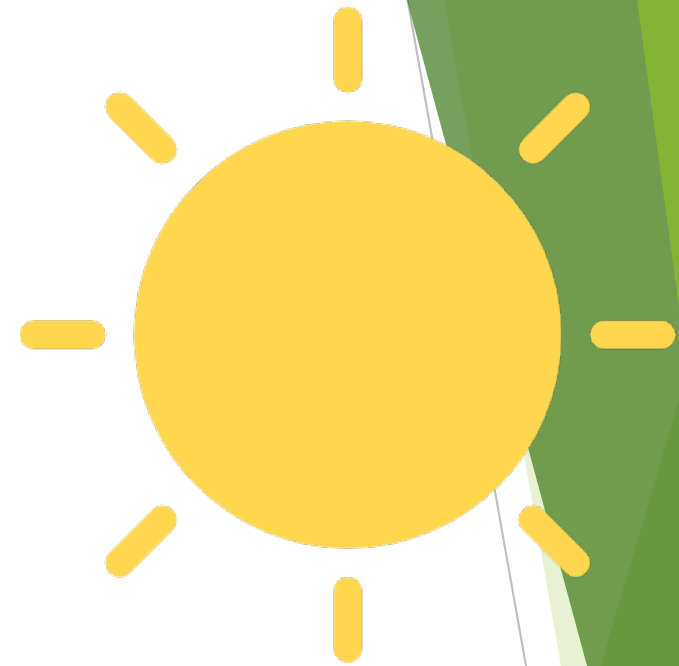


Vegetable Gardening Basics

By Sarah Browning,
Nebraska Extension



Where should the garden be located?



Amending Soils

- ▶ Organic matter - yes
- ▶ Sand - no
- ▶ Lime - almost always no in Nebraska
- ▶ Gypsum - almost always no in Nebraska
- ▶ Changing pH - works for the short term; ongoing process
- ▶ Soil test for others

Virginia Cooperative
Extension



Wisconsin Cooperative
Extension



Raised Beds



- ▶ Amended soil used
- ▶ Less compaction
 - ▶ Compaction can reduce yields up to 50%
- ▶ Earlier planting
- ▶ Drip/soaker irrigation
- ▶ Eases pest control
- ▶ Increased yields / sq. ft.
 - ▶ Traditional = .6 lb's / sq. ft.
 - ▶ Raised = 1.24 lb's. / sq. ft.
- ▶ Doubles as cold frame

Create a Garden Rotation Plan



Amaranth

- Beet, Spinach, Swiss chard



Aster

- Artichoke, Endive, Lettuce, Sunflower



Brassica

- Broccoli, Brussels sprouts, Cabbage, Cauliflower, Radish



Carrot

- Celery, Cilantro, Dill, Fennel, Parsnip



Cucumber

- Cucumber, Gourd, Melon, Pumpkin, Squash, Watermelon



Grass

- Sweet corn



Legume

- Beans, Cowpeas, Peas, Peanuts



Onion

- Chives, Garlic, Leeks



Tomato

- Eggplant, Pepper, Potato, Tomatillo

Germination- Minimum Soil Temp

35 Degrees Fahrenheit	40 Degrees Fahrenheit	50 Degrees Fahrenheit	60 Degrees Fahrenheit
Spinach Parsnip Onion Lettuce	Turnip Radish Pea Parsley Chard Celery Cauliflower Carrot Cabbage Beet	Asparagus Corn Tomato	Bean Lima Bean Cucumber Eggplant Muskmelon Okra Pepper Pumpkin Squash Watermelon

Planting Outdoors: Soil Temperature & Germination



- Optimum range
 - 5 to 10 degrees above minimum
 - 15 to 20 degrees below maximum
- Roots of transplants need minimum as well
- Faster germination at warmer soil temperatures

Planting Outdoors: Soil Temperature & Germination



- ▶ Carrot germination
 - ▶ 0 germination at 32 degrees F.
 - ▶ 51 days to germinate at 41 degrees F.
 - ▶ 17 days at 50 degrees
 - ▶ 6 days at 68 to 86 degrees
 - ▶ No germination at 104 degrees

