



Winter Squash

Katy
Christensens Farm

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Dream of Wild Health

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Ukwakhwa: Tsinu Niyukwayayathoslu
(Our Foods: Where We Plant Things)

Location	Browntown, WI	Hugo, MN	Oneida Reservation
Acres in Vegetables	7	5	2
Total acres in beets	0.25	0.75	1

How these tasks are done for Winter Squash:

field prep/tillage	with a tractor	by hand, with a walking tractor, with a tractor	with a tractor
direct seeding	by hand	by hand	by hand
transplanting	with a tractor	by hand, with a tractor	do not do this task for winter squash
cultivating	with a tractor	by hand	by hand
spreading amendments	by hand	by hand	by hand
mulch laying	by hand	by hand	by hand
laying row cover	do not do this task for winter squash	by hand	do not do this task for winter squash
harvesting	by hand	by hand	by hand
planting	direct seed & transplant	direct seed & transplant	direct seed
Please indicate your farming style	certified organic	organic practices, not certified	organic practices, not certified

Ukwakhwa YouTube channel on indiginous foods

<https://www.youtube.com/channel/UCedwwKogSpSD1pCYvfpUXbw/videos>

Propagation

Seed Saving	We have done this a little with Waltham Butternut Squash, but usually lack time and a good system.		Video on squash seed saving: https://youtu.be/iyWQMFQug6c
Varieties	Butternut- Waltham Buttercup - Burgess Acorn - Table Queen and Sweet Reba Pie Pumpkins-Winter Luxury Spaghetti Squash Crown Pumpkin Pumpkins (Jack O'Lanterns)-Howden, Cargo, Champion, Dill's Atl. Giant I try to purchase most of these seeds from Seed Savers. I feel strongly about their mission; they are a mid-west business; and the flavors and storage are excellent.	Each variety has their own super power so it is difficult to select just one.	Oneida Hubbard, Buffalo Creek

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Soil Mix	Potting Mix from West Star Organic Farm, switched from Cowsmo 3 years ago and happy for it. Both are local Wisconsin companies and I try to keep things local.	Pro-mix, with compost top dressing after up-potting	NA - no transplants
Seedling Trays	Scattered seeded in open trays Potted up into 4 packs	Started in 50s, up-potted to 3-in or 4-in pots	NA - no transplants
Propagation Schedule	Start seeds in germination chamber. Move to growth chamber (walk-in cooler, 80 degrees, humid, v. bright) length of stay dependent on outside temps, usually 2 weeks. Move to double layered (row cover & plastic) hoop house tables with a space heater under the table for cold evenings. Harden off on outside tables (row cover when necessary). Transplant out to field when air and soil temps are friendly	Planting with the moon cycles each year, transplants are started as early as end-of-February and no later than Earth Day in green house. Transplants are in the ground before Memorial Day-silage tarp used for soil prep, remay cover depending on air temperature and field placement.	We plant squash two weeks after we plant corn. We plant corn in mid May.
Germination	Scatter seeding saves us a lot of time Germination chamber is dark, kept at 88 degrees with small space heater, pans of water on lowest level for humidity trays are in bags to retain humidity(plastic garbage bags- reused multiple times) 5-7 days and then moved into growth chamber (re-purposed walk-in cooler)	Heating mats used in green house, silage tarp used in field to heat up the soil prior to transplanting.	NA - no transplants
Greenhouse Irrigation	Daily watering - sprinkler wand or watering can	Irrigated daily in the morning; watered in the afternoon when needed.	NA - no transplants
Greenhouse Conditions	Row cover adds a little bit of temperature protection. Plastic over the table helps retain humidity as well as temperature protection, especially at night. Space heater (heavy duty milk house variety with a thermostat) under the table adds another level of protection from really chilly nights. Wood Stove is sometimes used to heat the space if we're pulling out all the stops for a cold night. Greenhouse is orientated East-West, single layer of plastic	The greenhouse does house many different seedlings, so the temperature is usually between 73 degrees while the winter squash are indoors. Trays rotate from warming mats to each table until they are moved outside to harden off.	NA - no transplants

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Hardening Off	When night time temps are safe we have tables set up outside and move the squash out there for a few days up until transplanting out occurs. We often have row cover over the plants for added protection.	The squash are taken outside of the greenhouse and are slowly acclimated to the outdoors at increments of three hours. Each day their time outdoors is increased for approximately a week before transplanting.	NA - no transplants
Greenhouse Pests or Diseases	Sometimes mice like to eat the seeds before they have germinated. We have dealt with this by placing traps in the chamber, the humidity bags also have helped, and over planting.	N/A	NA - no transplants

Bed Prep

Preceding Cash Crop	Sweet Potatoes, Sweet corn, Potatoes,	No prior notes for year 1, Cover crop fallow in year 2, winter squash in third year	
Preceding Cover Crop	Oats/tillage radish/hairy vetch or winter wheat		
Soil Amendments	cow manure spread in spring prior to working the soil, chicken manure after crop but prior to cover crop	None	We plant fish in the mounds in early spring for fertilizer. We also use ashes for fertilizer.
Bed Prep	Chisel plow and then disk to cut down and work in the cover crop, culti-mulcher to smooth the soil (we may till but try not to)	Place silage tarp over intended planting space as early as possible, but up to three weeks before incorporating cover crop. Till to incorporate cover crop, cover with silage tarp for another week or two, remove silage tarp, transplant by hand or water wheel transplanter.	For the first year, we use a tractor to till up the soil and push the soil into mounds. Then, in subsequent years, we use the same mounds and remove the vegetation from the previous year and cover it with compost until it is time to plant. We push the compost aside and plant on top of the mounds.
Bed Shaping	We either use our hilling disks but more often we use our plastic mulch layer without laying the plastic to get a nice hill. We prefer to plant into hills to help the soil warm and for better drainage.	Dependent on the field location, mounds or ridges are made by hand when planting by hand.	Video on creating and planting mounds: https://youtu.be/hWURhP9sZpw
Stale bed, Occultation, or Tarping		Place silage tarp over intended planting space as early as possible, but up to three weeks before incorporating cover crop. Till to incorporate cover crop, cover with silage tarp for another week or two.	

