



Plantable Pots

Green Dot Bioplastics develops a compostable material for SelfEco's horticultural pots



SelfEco approached Green Dot Bioplastics to develop a horticultural pot to add to their current gardening line that could biodegrade once planted, and not be placed in a landfill.





Plantable pots - Green Dot material on the right

SelfEco, LLC is a manufacturer of Earth-friendly gardening and catering products in Minnesota's Twin Cities. Their mission is to develop and manufacture compostable products made from plant-based plastics that will not be placed in landfills after us. SelfEco's mission serves to benefit the environment in the long term, which is critical because there are 8.3 billion metric tons of plastic produced in a year, of which only 9% is recycled. The remaining 91% becomes waste and most of it is disposed in landfills.

SelfEco approached Green Dot Bioplastics to develop a horticultural pot to add to their current gardening line that could compost once planted, and not be place in a landfill. Their current line only offered horticultural pots *with* nutrients and they wished to have a similar one without nutrients for third and fourth generation growers.

SelfEco's mission

Danny Mishek, the President of SelfEco, noted that drilling oil for products that are used only once is unsustainable, especially since the oil should be saved for manufacturing long term products, such as those made for the aerospace and medical industries. In fact, petroleum-based products can last up to 1200 years, which is troubling because the United States is quickly running out of landfill space. As such, SelfEco is dedicated to educating consumers about sustainable products made from plant-based materials as well as the composting process.



Plantable pots green house test - Green Dot material on the right

Their Made in USA standard challenges the company to maintain quality and provide customers with products that will ultimately benefit the country's land. To this end, Mishek emphasized that SelfEco advocates the manufacturing of compostable products because organic and plant-based materials can be used to solve a variety of environmental issues, such as adding nutrients to farmlands. It should be noted that consumers are not truly aware of what "compostable" really means, which is why SelfEco, much like Green Dot Bioplastics is dedicated to fostering awareness.

The goals and challenges

SelfEco's desire to develop an Earth-friendly and compostable horticultural pot without nutrients led them to seek out a partnership with Green Dot Bioplastics. There were three unique challenges our team faced while developing the final material because of the horticultural pots:

- Needed to retain an aesthetically pleasing look while also composting within a standard timeframe
- Contained pull tabs that needed to cleanly break away
- Had to maintain the integrity of their shape while on shelves but be able to compost once planted.



Plantable pots labeled for compostability test

In regard to the first challenge, Mishek said the current pot would fade and discolor before it broke down and retailers were apprehensive about its retail appeal. Additionally, the pull tabs presented a unique challenge because the material needed a balance between its rigidity and ductility. Lastly, the material had to retain the shape of the horticultural pots while on store shelves and during handling but still break down once planted. The Green Dot Bioplastics team worked closely with the SelfEco team to develop an appropriate material that could address all these challenges while aligning with SelfEco's mission.

The consultation and development process

The consultation process began with SelfEco's team clearly outlining their current challenges and ultimate goals. Green Dot Bioplastics' team then consolidated all of the information and provided SelfEco with initial formulations and compounding within two weeks, which helped set the stage for the rest of the consultation process.



The consultation process itself was focused on fine tuning a cost-effective material that could exhibit all of SelfEco's requirements, which required several rounds of consultation. For example, the first formulation was too ductile for the pull tabs to work properly, so a more brittle one was developed to ensure a clean break. Essentially, our team presented SelfEco with effective alternatives throughout the consultation process until an optimal material was agreed upon. Mishek stated that **Green Dot Bioplastics' team was "one of the most responsive we have worked with. I like their diversity of materials and their willingness to experiment and try a variety of ideas."** He also said, **"Because they were listening and had such a wealth of knowledge based off of their experience, we got to the finish line faster."**

You can learn more on how to meet the growing demand for sustainable products by reading our white paper [How to Create More Sustainable Plastics](#).

The final material

Green Dot Bioplastics was ultimately able to meet the aforementioned challenges and developed a final material that managed to exhibit the following characteristics.

- Strength for increased shelf life
- Ductility for the pull tabs to cleanly break
- Aesthetics for retail appeal
- Compostability once planted

Although SelfEco's product required a unique balance of customizations, the Green Dot Bioplastics team was able to rely on past experiences of successfully developing and experimenting with various polymers and fillers to develop the final material.



compost samples removed for analysis

In fact, Green Dot Bioplastics has developed compostable materials for clients in the past, such as an identifier for the [Global Citizen Festival](#) as well as [cell phone cases](#). Both these and similar experiences proved exceptionally valuable when ensuring SelfEco's material could retain the integrity of the horticultural pots' shape while on store shelves but also compost once planted, all the while remaining aesthetically pleasing.

You can learn more about how our team develops materials by reading our [Bioplastic Research page](#).

SelfEco's vision and commitment

Standard petroleum-based horticultural pots can hold up to 300°F and last for hundreds of years. Although their robustness is impressive, it is not necessary since they will be used once and immediately discarded. SelfEco's vision for their horticultural pots goes beyond the buying experience because their team understands what happens to their products after use. Their website clearly states that they aim "to mindfully manufacture with the intent to compost, recycle or reuse our products give great pride." This vision closely aligns with Green Dot Bioplastic's mission of "improving our environment through material advances."

Mishek discussed how some competitors are unwilling to experiment with plant-based materials due to perceived issues such as flaws, brittle final products, low heat deflection and poor tensile strength. He emphasized that SelfEco was unfazed by these setbacks and was committed to providing customers with compostable products that were comparable to petroleum-based ones.



compostable pots are no longer visible in compost

Future Projects

Mishek noted that since compostable products are a part of a growing and ever evolving industry, there is no limit to what SelfEco can achieve in the future. He was interested in experimenting with various natural and Earth-friendly ingredients that could be added to SelfEco's products as cost-effective alternatives. Mishek also plans to continue working with Green Dot Bioplastics to create a similar horticultural pot *with* added nutrients.

Future Challenges

SelfEco has made major strides in mainstreaming their product line. Their products are now being sold on Amazon.com, Walmart.com and at Gardener's Supply Co. However, Mishek noted that the next challenge was to get SelfEco's gardening products into brick and mortar companies because despite high customer satisfaction and demand, traditional retailers are apprehensive about selling a product outside the standard norm. That being said, as more customers use compostable horticultural pots, the more mainstream the product will become. Lastly, SelfEco plans to continue educating consumers about compostable products and their role in decreasing waste in landfills.

Interested in learning more? Read how Green Dot Bioplastics can work with you to create customized compostable materials by reading our [BioInspiration Case Study](#)



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