Transplants

- Good- broccoli, cabbage, cauliflower, eggplant, lettuce, sweet potato, onion, tomato and pepper
- Medium- celery, melon, cucumber, squash, watermelon
- Poor- bean, corn, pea, okra



Transplants

- 10 weeks: broccoli, cabbage, cauliflower
- 6-7 weeks: pepper, tomato and eggplant
- 2-3 weeks: cucumber, muskmelon, squash and watermelon



Check Seed Viability

- Sow seed more thickly to achieve the desired amount of plants.
- Germination Test
 - Place 10 seeds on a moist paper towel
 - Seal the bag, and in a warm location, 70-75 degrees
 - Check germination at 7-10 days



Seed Germination Test,
Image by SouthernExposure.com

Planting Dates

Vegetables

Transplant into Garden

Asparagus crowns, Collards, Onion sets, Parsnip, Pea, Radish, Spinach, Turnip

Feb. 26

Leek, Potato, Swiss Chard

March 8

Beet, Cabbage, Carrot, Lettuce

March 18

Broccoli, Brussels Sprouts, Cauliflower,

March 28

Sweet corn, Sweet potato, Tomato

April 17

Bean (bush, pole & wax), Cucumber, Eggplant, Muskmelon, Pepper, Pumpkin,

April 27

Okra, Watermelon

May 7

Lima bean, Winter squash

May 17

Watering



Rooting Depths of Vegetables

Shallow 12-18 inches	Moderate 18-24 inches	Deep 24 inches +
Broccoli Cabbage Brussels Sprouts Cauliflower Corn Lettuce Onion, Garlic, Leek Parsley Potato Radish Spinach	Bean Beet Carrot Chard Cucumber Eggplant Muskmelon Pea Pepper Summer squash Turnip	Asparagus Lima Bean Parsnip Pumpkin Winter Squash Sweet Potato Tomato Watermelon

Vegetable Selection

2023 All-America
Selection Winner
'Zenzei' Tomato



Selection Criteria

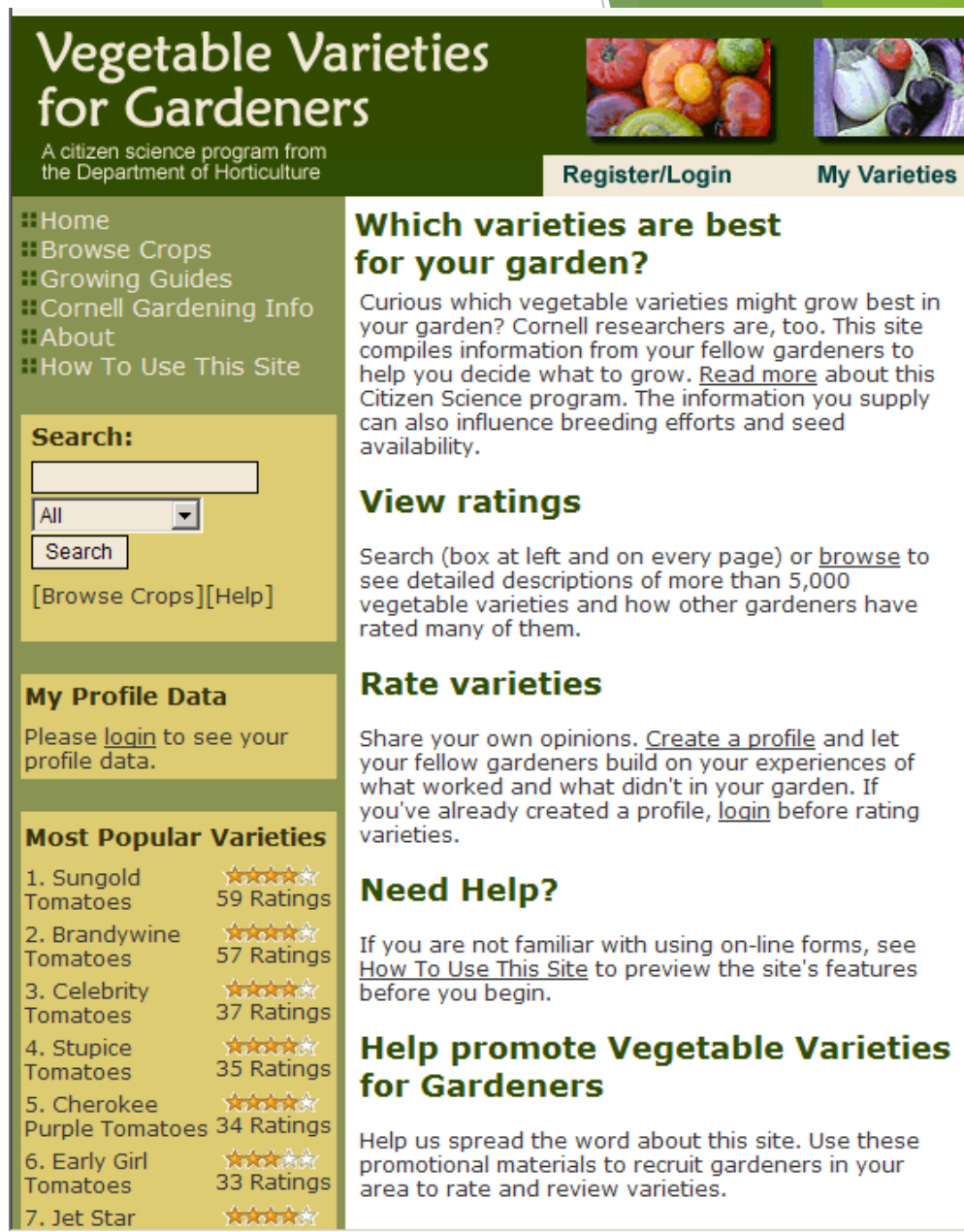
- ▶ Days to harvest
- ▶ Disease & insect resistance
- ▶ Resistance to environmental problems
- ▶ Fruit color, flavor & texture
- ▶ Plant growth habit



