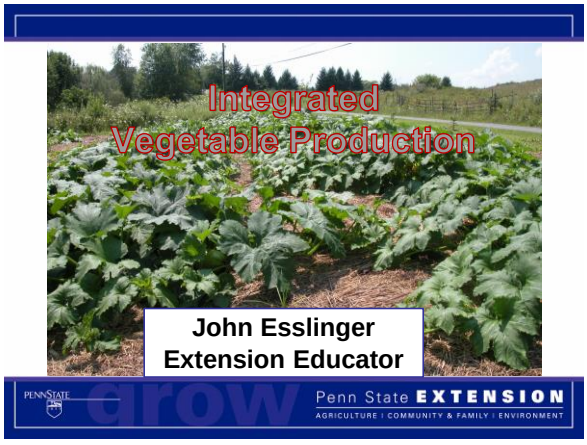

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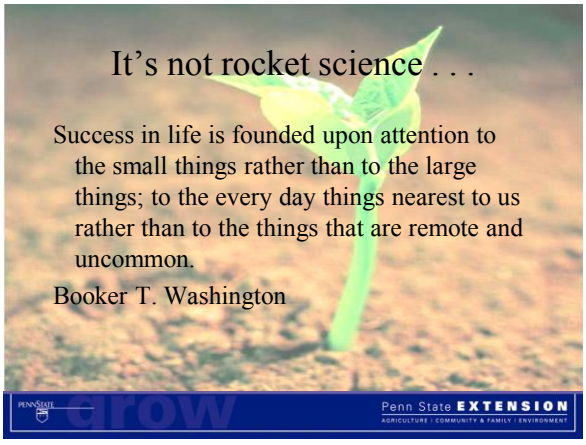

2

Integrated Crop Management Principle

- The soil
- Timing
- Rotation
- The pest
- Pest management

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Soil management

- High in organic matter
  - Cover crops, manure, minimal tillage, leaving the straw on
- Good drainage
- Not compacted
- Optimum fertility and pH

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Reduce Tillage: No-till Vegetable Production

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Soil Preparation

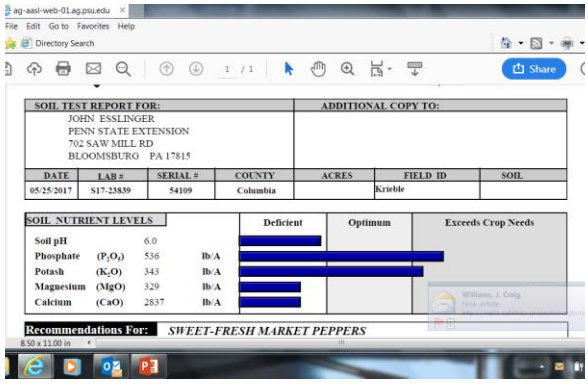
- Soil Test – "Don't Guess, Soil Test"
- Lime supplies nutrients and corrects pH
  - **High Calcium** or High Magnesium lime Organic Matter
  - Improve water holding capacity, capillary action
  - Improves drainage
  - Enhances the root system

8

Balanced Nutrition is the Goal

- Avoid excesses
  - High N increase pest pressure, reduces quality
  - High P ties up micro-nutrients
  - High Ca, Mg, or K causes deficiency of others
  - High micro nutrients can be toxic

9



SOIL TEST REPORT FOR:
JOHN ESSLINGER
PENN STATE EXTENSION
702 SAW MILL RD
BLOOMSBURG PA 17815

ADDITIONAL COPY TO:

DATE	LAB #	SERIAL #	COUNTY	ACRES	FIELD ID	SOIL
05/25/2017	S17-23839	54109	Columbia		Krieble	

SOIL NUTRIENT LEVELS				Deficient	Optimum	Exceeds Crop Needs
Soil pH		6.0				
Phosphate	(P_2O_5)	536	lb/A			
Potash	(K_2O)	343	lb/A			
Magnesium	(MgO)	329	lb/A			
Calcium	(CaO)	2837	lb/A			

