

GROWING SWEET SPANISH ONIONS ON PLASTIC

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Sweet Spanish Onion Production in PA



Basic Production System

- Raised beds - 6 to 8 inches tall
- Plastic mulch - 1.0 to 1.5 mil - black
- Drip irrigation - 2 tapes per bed
- Spacing - 4 rows/bed - 6" x 6"
- Locally grown transplants 10 to 12 weeks old

Making raised bed with plastic mulch and drip tape



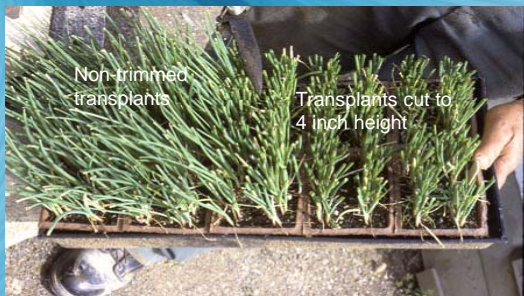
Power dibbler used to make holes in plastic mulch



Transplanting onions behind dibbler developed by PSU



Use healthy, vigorous transplants



Daylength - Bulbing

- Short-day - minimum of 11 to 13 hours to initiate bulbs.
- Long-day - minimum of 14 hours to initiate bulbs.
- Intermediate - requires 13-14 hours to initiate bulbs.

Seedstalk Formation

- Reproductive growth, including seedstalk formation, may be initiated before the bulb reaches mature size if plants are subjected to temperatures below 50° F for several weeks when plants are beyond the five-leaf stage of development in the field.

Sweet Spanish Onion Varieties



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Pungency Index based on pyruvic acid content

- Mmoles of pyruvic acid/kg weight of bulbs
- very mild sweet onion..... 1- 4 mmoles
- mild sweet onion..... 5- 7 mmoles
- intermediate pungency..... 8-10 mmoles
- pungent11-15 mmoles
- very pungent >15 mmoles

Onion growth after transplanting on beds



Stressed transplants after 2 weeks in field



Fertilizer requirement for onion production on plastic

- Base application of P, K, Ca and Mg on current soil test. Also test soil for S concentration. Fields with sulfur levels greater than 25 ppm should not be used for onion production. High sulfur increases the pyruvic acid content of the bulb and also increases pungency of onion bulb.

Fertilizer requirement for onion production on plastic

- Total N requirement for sweet Spanish onions is 120 to 160 lbs./A. Recommend broadcast application of 60 to 70% of total N requirement prior to making raised beds and laying plastic mulch. Apply additional N through drip irrigation during the first 6 to 8 weeks after transplanting - 7 to 10 lbs actual N per application per week.

N or K deficiency?



Water Requirement of Onions

- Since onion bulbs are 92% water and onion roots do not forage very deep for water, weekly application of 1.5 to 2.0 inches through drip irrigation tape is very essential for high yields. Optimum water application to onions directly correlates with onion bulb size. Recommend two drip tapes per bed.

Use of gauge to monitor water application



Weed Control

- Onions are not very competitive with weeds after transplanting in the field.
- Use of black plastic mulch on raised bed will reduce/eliminate volunteer weeds in the rows of onions.
- Keeping soil between onions rows weed free will facilitate harvest of bulbs.

Weed control

- One or two post-emergent applications of either Chateau or Goal will control broadleaf weeds.
- One or two applications of Poast or Select will control grass problems.
- Cultivation between raised beds or application of straw mulch will help reduce volunteer weed problems.

Weed free onion field



Fair to good weed control



Rhizome from quackgrass growing through bulb



Insect management

- Major problem of onions in PA - onion thrip. Uncontrolled thrip population can seriously reduce onion bulb size at harvest.
- Onion thrips will also infect garlic and shallot plantings nearby.
- Monitor the onion crop weekly for thrip problems.

Symptoms of thrip damage on onion leaf



Onion diseases - Purple Blotch



Purple Blotch

Onion diseases - Downy Mildew



Downy Mildew

Onion Diseases - Botrytis Leaf Blight



Botrytis Leaf Blight (Blast)

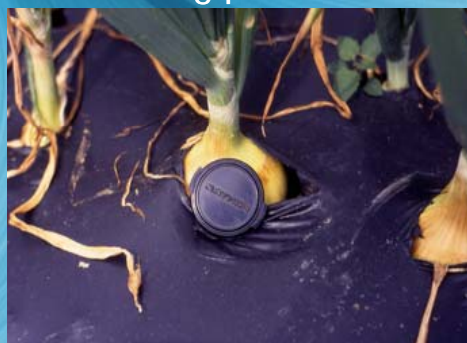
Onion Diseases - Pink Root



Onion diseases - Botrytis Neck Rot



Bulbs sizing prior to harvest



Onions ready to harvest



Cutting onion tops after harvest





Harvested onion bulbs in bulk bin or 50 lb burlap bags



Drying onions in high tunnel



40 lb Onion Box



Any Questions ?

