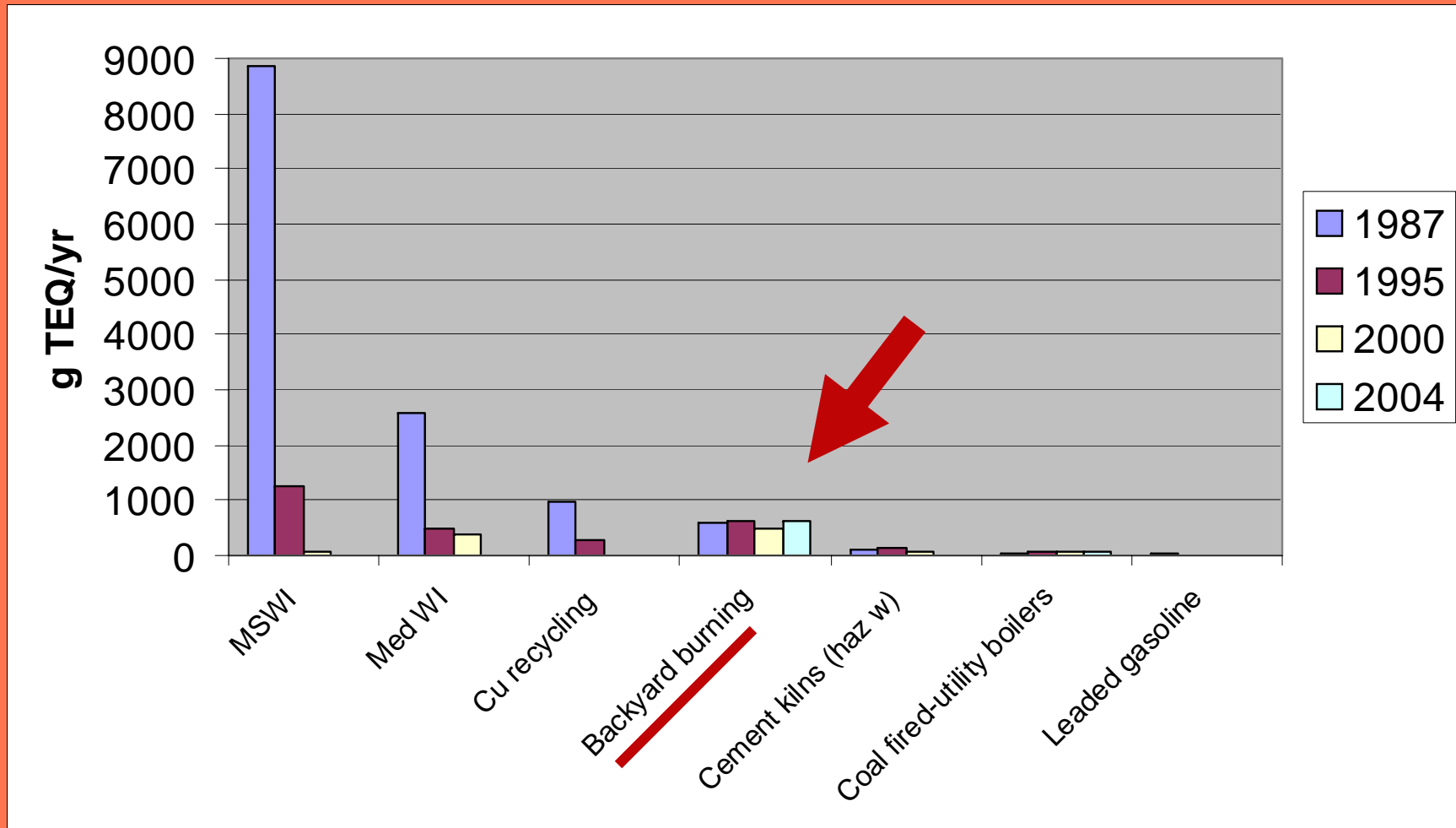
Reduce Dioxin Emissions by Recycling Agricultural Plastics



- Open burning as a source of dioxin
- Using a stick to reduce dioxin emissions:
Legal and regulatory climate
- Sowing carrots: Recycling & other means of more environmentally-benign disposal
- Focusing on agriculture

