

# How Can The Greenhouse Industry Benefit From Changing The Materials Used For Making Growing Containers?

By: Jessica Weller

(Floraldaily, 2021)



# PLASTIC CONTAINERS

AVERAGE NUMBER OF  
CONTAINERS USED IN THE  
BUSY SEASONS

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SMALL GREENHOUSES  
~200,000

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MEDIUM GREENHOUSES  
~1,000,000

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WHOLESALE GREENHOUSES  
~6,000,000

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CONTAINER CROP INDUSTRY  
~4 BILLION per year (sizes  
ranging from 3.25" and larger)



(Weller, March 6, 2024)

# REDUCE REUSE AND RECYCLE



(Association of  
Professional Landscape  
Designers, 2020)

# REDUCING

## PLANTABLE BIO-CONTAINERS

- Remains intact around the root ball
- Planted directly into the ground or large container
- Roots can penetrate container walls
- Decompose post-planting

## COMPOSTABLE BIO-CONTAINERS

- Rigged
- Removed before planting
- Disassembled
- Composted



(The HC Companies, 2022)

# REUSING

Greenhouses do reuse plastics just not containers but rather the holding trays.

The holding trays need to be clean but not as thorough because they are not making direct contact with the plant and soil.



(BFG Supply Company. n.d.)

# ISSUES REGARDING RECYCLING

- Containers need to be clean and sorted
- Having to meet weight and/or quantity
- Cost of labor and cleaning chemicals
- Chemicals used during the growing process
- Rejected at the sorting stage



(Association of Professional Landscape Designers, 2020)

# Other industries are looking into similar ideas



(Causeartist, 2023)

- 'Golf balls that are safer for the environment' Case Study
  - Created from biopolymers, natural rubber, and other organic substances, chosen to have a balance between durability, performance, and biodegradability (Causeartist, 2023)
  - Keeping the high-quality and performance standards
  - American company, Biodegradable Golf Balls, makes their golf balls from compressed cornstarch with a polyvinyl alcohol (PVA) coating, offering an 80% performance rate.
    - Specifically tailored for players near bodies of water and are not intended for professional green use (Biodegradable Golf Canada Inc., 2020).



# ENVIRONMENTAL IMPACT

# Plastic Pollution

- Only around 8.5% of plastic containers are being recycled in the U.S.
- Most plastic containers end up in landfills or fresh water and oceans
- Takes hundreds to thousands of years to completely decompose
- Releases chemicals into their surroundings
- 4 billion containers produced in one year has a large impact



(Floraldaily, 2021)

# Benefits of Bio-containers

- Significant reduction in single use growing containers
- Environmentally friendly
- Do not leave behind harmful chemicals
- Promotes better and safer alternatives



(Weller, March 6, 2024)



# Compatibility & Appeal

# Compatibility of Bio-containers

Compostable containers are more compatible for greenhouse production

- Rigid
- Have stronger wet and dry strength
- Already is used by some companies
- Improvement in plant growth
- Best used in annual production



# ‘Compatibility of Biocontainers in Commercial Greenhouse Crop Production’

By: Andrew Koeser, Gary Kling, Candice Miller, and Daniel Warnock



(Koeser, et. al., 2010)

- Evaluated 8 containers in total, one control and seven biocontainer alternatives. (plastic, wheat-based bioplastic, coir, pressed manure, paper, peat, straw, wood fiber)
- Testing was done on.
  - Mechanical filling
  - Mechanical spacing
  - Shipping
  - Types of watering
  - Container strength
- Despite some differences they concluded that biocontainers can be a suitable replacement for plastic containers.



