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PLA Plastic containers VS. PS Plastic containers:
A Study Conducted by Recipe Marketing, Sept. 2011.

Status:

Bloom Microgreens previously used Polystyrene(PS) plastic containers. They are widely available and acceptable. Their cost is low and their durability is high. However, there is a downside. PS is a proven environmental pollutant, in and outside of landfills. An alternative product currently on the market is PLA plastic, a plastic substitute made from fermented plant starch, usually corn. In a nutshell, or shall I say cornhusk, PLA is carbon neutral, BPA free, made from a renewable resource, compostable, biodegradable, does not emit toxic fumes, does not leech chemicals into the soil.¹ Therefore, we have switched to the use of Polylactic Acid (PLA) containers. There are downsides to PLA containers, but overall they are accepted as a better solution to PS plastic containers.

Background:

Polystyrene (/ˌpɒliˈstɑːriːn/; IUPAC **Poly(1-phenylethene-1,2-diyl)**) also known as Thermocole, abbreviated following ISO Standard **PS**, is an **aromatic polymer** made from the **monomer styrene**, a liquid **hydrocarbon** that is manufactured from **petroleum**, a non-sustainable and heavily polluting resource. Polystyrene is one of the most widely used **plastics**, the scale being several billion kilograms per year.²

Polystyrene can be recycled, and has the number "6" as its **recycling symbol**. However, the recycling of PS plastic has reduced significantly in recent years with PS plastic ending up in landfills. No known microorganism has yet been shown to **biodegrade** polystyrene, and it is often abundant as a form of pollution in the outdoor **environment**, particularly along shores and waterways especially in its low density cellular form. Polystyrene generally DOES NOT biodegrade over time. Instead, it forms a lumpy mess that can form leachate and pollute groundwater as a result.³

Polylactic acid (PLA), a plastic substitute made from fermented plant starch (usually corn) is quickly becoming a popular alternative to traditional petroleum-

¹ James Towner, Food & Health, AZSustainability.com

² Wikipedia.com

³ Ecolife.com

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based plastics. As more and more countries and states follow the lead of [China](#), Ireland, South Africa, Uganda and San Francisco in [banning plastic grocery bags](#) responsible for so much so-called “white pollution” around the world, PLA is poised to play a big role as a viable, [biodegradable](#) replacement.

Poly(lactic acid) or polylactide (PLA) is a [thermoplastic aliphatic polyester](#) derived from [renewable resources](#), such as [corn starch](#) (in the United States), [tapioca](#) products (roots, chips or starch mostly in Asia) or [sugarcanes](#) (in the rest of world). It can biodegrade under certain conditions, such as the presence of oxygen, and is difficult to recycle.

PLA is used for biodegradable and compostable disposable cups for cold beverages, the lining in cups for hot beverages, deli containers and clamshells for food packaging.^[12] Researchers have improved the glass transition temperature of PLA to use with hot liquids up to 110C (230F).^[13] As of Jun 2010, [NatureWorks](#) was the primary producer of PLA ([bioplastic](#)) in the United States.⁴ PLA is BPI certified compostable.

PLA, or corn plastic, is made with Midwestern corn, not Middle East oil. Its production releases fewer toxic substances than making petroleum plastic and uses less energy, spewing an estimated two-thirds less greenhouse gas. And corn plastic can be composted, incinerated or recycled, its manufacturer says, offering "the most alternatives" of any plastic to landfilling.⁵

The trendy plastic has several things going for it. It's made from a renewable resource, which means it has a big leg up—both politically and environmentally—on conventional plastic packaging, which uses an estimated 200,000 barrels of oil a day in the United States. Also, PLA is in principle compostable, meaning that it will break down under certain conditions into harmless natural compounds. That could take pressure off the nation's mounting landfills, since plastics already take up 25 percent of dumps by volume. And corn-based plastics are starting to look cheap, now that oil prices are so high.

For retailers, PLA has a halo effect. Wild Oats was an early adopter of the stuff. “Our employees loved the environmental message of the containers, that they came from a renewable resource, and our customers had a strong reaction when we told them they were compostable,” says Sonja Tuitele, a Wild Oats spokesperson. The containers initially boosted the company's deli sales by 17 percent, she says, and the chain now uses six million PLA containers a year. Newman's Own Organics uses PLA

⁴ Wikipedia.com

⁵ The Oregonian, Oct 27, 2008 Review

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packaging for its salad mixes. “We felt strongly that everywhere we can get out of petroleum products, we should,” says Newman’s Own CEO Peter Meehan. “No one has ever gone to war over corn.”⁶

⁶ The Smithsonian Magazine, Aug, 2006

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Summary:

PLA is not perfect.

One main issue with PLA is that, because it is of different origin than regular plastic, it must be kept separate when recycled, lest it contaminate the recycling stream. Being plant-based, PLA needs to head to a composting facility, not a recycling facility, per se, when it has out served its usefulness. And that points to another problem: There are currently only 113 industrial-grade composting facilities across the United States.

Another downside of PLA is that it is typically made from [genetically modified corn](#), at least in the United States. Learn about the global trends of GM crops at <http://youtu.be/SYCdVEB0TPc>.

PLA IS better, just not the best and final solution to replace petroleum-based plastics. Do the pros outweigh the cons? A unanimous yes. Considering that plastic has insinuated itself into just about every part of our lives from food packaging to clothing, using more environmentally friendly plastic is a vast improvement over the alternative. Since PLA or biopolymer plastic can be manufactured into just about every plastic item known to humankind, that alone makes it a winner.

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