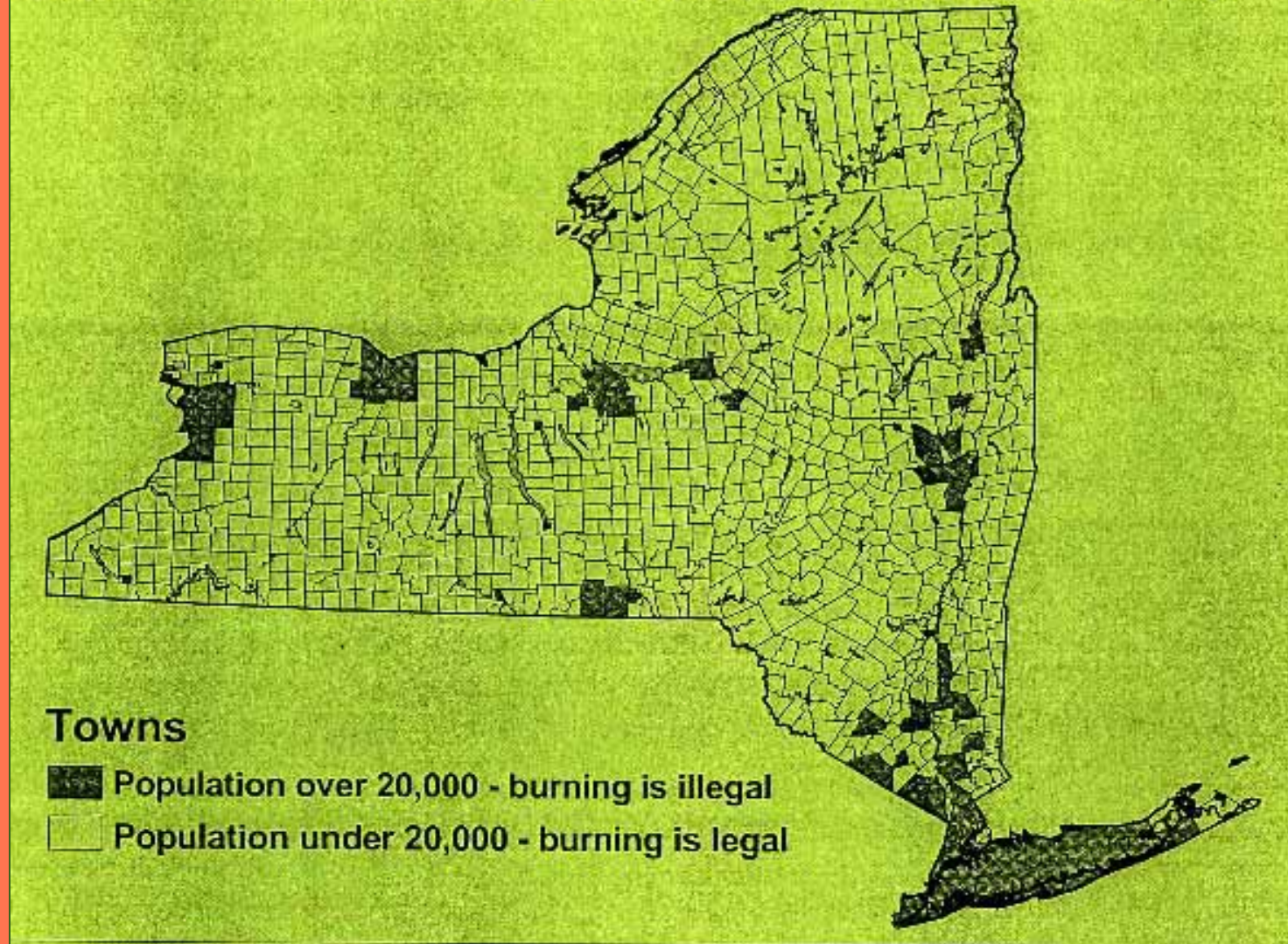


Trends in National Dioxin Emissions to Air



From: *Sources of Dioxins to the NY/NJ Harbor and Pollution Prevention Options*. Presented by Gabriela Munoz, June 8 2005, at the NY/NJ Harbor Consortium Meeting on Industrial Ecology, Pollution Prevention, and the NY/NJ Harbor

Open Burning is Legal in Most of New York State



Source: Citizens' Environmental Coalition, Albany, NY



In Rural Areas the Heat is on Over Practice of Trash Burning



March 7 2005
byline Lisa Foderaro

... In New York, where a bill to ban backyard burning has languished in the Legislature for several years, resistance to any government interference is fierce.

