



# PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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## Pennsylvania Vegetable Growers Association

*An association of commercial vegetable, potato and berry growers.*

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### Vegetable Research Grower Survey Results

Results from 227 surveys returned

Growers were asked to indicate their level of problem or concern for each of the following issues for the various major vegetable crops. Their choices were:                    N/A                    Minimal    Moderate                    Considerable

In tabulating the responses, "N/A" and no answer were recorded as null. Minimal was recorded as "1", Moderate as "2" and Considerable as "3". In the first column below, the average listed is the average of those responding as Minimal, Moderate or Considerable. In the second, third and fourth columns are the percentage of respondents who answered that question indicating minimal, moderate or considerable damage or concern respectively.

Growers were also asked whether they felt research was needed on each of these issues. The percentages reported here are, in the fifth column, the percentage that indicated "yes" research is needed of all the surveys returned and, in the sixth column, the percentage that indicated "yes" research is needed of all those who answered "yes" or "no". Many surveys were returned with neither "yes" or "no" indicated.

Highlighted responses indicate issues that growers identified as having greater priority. Issues are highlighted if the first column is 2.0 or greater, if the fifth column is 33% or greater, or if the sixth column is 67% or greater.

Underneath each section are additional comments from growers.

#### What kind of crops do you grow?

**Retail Fresh Market - 133**

**Wholesale Fresh Market - 102**

**Processing - 17**

**Greenhouse- 48**

SNAP BEAN	LEVEL of PROBLEM or CONCERN				RESEARCH NEEDED	
	Avg	% Min	% Mod	% Con	% of Total	% of Answer
<b>Cultural practices</b>						
No-till production	1.6	55%	24%	20%	13%	50%
<b>Disease control</b>						
White mold	1.3	69%	31%	0%	8%	32%
Root rots	1.5	60%	33%	7%	9%	34%
Gray mold	1.3	71%	25%	4%	5%	20%
<b>Insect control</b>						
Aphid/Virus issues	1.6	55%	32%	13%	12%	45%
Corn borer	1.5	65%	25%	10%	9%	35%
<b>Weed control</b>						
Annual broadleaf weeds	1.9	31%	44%	25%	18%	55%
Annual grass weeds	1.7	43%	40%	17%	15%	50%
Perennial weeds (e.g. Canada thistle, quackgrass, horsetnettle)	1.9	37%	35%	28%	22%	63%
<b>Other (specify below)</b>						
plastic mulch, organic focus, deer damage, Mexican bean beetle, mare's tail, Colorado potato beetles, leaf hopper						

TOMATO	LEVEL of PROBLEM or CONCERN				RESEARCH NEEDED	
	Avg	% Min	% Mod	% Con	% of Total	% of Answer
<b>Cultural practices</b>						
<i>Variety selection</i>	1.5	63%	23%	14%	19%	55%
<i>Nutrient management</i>	1.7	42%	47%	11%	20%	57%
<i>Organic production</i>	1.7	51%	30%	19%	17%	56%
<i>Vegetable grafting</i>	1.6	54%	31%	15%	11%	40%
<b>Disease control</b>						
<i>Bacterial canker, spot, speck</i>	1.7	47%	37%	16%	26%	79%
<i>Early blight, Septoria leaf spot</i>	1.8	40%	43%	17%	29%	79%
<i>Late blight</i>	1.7	42%	43%	16%	24%	72%
<i>Wilt diseases (Fusarium, Verticillium)</i>	1.6	54%	32%	14%	19%	66%
<b>Insect control</b>						
<i>Worms</i>	1.4	66%	27%	7%	10%	37%
<i>Aphids</i>	1.4	64%	28%	8%	14%	48%
<i>Thrips</i>	1.5	57%	31%	12%	17%	57%
<i>Stink bugs, plant bugs</i>	1.5	55%	36%	9%	13%	43%
<b>Weed control</b>						
<i>Nutsedge</i>	1.8	33%	53%	14%	11%	42%
<i>Morning glory and solanaceous weeds</i>	1.6	58%	25%	17%	11%	42%
<i>Weed control in plasticulture</i>	1.6	49%	39%	12%	16%	55%
<i>Weed control in bare soil</i>	1.7	44%	39%	17%	10%	43%
<b>Physiological disorders</b>						
<i>Yellow shoulder</i>	1.6	51%	35%	14%	19%	60%
<i>Blotchy ripening</i>	1.6	55%	33%	12%	18%	62%
<b>Other (specify below)</b>						
late blight, blossom end rot, greenhouse hydroponic production, Septoria, whiteflies, Phytophthora, fruit rot, timber rot, white mold, soil quality, organic matter, viruses						

