

Elements of IPM for Potatoes in New York State

Major PESTS		
Insects	Diseases	Weeds
Colorado potato beetle	bacterial soft rot & black leg	annual grasses
aphids	Fusarium dry rot	annual broadleaves
green peach	late blight	perennial grasses
potato	early blight	perennial broadleaves
melon	Verticillium wilt	nutsedge
buckthorn	Fusarium wilt	
foxglove	black dot root rot	
potato leafhopper	Rhizoctonia canker and black scurf	
flea beetle	Botrytis vine rot	
variegated cutworm	white mold	
subterranean and surface cutworms	golden & lesion nematodes	
European corn borer	pink rot	
wireworms	powdery scab	
symphylan	Pythium leak	
spider mites	Seed piece decay	
	Helminthosporium silver scurf	
	common scab	
	viruses, assorted	

A. Pre-planting decisions	Priority	Points
1) Crop rotation to control (or improve control of) early blight (2 years), verticillium wilt (3 years or longer), black dot (3 years or longer), canker and black scurf (3 years), white mold (3 years or longer), golden nematode, potato scab, silver scurf, Colorado potato beetle (1 year), European corn borer, wireworms (3-4 years). For some pests, longer distance between fields in the rotation increases effectiveness.	High	10
2) Use winter cover crop planted to improve soil, suppress weeds, and reduce compaction.	Medium	5
3) Credit nitrogen from previous crop or manure in fertility decision.	Medium	5
4) Minimum tillage in the spring to act as a reservoir for beneficial insects and to control soil erosion (muck limitations?)	Low	3

5) Destroy all waste potatoes/seed slivers	High	10
6) Use only certified seed potatoes	High	10
7) Select varieties resistant or tolerant to golden nematode, scab, late blight, early blight, black dot, Colorado potato beetle, potato leafhopper.	High	10
8) Properly calibrate seed piece cutter. Proper seedpiece handling.	High	10
9) To avoid bruising and soft rots, consider soil type (muck vs stoney) when choosing varieties.	Low	3
B. Planting Decisions		
1) Inspect seed on farm before planting by cutting and examining a representative sample for disease symptoms.	High	10
2) Adjust seed unloaders and planters to avoid bruising	Medium	5
3) Sanitize all seed/planting equipment between seed lots	High	10
4) Apply appropriate seed treatment fungicide and in-furrow treatments. Choose fungicide appropriate to soil type and disease history.	High	10
5) Warm seed before planting to variety/region specific temperatures as recommended	High	10
6) Plant at minimum soil temperature of 50 F and proper soil moisture.	Medium	5
7) Suberize seed properly	Medium	5
8) Adjust planting depth for soil type, drainage, temperature and variety	Medium	5
C. Soil and water Management		
1) Use proper drainage, tiling, and leveling.	High	10
2) Soil test for fertility/nutrient/pH levels at least once every 3 years for each field	High	10
3) Fertilize according to the soil test for N, P, and K and other nutrients and pH to amounts recommended by Cornell	High	10
4) Select irrigation systems by soil type, water availability and other factors	Medium	5
5) Use local information available from the Northeast Weather Association or other source for irrigation scheduling.	Medium	5
6) Maintain surface residue for erosion control.	Medium	5
D. Pest Monitoring and Forecasting		
1) Eliminate potato cull piles. Remove all volunteer potatoes from fields.	High	10
2) Scout at least once per week for insects and foliar diseases. (Colorado potato beetle, aphids, potato leafhopper, spider mites, flea beetle, European corn borer, late blight, early blight, viruses, white mold, Botrytis vine rot)	High	10
3) Scout once per season for wireworms (preplant) especially in high risk areas	Medium	5
4) Follow available Cornell thresholds for diseases and insects (CPB, aphids, PLH, spider mites, flea beetle, ECB)	High	10
5) Use trap crops, trenches (CPB), border mulches (CPB), natural enemy releases (CPB, aphids, PLH, ECB) or natural enemy refuges (CPB, aphids, PLH, ECB) to provide additional insect control.	Low	3

6) Use an on farm disease forecasting instrument or join a disease forecasting network (e.g. NEWA) to predict conditions appropriate for late blight and early blight.	High	10
7) Apply fungicides according to disease forecasts and forecasted weather.	High	10
8) Rogue virus infected plants from fields (especially for seed potato growers)	High	10
9) Spot kill late blight infected areas of fields with herbicides.	High	10
10) Band fungicides when crop is small.	Low	3
11) Modify fungicide choice according to late blight genotype that is present.	High	10
12) Modify fungicide applications with late blight status in NY on tomatoes, petunias and nightshade (information available from CCE)	High	10
13) Make a weed map/list 2 times annually	Medium	5
14) Choose herbicide/tillage strategy according to weed species and populations.	Medium	5
15) Manage problem weeds with rotational crops.	Medium	5
16) Experiment with banding of herbicides in combination with cultivation and hilling operations.	Low	3
17) Rotate fungicide, insecticide and herbicide modes of action to avoid or delay field resistance.	High	10
18) Chose effective labeled pesticides with the least environmental and beneficial organism impact (EIQ).	High	10
19) Calibrate sprayer at least once per season.	High	10
20) Keep complete records of soil tests, fertilizer applications, cultural practices, weed maps, scouting results, and pesticide applications.	High	10
21) Clean all equipment when moving between fields to prevent weed and disease spread	Medium	5
22) Use legal and appropriate techniques for sprayer cleanup, flushout, and container disposal	High	10
23) Adjust sprayer boom height as crop grows	High	10
24) All growers and employees receive Worker Protection Standard Training. Appropriate posting of fields is completed.	High	10
E. Harvest		
1) Minimize harvesting on hot days (>78F) or too cold days (<45F) for potatoes going into storage.	Medium	5
2) Minimize harvesting operations when soil is too wet or too dry.	Medium	5
3) Adjust equipment to minimize bruising. Have drops no more than 6 inches. Keep chains full. Conduct bruise evaluation (e.g. "superspud" or dyes) on equipment once per year — particularly when changes are made	High	10
4) Sanitize storage area and/or pallet boxes.	High	10
5) Avoid harvesting from wet spots in the field OR keep potatoes harvested from wet spots separated in storage.	Low	3

F. Post Harvest/Storage		
1) Maintain proper storage conditions (>90% RH) and allow adequate curing period to promote wound healing. Ensure adequate ventilation for the storage	High	10
2) Monitor and manage moisture and temperature to prevent condensation on the top of the pile that would lead to storage diseases	High	10
3) Use sugar testing to determine a temperature management plan.	Low	3
4) Use refrigeration to take field heat out especially for early season harvest	Low	3
5) Control sprouting with appropriate inhibitors or temperature	High	10
6) Note disease problems from any fields or as bins are loaded. Keep lots with any signs of disease separated from healthy lots.	High	10

Total points available = 454

80% of points = 363

REFERENCES...

Specific information about the use of these IPM elements can be found in the following publications:

[Integrated Crop and Pest Management Guidelines for Commercial Vegetable Production.](#)

[A Method to Measure the Environmental Impact of Pesticides.](#) 1992. New York Food and Life Sciences Bulletin Number 139.

The above reference material can be obtained from county Cornell Cooperative Extension offices