Ridge Culture Root Crop production at MX Morningstar

The How and Why We Grow Wholesale Root Crops:



WHO, ME?

50 tillable acres, 35 cash crop, 15 cover crops

Certified organic

20 acres wholesale field crops: potatoes, root crops, cabbage, radicchio & winter squash

15 acres diversified vegetable field & high tunnel crops for year round retail store

Lean Crew & Fat machines: 4 year round managerial staff, 4 seasonal H2A staff. System relies on mechanized production and harvest

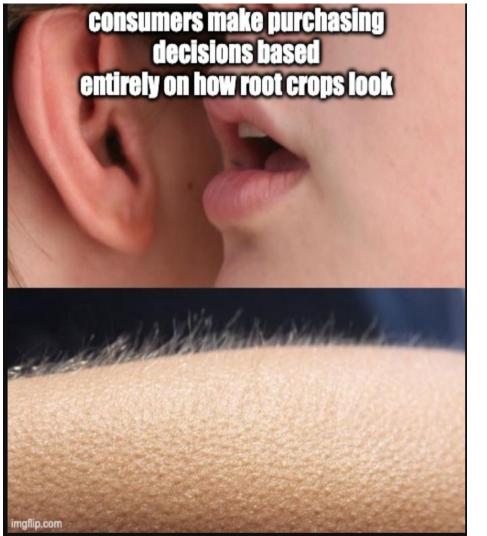
Cute, fun loving; not looking for anything serious but DFW



WHOLESALE

- Volume: enough to satisfy customers consistently
- **Efficiency**: keeps costs low and pricing competitive, increases profit potential
- Duration: the longer your season, the more reliable a vendor you become
- Price: tied to efficiency, important for bulk sales
- Quality: spec is everything (size, shape, pack etc..)

At its core this presentation is really about one way we are adjusting production strategies to improve efficiency and marketability and why that is important



The Reality:

the closer we get crops to conventional industry specs and pricing the more sales channels we can open. The motivation is to produce fewer crops at larger scale and mechanize. Labor costs are the main barrier to profitability.

Why did we choose to grow roots on dem lil' hills?

It is a production strategy to achieve wholesale market standards and yields



Straighter, longer, better, faster, stronger...roots

Less dirt uptake during harvest & reduced tip rot during wet spells

Spacing facilitates higher plant density in the seed band

Uphill Advantage = better weed control

Better airflow increases odds of that perfect windswept look for Instagram.

Carrots develop most of their length in the first 3 weeks after germination. Ridges make it easy.







PRIMARY TILLAGE & FERTILITY

This field was fallowed in 2023 and planted to successive cover crops of phacelia, buckwheat, and oats & peas

Field was used 2024 and had optimum Ca, P, K, Ph and Boron.

Supplemental foliar boron was applied to beets at 2lb per acre

2000lbs Krehers 5-4-3 was applied per acre

Plough or disk (residue dependant), and deep rip depending on previous field use

This beautiful 90hp tractor is for sale btw...

SECONDARY TILLAGE:

Forigo stone burier, followed by ridge former

Forigo stone burier creates level bed with deep tilth



72" tire centers, ridges are 36" inches apart



Two row ridger forms hills approximately 12" tall with a 6" ridge top



SEEDING

Seeds are planted with a Wizard vacuum seeder. Each planter unit seeds 2 parallel rows spaced 2" apart, seeding 2 rows per ridge top

Seed rate per row unit: 36 seeds per row, 72 seeds per foot of band on ridge top,

Seed variety: Bolero



GERMINATION

Install Meganet sprinklers immediately after seeding and run 2 hr sets 3xdaily until emergence. A key step to stand establishment.

After removing meganets for cultivation we irrigate with Bauer water reels aiming for 1-3" of rain per week depending on stage of growth



PRE-EMERGENCE WEED CONTROL

We traded flame weeding for Homeplate herbicide

Homeplate controls grass and sedge unlike flame weeding.

3% solution applied to seed band with backpack sprayer

- Kinetic sticker/water conditioner
- Typical timing; 3-4 days after seeding





First cultivation w/
Kult-Kress Duo



2nd Cultivation: Heavy Kult-Kress Argus knocks



ridges down

3rd-4th: ridging tools on same **Kult-Kress** carrier builds ridges back up.



We harvest using a Scott Viner carrot combine modified to carry a single 20 bushel bin. Loader operator shuttles bins to the field trailer

Harvest labor hours: 34 personnel hours per 29,800lbs (0.8 acre)





LABOR AND YIELDS SUMMARY

Labor hours: 88 Total

Field Prep: 7 hours 29,396 lbs per acre

Marketable Yields:

Irrigation: 12 hours

Cultivation: 17 hours (Marketable weight =

Hand-weeding: 18 hours post washing/grading)

Harvest: 34 hours

We believe marketable yields can increase to 35-40k/acre with some fine tuning of varieties, water, timing and nutrition

<u>Things That Worked</u>

Ways to improve via planning and \$

Variety & density experiments to attain more uniform size

Higher yield potential per acre

Very straight carrots

Integrated seeder & ridge former. Keeping the seeder centered on the ridge is surprisingly difficult

Cultivation was more aggressive and easy to track on the row

Custom sprayer for herbicide. Low priority, but could be a nice addition

better harvesting: dry conditions during wet spells and better spacing for our tractors/ harvester

More modern harvester. Some features for dirt removal, bin capacity and automated lifting height would be helpful on our rolling land

Low overhead: Redundant equipment & low cost harvester