SWEET CORN	LEVEL of PROBLEM or CONCERN				RESEARCH NEEDED	
	Avg	% Min	% Mod	% Con	% of Total	% of Answer
<b>Cultural practices</b>						
<i>No-till production</i>	1.8	44%	31%	25%	10%	44%
<i>Nutrition &amp; spacing to max. 1<sup>st</sup> ear yield</i>	1.9	35%	42%	24%	20%	69%
<i>Bird control</i>	1.8	46%	25%	29%	16%	53%
<b>Disease control</b>	1.4	69%	23%	8%	11%	46%
<b>Insect control</b>						
<i>Corn earworm</i>	2.0	26%	45%	28%	23%	77%
<i>European corn borer</i>	1.7	46%	38%	17%	14%	54%
<i>Fall armyworm</i>	1.6	50%	37%	13%	13%	52%
<i>Worms in general</i>	2.0	25%	49%	26%	25%	77%
<i>Sap beetle</i>	1.7	49%	34%	16%	9%	38%
<i>Improving the trapping network</i>	1.7	55%	24%	21%	11%	44%
<b>Weed control</b>						
<i>Triazine-resistant weeds</i>	1.7	41%	44%	15%	13%	52%
<i>Replacements for atrazine</i>	1.8	33%	50%	17%	18%	63%
<i>Perennial weed control</i>	1.8	34%	53%	13%	14%	55%
<i>No-till weed control</i>	1.9	34%	45%	21%	13%	59%
<i>Label field corn herbicides for sweet corn</i>	1.9	27%	51%	22%	15%	62%
<b>Other (specify below)</b>						
Why isn't Prowl H2O labeled for no till sweet corn?; earworm; need higher prices; organic focus; 78-86 day ShA varieties not available w/ good disease resistance; deer, bird and other wildlife control; emergence evaluation of untreated varieties of sweet corn						

CUCURBITS	LEVEL of PROBLEM or CONCERN				RESEARCH NEEDED	
	Avg	% Min	% Mod	% Con	% of Total	% of Answer
<b>Cultural practices</b>						
<i>No-till production</i>	1.8	48%	28%	24%	14%	52%
<i>Fertility for no-till</i>	1.7	45%	40%	15%	12%	45%
<i>Variety selection</i>	1.6	57%	27%	17%	17%	51%
<i>Organic production</i>	1.7	54%	21%	25%	12%	48%
<b>Disease control</b>						
<i>Powdery mildew</i>	1.9	33%	48%	19%	31%	72%
<i>Downy mildew</i>	2.0	30%	42%	28%	35%	78%
<i>Phytophthora blight</i>	1.9	36%	37%	27%	31%	71%
<i>Wilt diseases (Fusarium, Verticillium)</i>	1.7	45%	36%	19%	22%	60%
<i>Viruses</i>	1.7	47%	39%	14%	21%	61%
<b>Insect control</b>						
<i>Cucumber beetles</i>	2.1	27%	32%	41%	35%	75%
<i>Squash bug</i>	1.8	42%	40%	18%	24%	63%
<i>Squash vine borer</i>	1.6	52%	36%	12%	19%	55%
<i>Aphid/Virus issues</i>	1.7	42%	44%	14%	24%	63%
<b>Weed control</b>						
<i>In planting hole for mulched crops</i>	1.7	47%	38%	14%	16%	60%
<i>No-till pumpkin</i>	2.1	24%	38%	38%	22%	75%
<i>Herbicide resistant weeds</i>	1.8	40%	41%	20%	23%	67%
<b>Other (specify below)</b>						
weed control, deer and wildlife damage, rodents, seeds and mature fruit, Plectosporium on zucchini, emphasize practical cucumber beetle control - not weird things like trap crops etc, weeds in between mulched rows, organic - needs research, using Dual Magnum post emergence for nightshade, use of black plastic						

