

# Forcing Chicories

An Option For Diversifying Season Extension in  
Minnesota

A project funded by North Central SARE

# What are forcing Chicories?



- Chicory is a family of crops that include radicchio, endive, and other forage greens
- Roasted chicory root has been used as a coffee substitute for hundreds of years
- Forcing chicories are certain varieties bred to be dug from the field in late fall and forced to grow indoors, without sunlight
- Creates a leafy vegetable without chlorophyll with a unique appearance, flavor, and texture

# Why Forcing Chicories?

- A unique product at a time when other locally produced produce options are limited
- Utilizes idle infrastructure in winter
- Spreads the workload throughout the year
- A high value crop to help make lower volume 'off-season' sales more worthwhile



# Cultivation



- Grows like lettuce, requires no special equipment
- Can be grown from transplants or direct seeded
  - Planting method will impact final root shape
- Needs to be kept weed free and evenly watered for optimum performance
- Long day crop (100+ DTM). Needs to be planted in late-June/early-July for harvest in late-October/early-November

# Harvest/Storage



- Dig roots in late fall with undercutter bar/bed lifter
- Greens trimmed, leaving growing tip intact
- Roots can be forced directly from the field or stored to be forced at a later date
- Roots store best at 32-35 degrees and 95+% RH



# Forcing Chamber



- Utilizes an idle walk-in cooler to create a completely dark, climate controlled environment
- Chamber is kept at 60 degrees
- Custom fabricated metal trays are plumbed together to circulate and aerate water bath with a small aquarium pump
- Each tray holds 4 bulb crates
- This system is likely overkill. Simple shallow tupperwares filled with roots and water could be sufficient

# Forcing Roots - Tardivo



- Plants are trimmed, removing most of outer leaf
  - Less decaying plant matter to deal with after forcing
- Crates loaded with as many roots as possible



## Forcing Roots - Tardivo



- Ready to harvest in approximately 3 weeks
- Require minimal supervision
- Maintaining complete darkness and adequate water levels are the critical factors



## Harvest - Tardivo

- Trim root to a small white wedge
- Remove decayed leaves, other debris
- Soak in cold water for 5-10 minutes
- Shake dry and package in loose fitting plastic
- Keep in the dark!



# Forcing Roots - Endive



- Roots are trimmed, leaving 1" of greens above top of root
- Trimming too close (bottom root on left) removes the central growth tip. Results in unmarketable chicons
- Straight endive roots are desirable for more space efficiency in the forcing chamber



# Harvest - Endive



- Chicons ready to harvest after 6 weeks
- Can be cut or snapped off of root
- Remove decayed and unfurled leaves leaving tight heads.
- No green allowed
- No additional washing necessary
- Pack for sale directly from forcing chamber
- Keep in the dark!

# Marketing

- Both are specialty products with relatively limited markets
  - Fine dining restaurants are most likely customers
  - Will require customer education to expand sales
- Tardivo - not commercially available in US
  - Commands a high price, but expect lower volume sales
- Belgian endive - Available from many produce wholesalers means more familiarity in the marketplace
  - Lower price, but more opportunity for regular, higher volume sales
- Winter farmers markets?
  - Eye-catching display, differentiation in a crowded market, interesting/unique story
- Specialty grocery stores?

# Future Possibilities?

Other forcing radicchio varieties:



Chicory Rosa



Isontina

Scaling up to  
meet demand of  
local Belgian  
endive wholesale  
market?

## Special Thanks

Thank you to North Central SARE for funding this project.