



High Tunnel Production of Fresh Ginger Root (*Zingiber officinale*) and Turmeric (*Curcuma longa*)

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High Tunnel

- Resembles a conventional greenhouse
- Crops are grown in the soil
- Season extension
 - Spring earliness
 - Fall extension
- Protects crops from adverse environmental conditions





High Tunnel Conditions



Growing Ginger and Turmeric

Ginger Seed Rhizomes



<http://www.ctahr.hawaii.edu/oc/freepubs/pdf/scm-8.pdf>: Paul Hepperly and Francis Zee

Ginger Seed-Rhizome

- Use only mature, clean, disease-free ginger hands
- Cut the selected hands into 2-4 oz sections, sterilizing the knife after each cut
- Each seed-piece should have two to four well developed “eyes.”
- Surface-sterilize the seed-pieces in a 10% solution of household bleach (1 part bleach in 9 parts water) for 10 minutes
- Cure the seed-pieces in a clean, disease-free area for three days or more before planting

(Hepperly, P. and Francis Zee, 2004)





In April the potted plants are ready to be transplanted in the high tunnel.

In February, plant the seed piece in a one gallon pot $\frac{1}{2}$ - $\frac{3}{4}$ filled with soilless potting mix (2 parts Compost, 2-4 parts Sphagnum Peat Moss, 1 part Perlite, and 1 part Vermiculite). Maintain in a greenhouse.





April-May

October







May



August

September



Fertilizer

- Ginger responds well with adequate fertilizer application.
- For detail of fertilizer need see
- <http://www.ctahr.hawaii.edu/oc/freepubs/pdf/SCM-8.pdf>

Mounding (Hilling)

Is the periodic covering of the upward-expanding rhizomes. It is an important process in ginger production.









Mature Ginger



Baby Ginger



Armyworm, *Pseudaletia unipuncta* potential problem with high tunnel ginger production



leaf-spot *Phyllosticta zingiberi*



Diseases

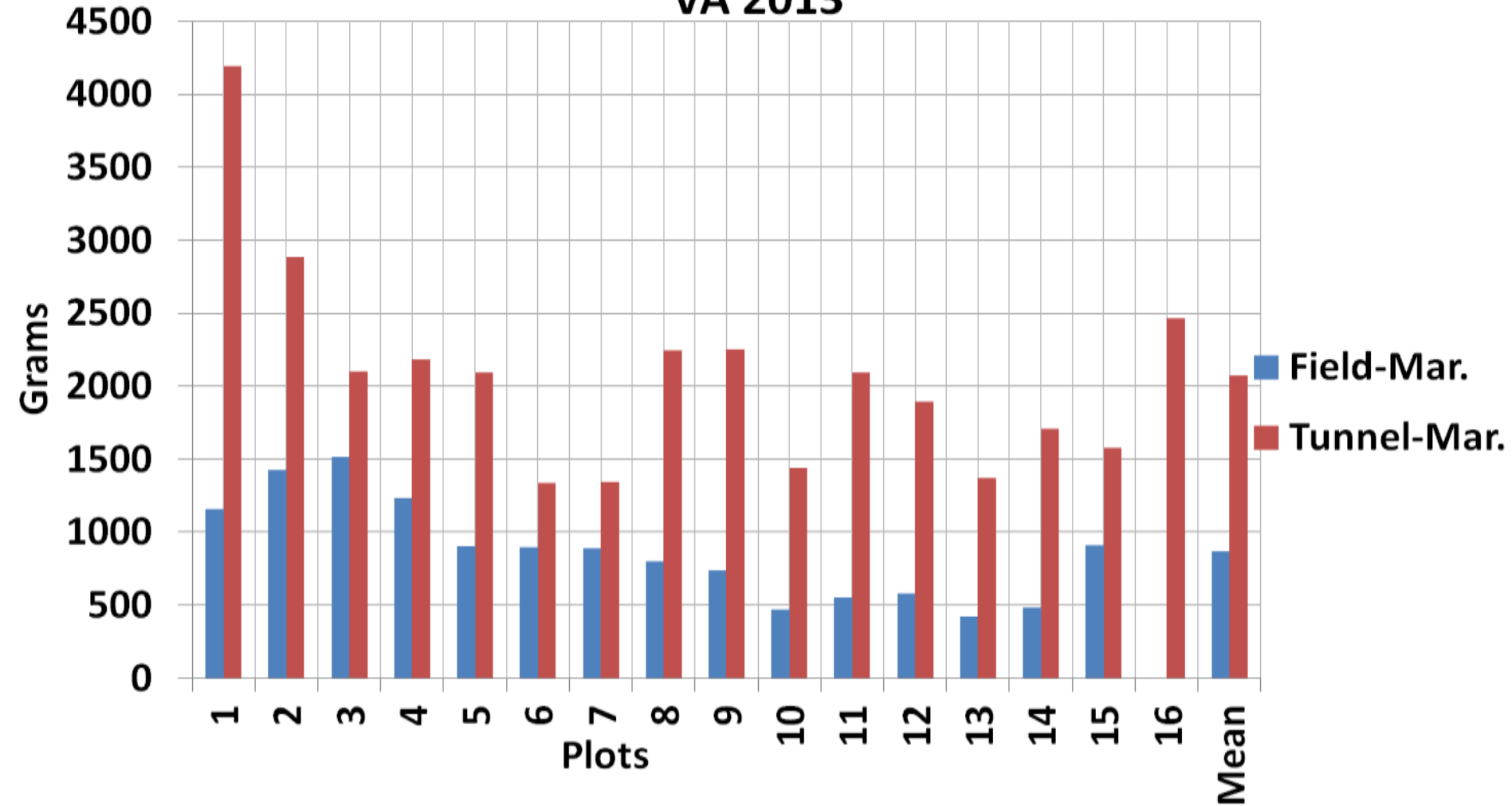
- Bacterial wilt (*Pseudomonas solanacearum*) - wilt of entire plant, rhizome rot.
- Bacterial soft rot (*Erwinia* sp.) - Leaf, pseudo stem and rhizome rot.
- Bacterial leaf blight (*Xanthomonas* sp.) - Leaf blight.
- Fusarium yellows and rhizome rot (*Fusarium oxysporum* f. sp. *zingiberi*) - Wilt of entire plant, rhizome rot.
- Pythium soft rot (*Pythium graminicola*, *P. splendens* and *P. aphanidermatum*): root rot, and soft rot of rhizomes.

