

Storage Onion Production, Practical Farmers of Iowa Annual Conference, 2019

Task	Featherstone Farm, Rushford, MN	Wildwoods Farm, Iowa City
Harvest and Yield		
Harvest Window?	We start harvesting onions with fresh-market bunches for CSA in late June. We continue with these bunches every 2-3 weeks through the end of July, when we bring in the rest of the onions to cure and store.	After their tops bend and before the August sun hits them. So between July 15 and Aug 1, depending on the year.
Harvest Procedure?	We hand-pull out of the ground (or harvest knife) and put directly into bulk bins. We move these bulk bins to the greenhouse, where we unload them and lay out the onions on vacant greenhouse tables. We use the drying leaves to cover the adjacent bulbs, layering them like shingles, to prevent sunburnt bulbs.	Pull by hand (broadfork or potato fork if needed), place gently in crates, take crates to greenhouse on wagon, gator or pickup bed. Lay out single layer on the greenhouse tables, leave them in the greenhouse only long enough to dry, too long and they will begin to rot.
Cleaning?	After 1-2 weeks, we will snip the leaves and put the onions into a bulk bin for storage in our cooler.	After drying, use scissors to cut the stem ABOVE the natural bend in the onion. Loosely take off layer of onion skins that falls off easily, trim roots if desired. Use scissors, not a knife to trim. Handle onions carefully. They can bruise.
Packing?	We only put onions in our CSA boxes	We sort and bag in predetermined weight, from 0.5 to 1.5 lb in a paper lunch sack. In the summer we bag them the day of delivery. In the fall when its cooler we can pack 1 or 2 days ahead.
Storage?	We store onions 34-40 degrees F in a walk-in cooler.	We have tried different things, next year we will be trying a climate controlled, ventilated, high humidity, 55 degree F above ground root cellar on bread trays.
Yields (per area, per bulb)?	2015: 15,372 lbs/acre; 2016: 11,984 lbs/acre; 2017: 27,834 lbs/acre; 2018: 35,224 lbs/acre	Unknown
Marketing		
Markets?	CSA only for onions. (roughly 1/3 of our income is from CSA, and 2/3 from wholesale)	CSA
CSA frequency?	once a week from 6/21-10/21, then every other week 10/28-2/28	Every week through summer, every other week through fall and sometimes into December
Farmers Market Price?	NA	NA
Direct to Grocery Price?	NA	NA
Other Prices?	NA	We grow as a staple crop for the CSA and consider it a valuable item in the share. We have looked into wholesaling them but don't find the prices to be competitive enough.

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Other Notes on Field Prep?	Strive to make these beds as early as we can get into the fields. Some years we can't hit our 4/20 planting date since it has been too cold or too wet.	NA
Field Planting		
Bed Width?	We shoot for 5.75-ft spacing between bed centers	Not on bed system, on row system with 36-in. row spacing
Plant Spacing?	6 in. between plugs, 2 rows per bed	One fist width (3-4inches) for all storage and summer onions. Green onions are planted as close together as possible.
Planting depth?	We're not terribly finicky about this. Since we often are pushing it to get the beds made for this crop, the soil texture is often rough and it is difficult to get perfect depth or planting conditions.	As deep as your thumb will get them
Transplanting Process?	We tow the trailer of transplants to the field. We transplant using a tractor mounted waterwheel transplanter. Depending on conditions, we may opt to have a walker follow the planters.	Hold bundle of plants in non-dominant hand, bend at waist and plant one at a time with dominant hand. The speed of planting is determined by how fast you transfer plants from bundle to planting hand, and stance. We do not sit, we might crouch or crawl on our hands and knees but never sit. Too much momentum is lost with sitting.
Fertility at Planting?	We add 2.5 gallons of fish hydrolysate to each 160 gallon load of water	NA
Water at Planting?	Yes	Only in 2018
Crop Maintenance		
Irrigation (frequency, system)?	Drip irrigation, t-tape. Enough to equal roughly 1.5 in. of rainfall each week	Hand-laid drip irrigation when needed. We did not use to need this but with changing climate conditions may have to more. Irrigated in 2012 mid-summer; 2018 at planting.
Weeding (frequency, tool/implements)?	We cultivate bed edges, and wish that were all we needed to do! Unfortunately, a ton of weeds germinate in the planting holes around the onions, requiring hand-weeding of every planting hole. Some years, like 2018, we needed to do this 2 times per hole.	Cultivate as often as weather allows, every 4 days is ideal, every week is important. Start by basket weeding, then move to cultivation. We had to hand-hoe in 2018 for first time due to irrigating at planting.
Do you cultivate?	Using tractors, we cultivate the pathways between the beds. First 3 times, use large sweeps to mound up soil on the bed shoulders and bury weeds. After that use "side knives/banana knives" to slice away large weeds and small hilling discs to rebuild the dirt covering the bed edge	Tractor cultivation with a one-row cultivator on Allis Chalmers G
Insect and Pests Management?	Thrips are the only pest of note, and they are only really bad once every three years or so. If thrips are bad, we spray Entrust 1-2 times	I need to learn more about scouting for thrips. I did spray once in 2013 for thrips, with a backpack sprayer. I think I should have sprayed for them in 2018. I noticed an abrupt change in the plant material but thought they were just dying back early due to weather. Looking back, based on the storage condition of the onions, I am pretty sure I had thrips. In 2019 I will be doing more aggressive scouting for thrips.
Disease Issues and Management?	Bacterial soft rot is the worst problem for us and because of this we are considering doing away with storage onions altogether!	NA