## Groovy Plant Ranch

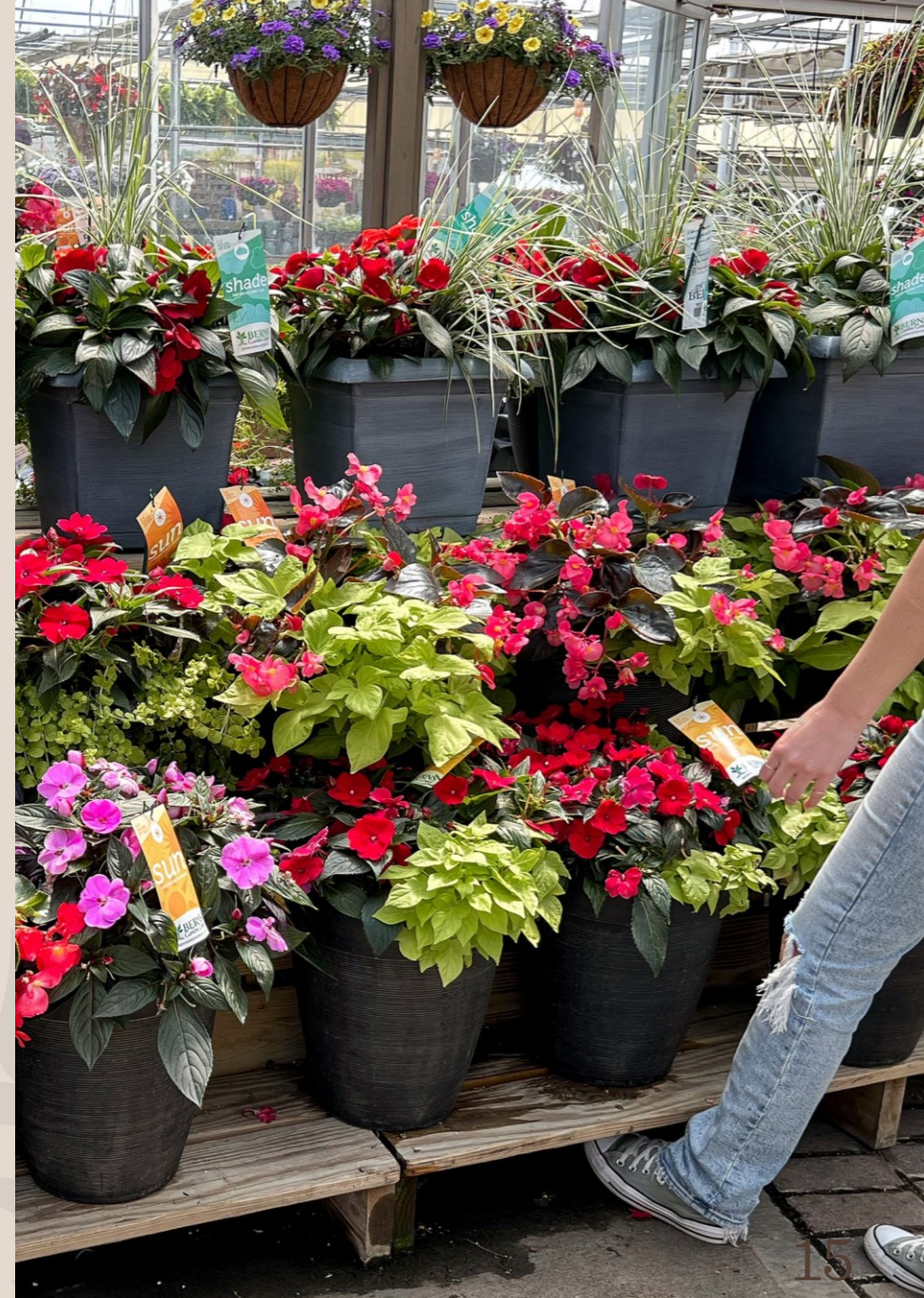
- Noticed that the plants grow better in them
- Believes this is the way the industry is going
- Through his own observations customers do not mind the containers even if they are a little messy

GROOVY  
PLANTS  
RANCH

# Consumer Appeal

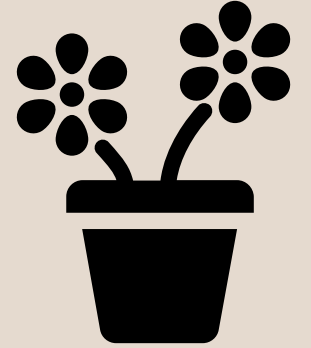
Consumers are becoming more environmentally conscious and are more concerned about environmental issues such as plastic pollution and waste management. Offering products grown in eco-friendly containers can be a selling point for many consumers because:

- Reduce waste sent to landfills
- Do not leach harmful chemicals
- Reduces their environmental footprint
- Can use in their compost



# 'Investigating Consumer Preferences for Biodegradable Containers' (2010)

By: Chengyan Yue, Charles R. Hall, Bridget K. Behe, Benjamin L. Campbell, Roberto G. Lopez, and Jennifer H. Dennis



- Explored consumers willingness to pay for different kinds of biodegradable containers.
- Got consumer reactions to the biodegradable pots themselves, without any plant material present
- Conducted a survey asking questions like.
  - What kind and how many plants they bought
  - Where they purchased the plants
  - How much they spent on plants and garden supplies
  - How they recycle
  - Etc.

- Also asked willingness to pay questions, using pictures of 8 different kinds of containers (plastic, wheat, rice, straw, chicken feathers, cow manure, coir, and peat)
  - 'In the following questions, please identify how much more or less you are willing-to-pay for the potting container form compared to a plastic potting container.'
- Discovered that consumers are willing to pay a more premium price for containers made from wheat starch, rice hull, straw, coir and peat, but not containers made from chicken feathers and cow manure



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Greenhouses can benefit by aligning the industry with environmentally friendly practices, reduce their environmental impact, and open new marketing opportunities, such as environmentally conscious consumers and areas for growth.