Rhizome Rot

Fusarium oxysporum



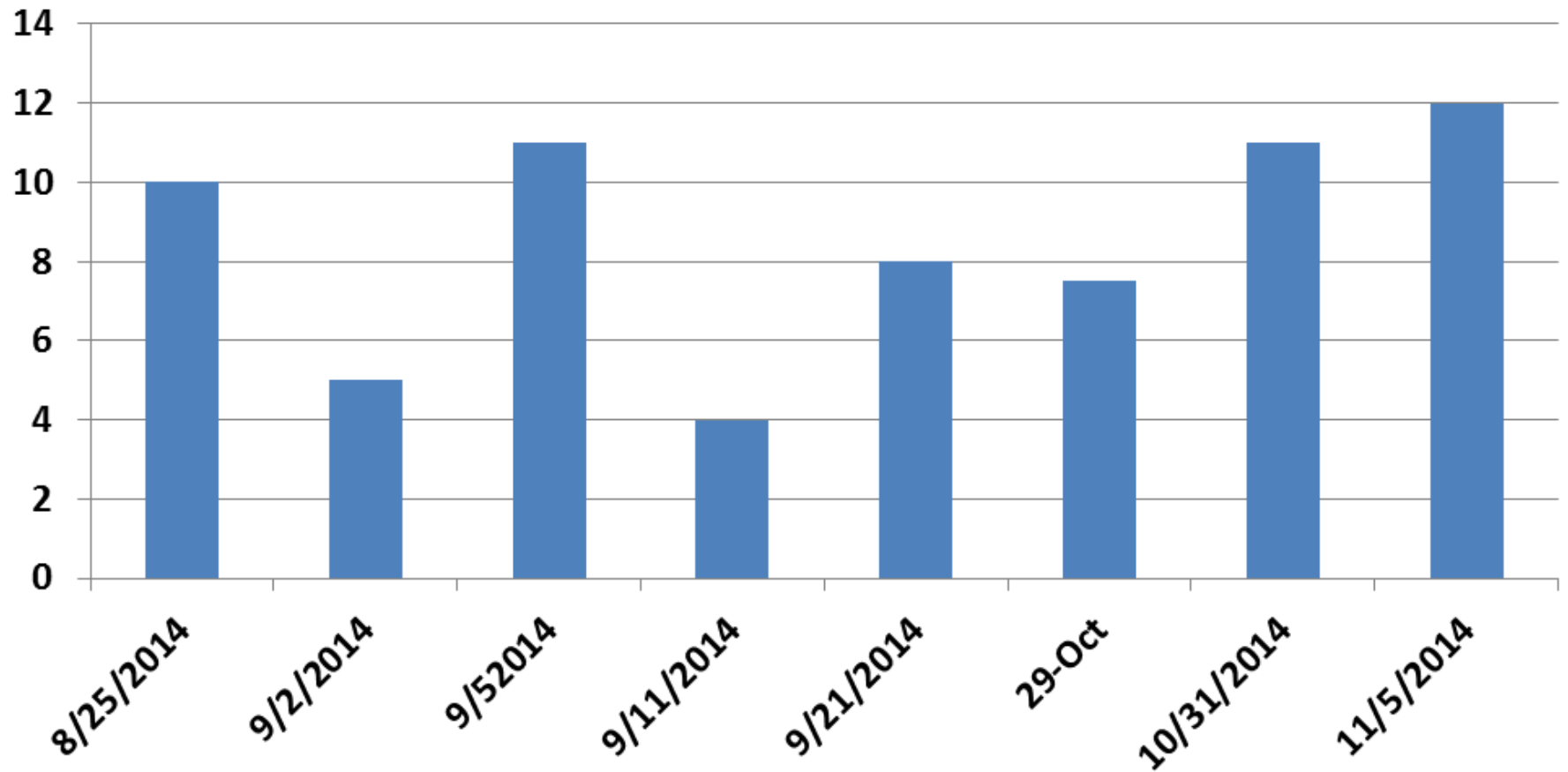
Marketable yield comparison of ginger root (gr.), grown under high tunnel and field conditions, VSU, Petersburg, VA 2013



Harvest begun: Field and High tunnel 10/8/2013

Harvest ended: Field, 10/31/2013 and High tunnel, 12/05/2013

High tunnel grown ginger yield/plant 2014 season, VSU Randolph Farm (lbs.)



Turmeric, *Curcuma longa*

- Is a rhizomatous herbaceous perennial plant of the ginger family, Zingiberaceae.
- It is native in Southeast Asia. Growing turmeric requires 9-11 month from planting the rhizome seed pieces until the harvest.
- In temperate zones as in Virginia, where the growing season is 7-8 month, there is a need to grow turmeric in high tunnel structure





Turmeric