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Propagation		
Varieties used?	50/50 split of Candy, Red Long of Tropea (probably switching to Ailsa Craig and Cabernet for 2019 after trialing these varieties in 2018)	Storage onions: Copra (yellow), Red Zeppelin (red), Stirling (white); Summer onions: Ailsa Craig (sweet), Candy, Red River, Superstar; Green Onions (Super Star)
Direct seed or transplant?	Transplant	Transplant - purchased from Dixondale Onions in Texas. 20 cases. 30 bundles per case. 60-100 onions per bundle.
(if transplant) Soil mix used?	Vermont Compost Fort Light	NA
(if transplant) Tray/soil block size and setup?	128s (1020-sized trays), 2 seeds per cell	NA
(if transplant) Germination location? (high tunnel? Chamber?)	Placed on heated concrete slab in warehouse with trays stacked 8 high. Moved to heated 30x96 tunnel after radicles emerge.	NA
(if transplant) Seedling Watering/Irrigation? (wand type, etc)?	Watered by hand using wonder waterer	NA
(if transplant) Greenhouse/High Tunnel/Seedling Environmental Controls?	Greenhouse heated to 75 F	NA
(if transplant) Hardening off?	One week prior to transplant, we move trays out to hayrack wagons with wooden decks. Each wagon fits about 80-90 trays. When nights are cold or thunderstorms threaten, we roll these wagons into an empty tunnel. Transplant crews take these wagons directly to the field.	NA
Other Notes on Propagation?	NA	Variable April weather makes it difficult to select a shipping date. It is possible to hold onions starts for a few weeks, but a later planting date requires watering at transplant, more weeding, and provides a shorter season, meaning smaller onions.
Seeding schedule, dates, successions?	Seeded in greenhouse Mar. 2, transplanted to field Apr. 20	One succession, ideally transplant first week of April; last week of April in 2018
Field Prep		
Preceding Cash Crop?	No set rotation	In 2019 the preceding cash crop was squash; 2018 - potatoes; 2017 - brassicas; 2016 - oats/alfalfa (new field). Rotation is flexible, based on field accessibility and farm growth.
Preceding Cover Crop?	Either bare ground or winter-killed cover, such as oats and peas	Winter Rye. Cover crop, spread with a shoulder strap seeder or on the back of an ATV with a small seeder. Crop is usually harrowed in if ground is plant debris free. In 2018 we disced it in.
Soil Amendments?	Our plastic mulch implement has a fertility hopper that dispenses a custom dry fertility blend (1-2-6) into all our beds. We apply 300 lbs per acre. We source the blend from Midwestern BioAg.	Broadcasted with large, tractor-drawn cart by Midwest BioAg in spring before planting. We use organic standards approved, composted turkey manure from Midwest BioAg.
Bed Prep and Shaping?	Chisel plow > Disc > Rainflo 2600 plastic mulch layer. We use 4-ft embossed black plastic mulch that we source from Rainflo.	Roto-till one or two times then plant on 36-in. row-centers, marked with string lines.