'Early Girl', Park Seed
www.parkseed.com

Vegetable Selection

- ▶ New NebGuides available
 - ▶ “Selected Vegetable Varieties for Nebraska”
 - ▶ “Selecting Tomatoes for the Home Garden”
extensionpubs.unl.edu
- ▶ Other Resources
 - ▶ Cornell University
vegvariety.cce.cornell.edu/
 - ▶ All American Selections
all-americanselections.org/



Vegetable Varieties for Gardeners

A citizen science program from the Department of Horticulture

[Register/Login](#) [My Varieties](#)

- Home
- Browse Crops
- Growing Guides
- Cornell Gardening Info
- About
- How To Use This Site

Search:

All

[\[Browse Crops\]](#)[\[Help\]](#)

My Profile Data

Please [login](#) to see your profile data.

Most Popular Varieties

1. Sungold Tomatoes	★★★★☆	59 Ratings
2. Brandywine Tomatoes	★★★★☆	57 Ratings
3. Celebrity Tomatoes	★★★★☆	37 Ratings
4. Stupice Tomatoes	★★★★☆	35 Ratings
5. Cherokee Purple Tomatoes	★★★★☆	34 Ratings
6. Early Girl Tomatoes	★★★★☆	33 Ratings
7. Jet Star	★★★★☆	

Which varieties are best for your garden?

Curious which vegetable varieties might grow best in your garden? Cornell researchers are, too. This site compiles information from your fellow gardeners to help you decide what to grow. [Read more](#) about this Citizen Science program. The information you supply can also influence breeding efforts and seed availability.

View ratings

Search (box at left and on every page) or [browse](#) to see detailed descriptions of more than 5,000 vegetable varieties and how other gardeners have rated many of them.

Rate varieties

Share your own opinions. [Create a profile](#) and let your fellow gardeners build on your experiences of what worked and what didn't in your garden. If you've already created a profile, [login](#) before rating varieties.

Need Help?

If you are not familiar with using on-line forms, see [How To Use This Site](#) to preview the site's features before you begin.

Help promote Vegetable Varieties for Gardeners

Help us spread the word about this site. Use these promotional materials to recruit gardeners in your area to rate and review varieties.

