

Ridge Culture Root Crop production at MX Morningstar

The How and Why We Grow Wholesale Root Crops:
a love story



By Max Morningstar, Steph Moran & Will Morningstar

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



**consumers make purchasing
decisions based
entirely on how root crops look**

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 3x daily 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

Irrigation: 12 hours

Cultivation: 17 hours

Hand-weeding: 18 hours

Harvest: 34 hours

Marketable Yields:

29,396 lbs per acre

(Marketable weight =
post washing/grading)

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

Things That Worked

Very straight carrots

Higher yield potential per acre

Cultivation was more aggressive
and easy to track on the row

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

Low overhead: Redundant
equipment & low cost harvester

Ways to improve via planning and \$

Variety & density experiments to attain
more uniform size

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

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

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



QUESTIONS?

Contact: TEXT ME 508-259-8945
Email also max@mxmorningstarfarm.com