The strongest opposition to a ban has come from the New York Farm Bureau, which cites costs.

The bill would ... spell an end to the practice on farms of burning the large plastic wraps that cover hay bales.

"We don't feel there are any viable economic alternatives for disposing of trash..."

The New York Times
nytimes.com

Uses of Plastics in Agriculture:

Dairy silage bags, tuber bags, bunker silo covers, bale wraps, bale net covers, irrigation drip tape, greenhouse covers, fumigation & mulch films, pesticide containers, dairy sanitizing chemicals, nursery pots, seedling trays, bee hive frames...



Gloria Rabinowitz



Plastic Use Is Increasing:

Safer. Improves production efficiency.
Costs less. Greater flexibility in
management.



Garthe 2003



Clarvce 2005



Garthe 2003



Disposal

- ~ half of used ag plastics are burned on-farm
 - Open burning emits high levels of pollutants: particulates, heavy metals, as well as dioxins that deposit and enter the food chain
- Most of the rest is dumped on-farm, leaving debris:
 - creates mosquito breeding habitat
 - clogs water channels
 - is a choking hazard for livestock and wildlife
 - is not pretty, reducing aesthetic and tourist appeal



Energy Value of Plastics

as Compared with Other Fuels & Wastes

<u>Material</u>	<u>Btu per Pound</u>
Fuel Oil	~20,000
<i>Polyethylene (LDPE & HDPE)</i>	19,900
<i>Polypropylene (PP)</i>	19,850
Rubber	10,900
Coal (varies with type)	5,000-12,000
Wood / Other Dry Vegetation	6,750
Average Municipal Solid Waste	4,500