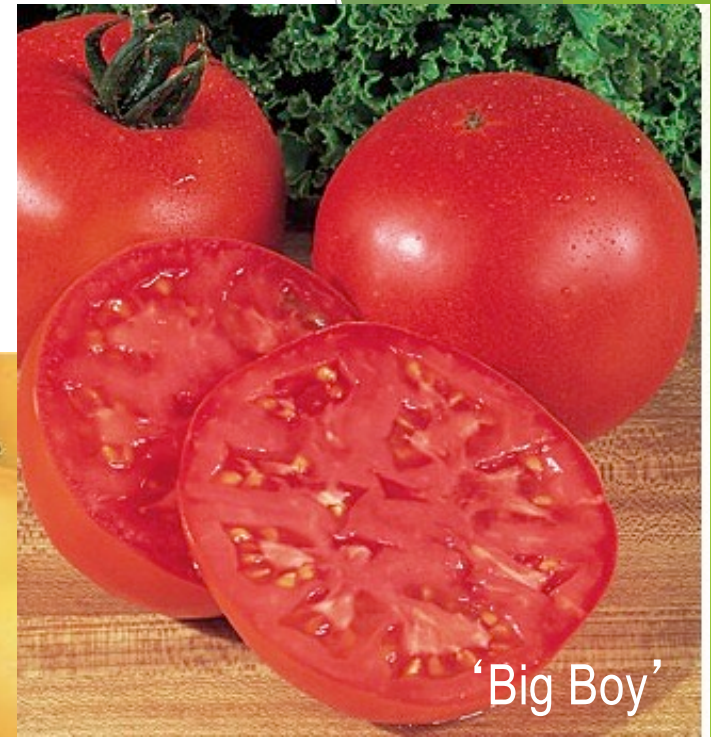
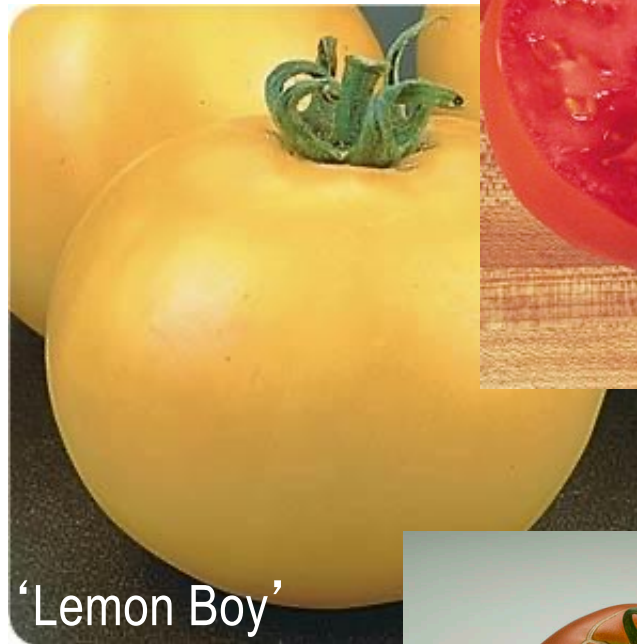
Cultivar vs. Variety



- ▶ Cultivated variety
- ▶ Group of plants with distinct characteristics
- ▶ Developed through human manipulation
 - ▶ Plant selection
 - ▶ Hybridization

Hybrid

- ▶ Variety resulting from the cross of two genetically uniform varieties to produce special characteristics
- ▶ F1 hybrid - first offspring, more vigorous
- ▶ Uniform characteristics, higher yields
- ▶ Usually do not breed true



Asparagus 'Jersey Supreme'

- ▶ Hybrid, male cultivars
- ▶ Jersey Supreme is an early variety with medium sized spears
 - ▶ Highest yield in Iowa State University trials (1995), followed by Jersey Giant and Jersey Knight
- ▶ Tolerant of fusarium crown rot and rust in colder climates
- ▶ Does well in heavy soils



'County Fair' Cucumber



- ▶ 52 days
- ▶ Pickling or slicing cucumber
- ▶ Predominantly female, mostly seedless if isolated from pollinators
- ▶ Bacterial wilt resistance

'Diva' Cucumber

- ▶ 58 days
- ▶ AAS 2002
- ▶ Smooth thin skin, burpless
- ▶ Gynoecious
- ▶ Parthenocarpic
- ▶ Good disease resistance
- ▶ Not attractive to cucumber beetles