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Mulching		Seed-free hay or straw	
Other Notes on Field Prep		Although I use some methods of stale seed bed in my process, the intent is more to solarize the soil and reach optimum soil temperature for the first transplants in the field. I transplant squash for a trap crop and to also time isolate different varieties of squash for seed saving purposes.	

Planting

Bed Width	4-5 feet	30-inch	It depends
Plant Spacing	1 row per bed, 2 feet between plants	Trap crop at 36-inch interval; cash crop at 60-inch	2 plants per mound, 5 feet apart
Planting Process	Transplant: We use our smallest lawn tractor to pull our tobacco planter on which 1 person sits and transplants into the hill.	Direct Seed: After soil is prepped, hoes are used to assist with mound or ridge planting. When planting into smaller mounds, mounds are made by hand and two holes are made by hand to plant seeds into soil. Seeds are planted, covered lightly with soil and mulched with hay or straw.	Video on planting: https://youtu.be/rWzFXZK05ZM
Soil Amendments at Planting		Direct Seed: Will sprinkle compost on top of mounds in preparation for rainfall.	
Irrigation at Planting	Transplant: After transplants are in we use our 4-wheeler with loaded water tanks and a short hose to drive alongside plants and water. We do not use drip tape in our squash.	In seed saving gardens, seedlings are planted before the rain. In market garden, seeds and seedlings are watered in with irrigation.	
Row Cover		Floating row cover used when seedlings are young.	
Germination		This process starts when processing squash seed after harvest. Only the strongest and most viable seeds are grown. After emergence, we will fill in the gaps with additional seed.	
Thinning		I do not thin any seedlings. I do allow nature to take its course and then rogue plants when necessary.	

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Mulching	Once crops are in and watered we wait 1 -2 weeks and till, very shallow, between the rows. Then hand spread a cover crop mixture of oats and tillage radish that we mow throughout the summer to suppress weeds and protect soil. Once squash plants are vining we stop mowing.		
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Crop Maintenance

Irrigation	If we have a very dry stretch and plants are looking stressed depending on the location of the field we do one or more of the following. - 4 wheeler with filled water tanks and short hose to direct spot water - Soaker hoses or drip tape moved from row to row throughout the day hooked to hoses from hydrant or barn - large tanks filled from the creek and emptied into trenches alongside plants		We do not irrigate
Weed Control	Up until they begin to vine we primarily will hand hoe but sometimes cultivate with the lilliston or belly cultivator.		Hand weed the whole area
Insects and Pests			NA
Diseases			NA

Harvest and Yields

Harvest Window	Spaghetti Squash- 1st week of September All other squashes are harvested 2nd and 3rd week of September	Trap crop squash: monitor squash development, harvest squash blossoms after each plant has at least one squash fruit.	We harvest when the vines dry up
Harvest Procedure	We pull a flat bed wagon, with straw spread on the bottom and outlined with bales, along the side of the patch to load onto. We use clippers to take plants off the vines. After any dew of light frost has evaporated.	Time of day is irrelevant.	We use a small hand lopper to cut the vines

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Cleaning	We do not clean or get the fruits wet at all.	Squash are gently wiped down. In a single layer, not touching one another, the squash cure in the sun for a few weeks until they are moved indoors.	we spray them down with water and wipe them dry.
Curing	The wagon with squash is either parked in the barn or outside. It's covered with a tarp at night.		Video on making dried squash braids: https://youtu.be/kuzpiAgjGdU
Packing	Prior to market squash are wiped down with cloths or scrubby pads and water are used to get rid of caked on mud or plant material.		
Storage	Once squash has cured we store them in large bins (cattle feeders) in our barn, root cellar, and/or turned off walk-in cooler. We try to keep the squash covered and around 50 degrees.		We store our squash in our screen room and then move them to the basement when it gets too cold outside. We generally process the squash by mid winter.
Yields	Off of a 100 foot row of squash, we hope to yield approx. 600 lbs of butternut, and less for the smaller varieties.	Variety 'A' in mounded garden with a 15' diameter produced 475 pounds of fruit. Variety 'A' in linear planting, bed length of 30' produced 35 pounds of fruit.	We do not track this information

Equipment

General	Lawn tractor (\$3000, used kabota lawn tractor-transplanting in and mowing between rows. Tobacco Planter \$ (transplanting) Hoes	Water wheel transplanter: custom made for \$3500, Hands: priceless.	Tractor \$12,000
Biggest Impact	Hand hoes - getting the early weeds is essential	For seed saving purposes: the intent is not to be profitable, but to learn about how each plant likes to grow. When figuring out what makes the plants most happy, they are incredibly generous.	We do not sell our squash so profitability is not an issue.

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Marketing

Markets	CSA, farmers market, on-site farm stand	Direct to Indigenous chef	We do not sell our squash.
CSA	Regular Shares -Butternut-2, Buttercup -1, Acorn-2, Spaghetti-2, Pie Pumpkin-1, Jack O'Lantern-1 Options for more plus they go into our Autumn Share		
Farmers Market	.75/lb.		
Other		Some varieties are gifted and the seeds are returned to the farm. Other varieties are sold according to current "specialty squash" prices and then seeds are returned to the farm.	