Several sources cited in Levitan et al 2005

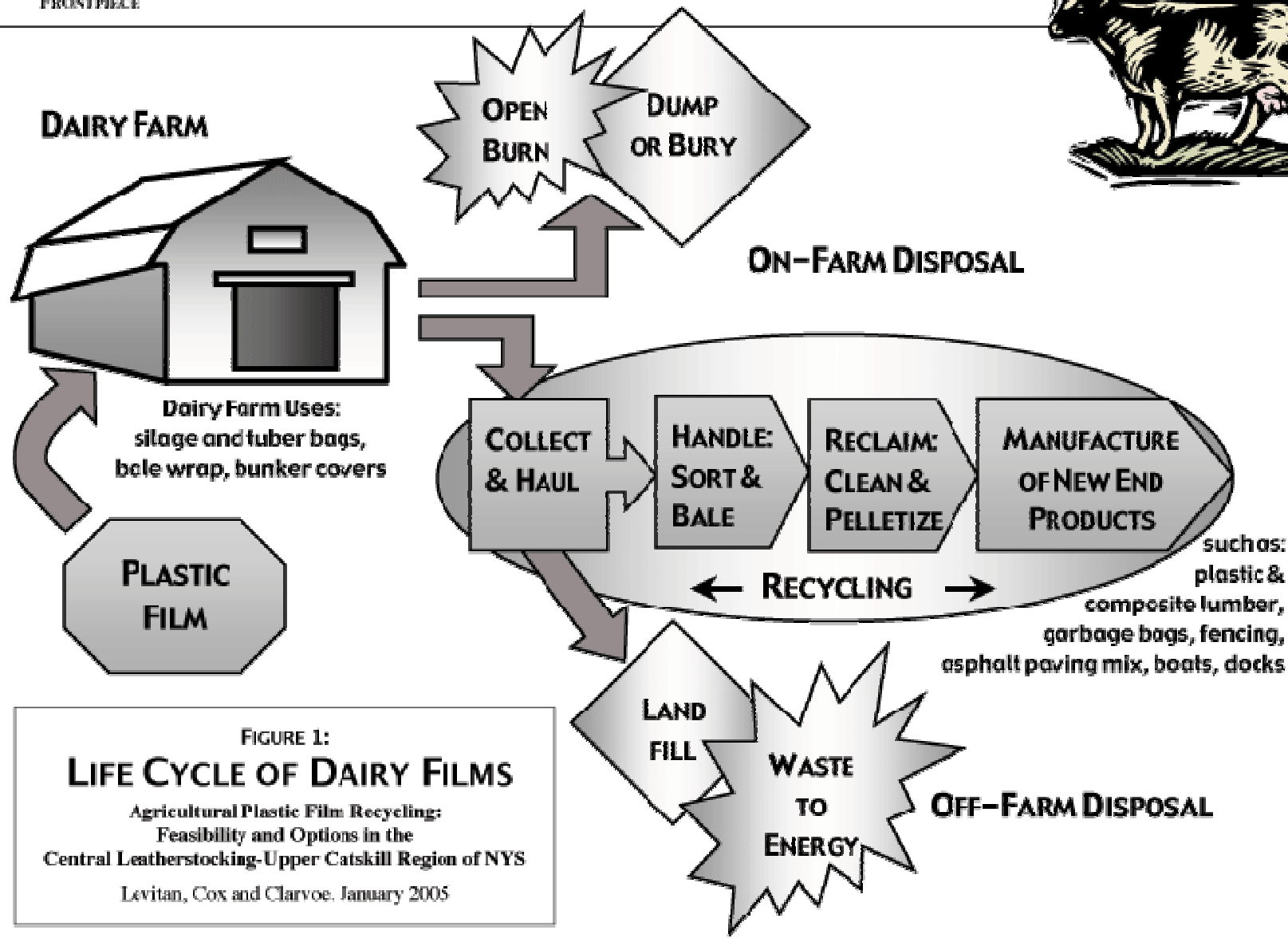
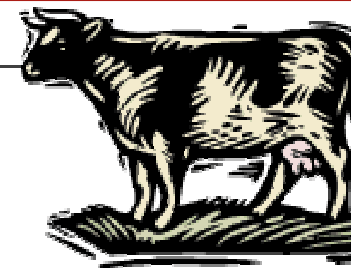
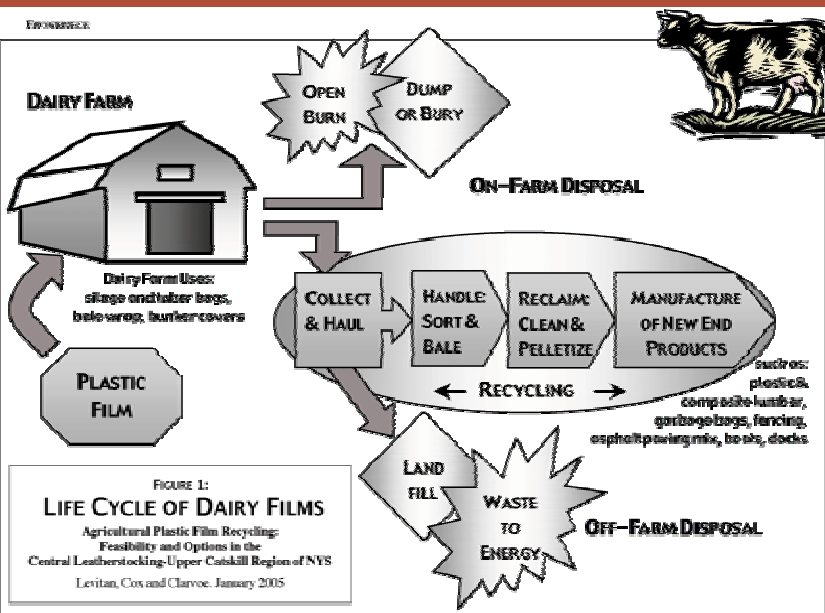


FIGURE 1:
LIFE CYCLE OF DAIRY FILMS
 Agricultural Plastic Film Recycling:
 Feasibility and Options in the
 Central Leatherstocking-Upper Catskill Region of NYS
 Levitan, Cox and Clarvoe, January 2005