Recommendations For: *SWEET-FRESH MARKET PEPPERS*

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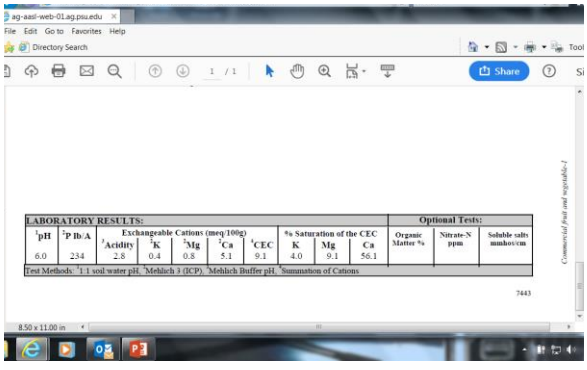

LABORATORY RESULTS:

[1]pH	[2]P lb/A	Exchangeable Cations (meq/100g) [3]Acidity	[2]K	[2]Mg	[2]Ca	[2]CEC	% Saturation of the CEC K	Mg	Ca	Optional Tests: Organic Matter %	Nitrate-N ppm	Soluble salts mmhos/cm
6.0	234	2.8	0.4	0.8	5.1	9.1	4.0	9.1	56.1			

Test Methods: [1]1:1 soil water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

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Manure is Magic

- Balance of N-P-K, and micro nutrients
- Varies by what the animal eats
  - Poultry is high in N, lower in P and K
    - Low in fiber, quickly available
  - Cattle is moderate in N-P-K, higher in fiber
  - Sheep, Goat, and Rabbit is more concentrated, balanced, high in fiber
- Varies by how it is handled

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Using Manure

- Apply before planting
- Apply only enough to meet fertilizer needs, additional fertilizers not needed
- Work it into the soil.
- Supplies macro and minor nutrients
- Breaks down as plant needs it
- Do not apply after planting/GAPs

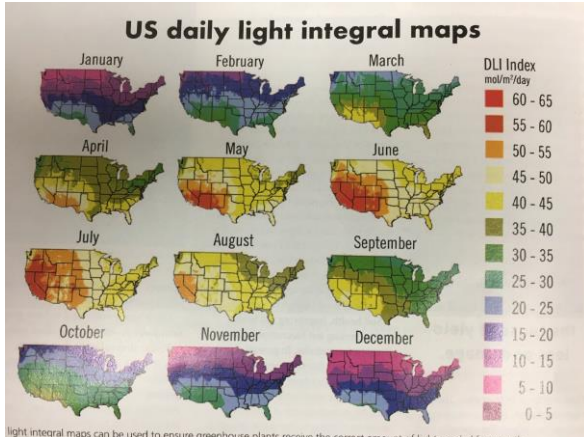
Soil Fertility

- pH 6.5 to 7.0 range
  - tends to move downward
  - Calcium levels need to be up
- Calcium critical to fruit development
  - Blossom end rot is calcium deficiency
  - Taken up by roots
  - Needs adequate soil moisture

Timing

"Timing is everything"

- Day length & light intensity
- Chilling/frost damage
- Disease pressure
- Maturity



light integral maps can be used to ensure greenhouse plants receive the correct

Crop Rotation

- At least 2 years outside the family
- Do not allow volunteers
- Select cover crops carefully
- What not to do: (excuses not to rotate)
  - Field gets early tomatoes because it drains
  - Gets sweet corn because people can see it
  - Peppers do the best in this field

Know your Enemy

- Insect Pests
  - What insects damage this crop?
  - When do they cause damage?
  - How do they cause damage?
  - What's the lifecycle of this pest?
  - What can be done to eliminate or minimize the damage done by this pest?

If a Pesticide is Needed:

- Insects are controlled when present
  - Timing is critical – **be early**
- Diseases are prevented – not controlled

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Insect Pests of Vegetables

- Mid-Atlantic Commercial Vegetable Production Recommendations
  - How to Improve Pest Management
- Managing the crop to stay ahead of pests

  - It's a different mindset

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Example: Potato Insects

- Moved to a field far from last year's crop
- Bought certified seed
- Plant early to get good early growth
- Provide optimum fertility to maximize growth
- Scout for CPB adults starting in late May
- If needed, apply insecticide as eggs hatch

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Potato pests continued

- Scout for flea beetles
- Keep scouting for late emerging and second generation CPB adults/larvae
- Watching for potato leafhoppers (about the time alfalfa starts to regrow after 1st cutting). Migrate in from the south

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Can we do anything else?