Vegetable Pest Control

Early blight,
Alternaria linariae



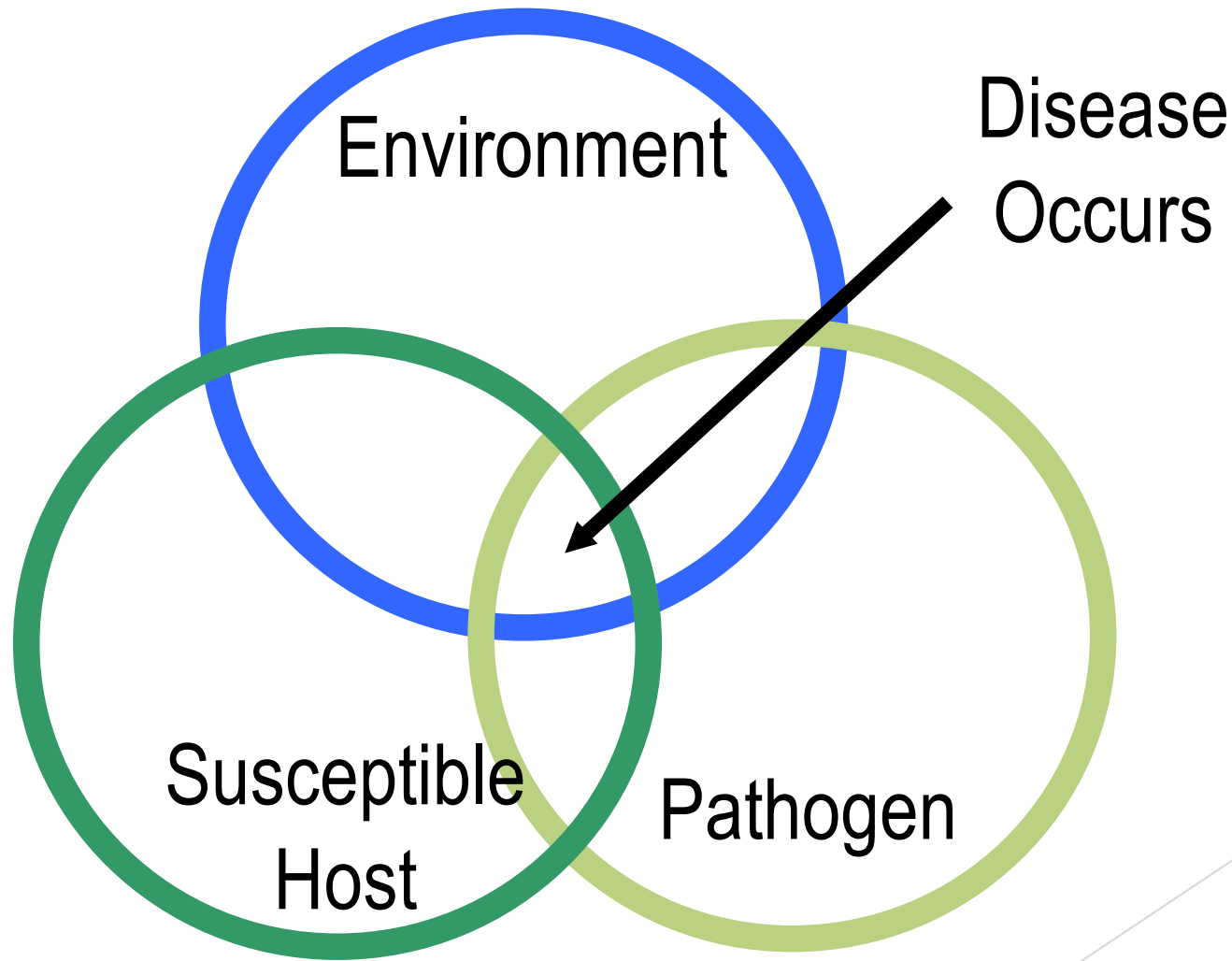
Solarization

- ▶ A non-chemical method to kill weed seed, insects and nematodes in the upper soil layers
- ▶ Clear plastic traps heat from the sun; use thin, 1-6 mil plastic
- ▶ Soil temperature must be maintained between 98-126°F for at least 3 months
- ▶ Moist soil increases the efficiency of kill



Lower image - "Solarized bed initial soil temp 97.0 deg" by drmacro, CC BY-NC 2.0.