COLE CROPS	LEVEL of PROBLEM or CONCERN				RESEARCH NEEDED	
	Avg	% Min	% Mod	% Con	% of Total	% of Answer
<i>Anthracoze</i>	1.5	59%	28%	13%	11%	56%
<i>Other Diseases – Black Rot</i>						
<i>Other Diseases - Alternaria</i>						
<i>Thrips</i>	1.4	66%	31%	3%	5%	29%
<i>Other – slugs, plant bugs, flea beetles, worms in broccoli</i>						
<i>Other – Nutrient management in heat</i>						
insecticide resistance in worms, insects – cabbage worm, flea beetles, ants, diamond back moth, cabbage butterfly caterpillars, brassica, downy mildew, tip-burn, Fusarium						

HIGH TUNNEL PRODUCTION	LEVEL of PROBLEM or CONCERN				RESEARCH NEEDED	
	Avg	% Min	% Mod	% Con	% of Total	% of Answer
<b>Cultural practices</b>						
<i>Variety selection</i>	1.7	43%	46%	12%	17%	76%
<i>Nutrient Management</i>	2.0	34%	35%	31%	18%	80%
<i>Soil Health</i>	2.1	24%	38%	38%	19%	85%
<i>Crop Rotation</i>	1.9	32%	48%	21%	16%	71%
<i>Biological controls</i>	2.0	33%	33%	34%	19%	81%
<b>Disease control</b>						
<i>Leaf mold</i>	1.7	48%	37%	15%	11%	57%
<i>Soilborne diseases</i>	1.8	40%	40%	20%	14%	71%
<b>Insect pests</b>						
<i>Spider mites</i>	2.0	32%	41%	27%	18%	80%
<b>Other (specify below)</b>						
prices need to be higher, broad mites on pepper seedlings, water management, cucumber beetles, intercropping, new crops, white fly						

ORGANIC/SUSTAINABLE	LEVEL of PROBLEM or CONCERN				RESEARCH NEEDED	
	Avg	% Min	% Mod	% Con	% of Total	% of Answer
<b>Cultural practices</b>						
<i>Variety selection</i>	1.8	43%	38%	20%	15%	67%
<i>Compost use</i>	1.9	40%	33%	26%	15%	65%
<i>Nutrient management</i>	2.0	28%	43%	29%	19%	74%
<i>Soil health</i>	2.2	20%	39%	41%	22%	81%
<b>Disease control</b>						
<i>Evaluation of OMRI approved products</i>	2.0	32%	34%	34%	19%	86%
<b>Insect control</b>						
<i>Evaluation of OMRI approved products</i>	2.0	32%	36%	32%	19%	82%
<b>Weed control</b>						
<i>Evaluation of OMRI approved products</i>	1.9	41%	33%	27%	15%	74%
<i>Effects of cover crops on weeds</i>	1.9	36%	36%	28%	19%	76%
<i>Mechanical weed control options</i>	2.0	36%	31%	33%	16%	71%
<b>Other (specify below)</b>						
need higher prices, sourcing OMRI approved or allowable nutrients continues to be difficult and expensive, beneficial insects, consumer education & organic markets, plant health studies						