- Plant a row of eggplant in with your potatoes
  - Potato beetles and flea beetles prefer eggplant to potato or tomato
- If your potato patch is small enough, hand picking adults in May can be effective

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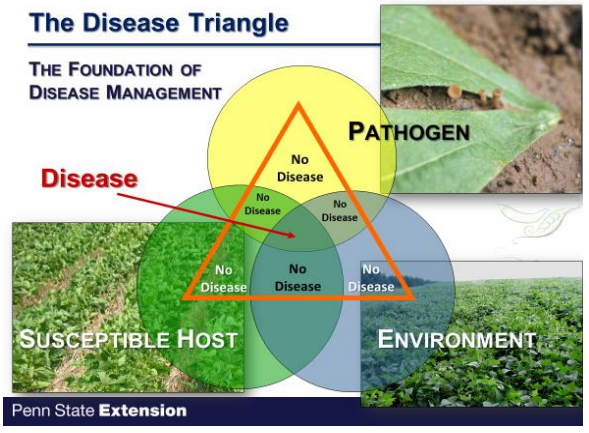

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Disease Management

- Rotation is critical
- Select varieties with disease resistance
- Control non-disease pests – weeds, insects & even wildlife
- Timing
  - Early season = less disease
  - Late season = more disease

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Vegetable Grafting

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Vegetable Grafting

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Start Clean

- Clean seed
- Clean greenhouse, trays
- Moist soil, dry foliage
- Clean stakes, plastic mulch, cages, etc.

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Example: tomato diseases

- Select a variety with blight resistance
- Start with a thriving 6 week old transplant with a thick stem
- Plant where there has not been a nightshade family for the last 2 yrs. Plant late May when the soil is warm and the sun is strong

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Tomato Disease continued

- Stake and prune suckers to increase air flow and reduce leaf wetness
- Eliminate weeds
- Manage fertility – avoid excessive N
  - Insects and diseases love plants with high N

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Help for Commercial Growers

Penn State Disease Identification Clinic
https://plantpath.psu.edu/facilities/plant-disease-clinic

John Esslinger 570-316-6516

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Help for Gardeners

- Penn State Master Gardeners
  - Mifflinburg Extension Office on 343 Chestnut St., 570 556 4757
  - email is union-snydermg@psu.edu.
- Plant disease clinic

https://plantpath.psu.edu/facilities/plant-disease-clinic

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Wrap Up: ICM Mind Set

- Learn about your pest problems
- Develop a strategy to manage the crop to avoid/minimize the problem

Rotation	Wildlife
Genetics	Tunnels
Fertility	Horticultural
Timing	practices
Weeds	

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ICM Mind Set

- If a pesticide is needed:
  - Lowest toxicity AND effective
  - Targeted
  - Avoid hitting beneficials
- Scout at least weekly (not weakly)
  - Scout as long as you have a crop in the field

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Spotted Lanternfly

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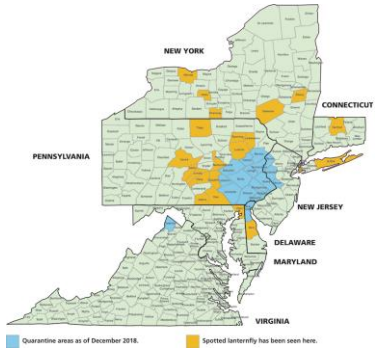
Current distribution



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National rankings of some threatened PA commodities

Hardwoods: #1 exporter in USA

Apples: 4th largest producer in USA

Peaches: 4th largest producer in USA

Grapes: 5th largest producer in USA

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Spotted Lanternfly

www.extension.psu.edu

Union County Master Gardeners
Tuesday, March 26 at 6:30 pm
Fero Winery, Lewisburg
Speaker: Anna Busch

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Thank You !

Any Questions?

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