Disease System Components



Management of Foliage Diseases

- ▶ Use a 3-4 year garden rotation schedule
- ▶ Do Rotations Matter Within Disease Management Programs?

<https://bit.ly/vegrotation>



Avoid Planting too Closely,
Use Mulch Beneath Plants



Avoid Overhead
Irrigation



Use Resistant Varieties



Buy Healthy Plant Material

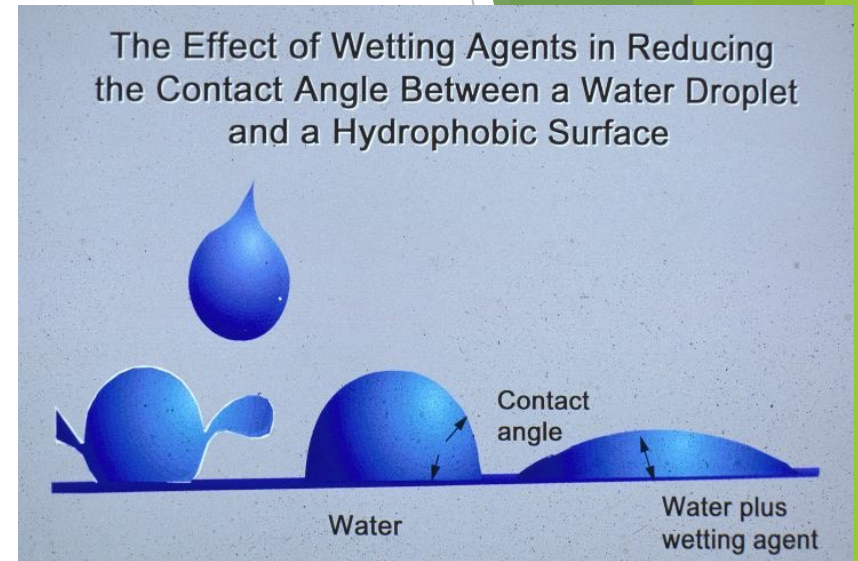


Practice good garden sanitation



General Guidelines for Chemical Pest Control

- ▶ Use the least toxic product that will give good control
 - ▶ *Bacillus thuringiensis*
 - ▶ Horticultural oils
 - ▶ Insecticidal soaps
 - ▶ Pyrethrins
 - ▶ Copper fungicide
- ▶ Begin a preventative fungal spray program at first sign of disease
 - ▶ Fungicides are protective, not curative
 - ▶ Every 7-14 days
- ▶ Thorough plant coverage with the insecticide is essential
 - ▶ Higher water volumes help increase coverage
 - ▶ Use wetting agents or spreader/stickers if needed



Environmental Problem

Blossom End Rot

- ▶ Calcium deficiency
- ▶ Maintain an even moisture supply
- ▶ Mulch to conserve soil moisture and reduce disease
- ▶ Avoid root injury
 - ▶ Mechanical
 - ▶ Disease
- ▶ Avoid excessive Nitrogen

Tomato end rot – Nebraska Extension



Watermelon end rot - Purdue University

Environmental Problems: Sun Scald

- ▶ Poor leaf canopy for developing fruits
- ▶ Control foliage diseases
 - ▶ Resistant varieties
 - ▶ Spray program
- ▶ Selectively harvest and prune to minimize fruit exposure to direct sunlight



Environmental Problems: Fruit Cracking

- ▶ Use tolerant varieties
 - ▶ Resistant- Celebrity, Jackpot, Mountain Fresh, Rutgers, Supersonic.
- ▶ Proper irrigation and nutritional management
 - ▶ Periods of slow fruit growth followed by fast fruit growth
 - ▶ Heavy periods of rain following dry conditions
- ▶ Mulch
- ▶ After harvest, do not immerse fruits in water to clean



Check Out:

GRO Big Red Virtual Learning,
[Go.unl.edu/grobigrdtube](https://bit.ly/grobigrdtube)

Vegetables,
<https://bit.ly/vegbasics>

Extension Publications,
[Extensionpubs.unl.edu](https://extensionpubs.unl.edu)

Questions?

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