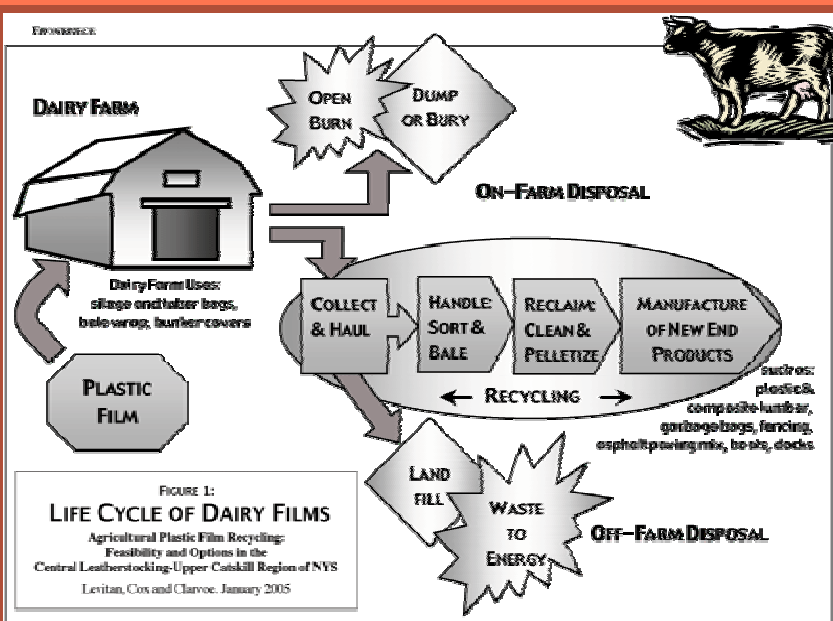
Institutionalizing a Sustainable Infrastructure for Ag Plastic Recycling



Pesticide containers collected for recycling



Nursery containers dumped after use



Photos of decking:
<http://trex.com>



Levitan 2003



Trex Composite Lumber: post-industrial wood + post-consumer plastic



Recycling Plastic Pesticide Containers

- # 2 HDPE rigid plastics
- ACRC-organized national network of companies collect clean HDPE pesticide containers, chip and haul ground resins to selected reprocessors
- Recycling subsidized by pesticide manufacturers



Pesticide containers collected for recycling

Ag Container Recycling Council

Institutionalizing a Sustainable Infrastructure for Ag Plastic Recycling





Agricultural Plastics Disposal

Modified: September 26, 2003

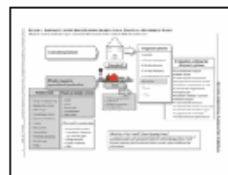
Recycling Agricultural Plastics

Recycling Agricultural Plastics in New York State

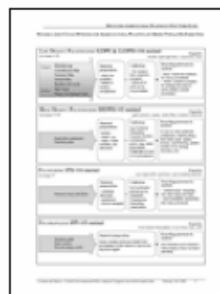
Lois Levitan and Ana Barros. March 11, 2003 (Revised). Cornell University, Environmental Risk Analysis Program: Ithaca, New York. 30 pages.



[Full Report - 728KB PDF](#)
[Report \(no figures\) - 457KB MS Word](#)
[Executive Summary - 29KB MS Word](#)
[Press Release - 32KB PDF](#)



[Figure 1 - 168KB PDF](#)



[Figure 2 - 161KB PDF](#)



[Figure 3 - 220KB PDF](#)

Figure 1. Schematic of the Issue: Burning Agricultural Plastic & Household Waste
Figure 2. Life Cycle Options for Agricultural Plastic, by Resin Type & On-Farm Use
Figure 3. ERAP Survey -- "Let's Recycle Agricultural Plastics"

ERAP Projects & Resources

- **Agricultural Plastics Disposal**
 - ▶ Report: Recycling Agricultural Plastics in New York State. 2003.
 - ▶ Bibliography
 - ▶ Contacts & Resources
 - ▶ Photo Gallery
- Communities & Environmental Risks
- Pesticide (& Other Environmental) Risk Indicators
- Pests Control Impacts Database
- Risk Analysis Studies at Cornell
- Tools for Environmental

A portal for resources about agricultural plastics recycling:

< <http://environmentalrisk.cornell.edu/AgPlastics> >