## Other Crops

All Vegetables - DEER! fields in flood plain, 10 ft. fence not an option  
Asparagus - aphids, morning glory, weed control  
Basil - Japanese beetles  
Black Raspberries - longevity/disease issues in organic at same site for years  
Black raspberries - thrips and morning glories.  
Blueberries - bird control (2 times)  
Blueberries - size - can't get the size  
Blueberries - fertility  
Blueberries - squirrels  
Blueberries - organic weed control  
Butternut squash - no till weed control  
Brambles - weed control (3 times), gray mold, birds, thrips, nutrient management  
Brambles - Organic Weed control  
Broccoli and Cauliflower - downy mildew  
Cantaloupe and watermelon - bugs and wilt  
Celery - heart rot  
Cucurbits - how to keep viruses out of late cucurbits  
Eggplant- flea beetles  
High tunnel overwintering crops - chickweed control  
Leeks, Garlic, Onions - Allium leafminer  
Lettuce - slugs  
Onion - nutrition and diseases  
Organic Cucurbits - downy, powdery mildew, cucumber beetles  
Organic Onions - weed control  
Organic Potatoes - early die - off, low yield, verticillium  
Peppers - Phytophthora/bacterial speck  
Peppers - grubs and root maggots are the only problems, 1300 plants this year  
Potatoes - Potato leaf hopper  
Prices (6 times)  
Pumpkins/Winter Squash – wildlife control (deer and bear)  
Raspberries – winter health  
Red beets - organic weed control & production methods, conventional weed control  
Rhubarb - weed control  
Root crop problems are wire worms and grubs, spraying with nematodes  
Sweet potatoes- voles chewing the tops  
Sweet potatoes - best varieties and organic mice control  
Sweet Corn - rotational herbicides for no-till  
Strawberries – slugs  
Strawberries – black root rot (3 times)  
Strawberries – vine weevils (3 times)  
Strawberries - Anthracnose, (4 times)  
Strawberries - Anthracnose - organic  
Strawberries - Crown Rot  
Strawberries - Phytophthora  
Strawberries - organic weed control (3 times)  
Strawberries – weed control (3 times)  
Strawberries - no disease are on weed barrier  
Strawberries - rate of Sinbar effect on second year berries after renovation  
Strawberries - how to grow in gutters in greenhouse - varieties, fertilization  
Strawberries - post harvest care and cooling  
Strawberries - how to fertilize to avoid soft berries  
Strawberries - matted row weed control

Strawberries - chickweed in matted row  
 Strawberries - thistles  
 Strawberries – plasticulture strawberries (Flavorfest) wilting and eventually dying some in the fall after Strawberries - red stele  
 Strawberries - controlling slugs in plasticulture  
 Strawberries - Botrytis  
 Strawberries - (FlavorFest variety) and phytophthora (crown rot)  
 Strawberries - general production, weeds, varieties  
 Strawberries - fine-tuned nutritional program for strawberries  
 Strawberries - mites  
 Transplanting but mostly dying in the spring.  
 Tomatoes - Nutritional program for tomatoes  
 Weeds - especially winter annuals, yellow nutsedges, purple dead nettle, oxalis  
 Wild blackberry brambles - how to control

GENERAL TOPICS	SPECIFY CONCERN OR PROBLEM AREA WHERE RESEARCH IS NEEDED <i>(include what crops are involved if appropriate)</i>
<i>Irrigation water management</i>	Research needed - 3 times, state regulating, Soil moisture need, technical help needed - how to set up effectively, use pressure regulators, fertigation, how to calculate amount of water applied/how long to run to apply an acre-inch, tomato- moisture sensing and hi tunnel, tomatoes, peppers, basil, chlorination of water, keep control of our water, high tunnel, how well water hardness & pH affects fertility and soil health
<i>Alternative to chemical soil fumigation</i>	Research Needed – 3 times, natural fumigation, for garden syphilis control in pepper, strawberries, how to determine the best temp and humid for whole house treatment?, alternative to glyosphate between rows of plastic, could this help w/phytophthora?, systemic controls for disease and insects, tomatoes in greenhouse
<i>Greenhouse vegetable production</i>	Research Needed – 3 times, unheated and heated winter produce production, strawberries, soil borne diseases, soil health, varieties, tomatoes help – 2 times, what tools help to measure humidity?, nutrient management in soil grown tomatoes, dwarf squash plants for tunnel/greenhouse production, rotation
<i>Soilless growing systems</i>	Research needed- 3 times, strawberries, lettuce and cucumbers, grow bags vs potting soil, root rots in floating tray (tobacco style) systems, currently not using, but I am interested. how to get started?
<i>Bacterial Diseases</i>	Research Needed – 2 times, Only a problem on onions, cole crops, cucurbit crops, tomatoes and peppers, Tomato variety resistance, cole crops, tomato speck and spot, What is effective in organic products?, cucurbits, onion soft rot, bacterial speck and spot, info on fungicides
<i>Biological controls – greenhouse/tunnel</i>	Research Needed – 4 times, strawberries, tomatoes cucumber beetles, how to encourage predators or pathogens that may already be there, Do they work all the time and what works?, controls for pill bugs - a chemical spray?
<i>Biological controls - field</i>	Research Needed – 4 times. comprehensive guide needed, tomato - what works and what doesn't? both controls and simulants - cost effective?, cole crops, do they work all the time ?, how do we switch from conventional to biological?, late blight - early blight, corn earworm, strawberries

<i>Cover Crops</i>	Needs Research – 7 times, how to increase soil aggregation, using cover crops between plastic mulch rows, alternatives to rye and wheat, cover crop mixes, organic production cover crops, soil health effects, best cover crops for pumpkins, What does well after certain cover crops?
<i>Crop Rotation</i>	Research Needed – 3 times, 3-year rotation: green beans/grain/cloves, practical options to rotate thru strawberries, pumpkins, cole crops, organic production rotation, What kind of crop rotation works best in a field with phytophthora problem?, ways to rotate quicker
<i>Compost use</i>	Research Needed – 4 times, evaluation of economical products, 100% leaf mulch. Do we need to add nutrients?, identify certified sources and also determine amounts to apply yearly for different crops., research results to crops, who in PA will measure nutrient levels in compost?, any problems with used mushroom soils?
<i>Invasive Species – Allium leaf miner, BMSB, etc.</i>	Research Needed – 4 times, spotted lanternfly, allium leaf miner - leeks, garlic, onions, as soon as the next invasive shows up, short term insecticide recommendations keep a crop working for growers until they catch up, organic management
<i>Pollinators – honey bees</i>	Needs Research – 2 times, how to manage swarming, bee safe insecticides, effects of seed coating/treatment on fecundity, how to treat for mites and keep bees healthy, why so many bees die off every winter?, how to implement a program, research needed on declining honey bees., hand pollinators vs bees, more research needed to keep bee hives alive longer?, how to make my farm bee friendly?
<i>Pollinators – native bees</i>	Needs Research – 4 times, Need research into bee safe insecticides, effects of seed coating/treatment on fecundity, how to sustain them, Do they pollinate as good as honey bees?, How do I know if I have enough native bees?, identify bee friendly methods of insect control
<i>Soil Health</i>	Needs Research – 6 times, how to improve? – 2 times, evaluation of bio stimulants, nutrient balance and economics, soil health and organic production, increase OM, how to do cover crops help soil health, using manure versus fertilizer, improving organic matter economically, how does soil health correlates with Phytophthora, support PASA in soil health metrics, trace mineral connection to diseases
<i>Efficacy of phosphorus acid products</i>	Research needed – 3 times
<i>Practical food safety methods</i>	Research Needed – 5 times, dump FSMA rules and inspection, tomatoes, strawberries
<i>New crop or marketing opportunities</i>	Needs Research – 4 times, alternatives to current crops, new options, more research needs to be done about the pros and cons of eating on organic diet. do organic people have less risk of obesity and cancer, better mental health, etc? the results should be available.
<b>Other (specify below)</b>	
<i>Organic Phosphorous fertilizers</i>	high population of deer – ways to keep deer out other than fencing, deer control – over population, game commission won't allow trapping.