

Pythium Diseases of Vegetable Crops

Kentucky Pest News, April 9, 2024

Kimberly Leonberger, Plant Pathology Extension Associate, and Nicole Gauthier, Extension Plant Pathologist

Pythium diseases can affect many vegetable crops. Vegetables produced in structures, such as greenhouses or high tunnels, may be at an increased risk for disease losses once the pathogen is introduced. Infections may impact above and below ground plant parts, resulting in plant decline or fruit rot. Cultural management strategies and fungicides may be used to limit the impact of Pythium diseases.

Pythium Disease Facts

- Pythium diseases can impact plant roots, stems, and crowns. Root infections result in brown, rotting roots (Figure 1), while stem infections appear as lesions that girdle stems or crowns. Both types of diseases can result in wilting, stunting, reduced vigor, yield reduction, nutrient deficiency-like symptoms, and plant death. Early plant infections cause damping-off.
- Pythium diseases can also cause damage to fruit. Symptoms include sunken, wet, or slimy lesions. Over time, a white, cottony growth can cover infected portions of fruit (Figure 2). Disease development frequently occurs where fruit are in contact with soil. Disease development can occur in the field or in storage.
- Wet soils from excess irrigation or rainfall are conducive to disease development.
- Infested soil, water, tools, and plant debris can harbor disease causing pathogens.
- Caused by multiple species of *Pythium*, a fungus-like pathogen called a water mold.



Figure 1: Brown, rotting roots are a symptom of Pythium infection. (Photo: Penn State Department of Plant Pathology & Environmental Microbiology Archives, Penn State University, Bugwood.org)



Figure 2: Fruit infected with Pythium develops a white, cottony growth. (Photo: Cheryl Kaiser, UK)

Todd County Extension | 240 Pond River Road | Elkton, KY 42220 | Phone: 270-265-5659 |
Email: traci.johnson@uky.edu | todd.ca.uky.edu

Pythium Diseases (continued)

Pythium Management Options

- Improve soil drainage.
- Avoid overwatering.
- Avoid introduction of natural soil into hydroponic systems.
- Use clean, new soil for seeding and transplanting.
- Clean and sanitize pots, tools, and structures.
- Avoid movement of infested soil. Work in clean fields first and infested sites last to avoid spread.
- Wash and disinfect tools, equipment, shoes, and clothing after working in infested fields, greenhouses, or tunnels.
- Apply a mulch layer to limit contact between fruit and soil.
- Infected fruit may not show symptoms at harvest, but disease may develop in storage. Damaged, wounded, and diseased materials should be discarded.
- Use approved fungicides labeled for *Pythium* spp. Commercial growers can find information on fungicides in the [Vegetable Production Guide for Commercial Growers \(ID-36\)](#) and the [Southeast U.S. Vegetable Crop Handbook](#). Information on fungicides available to homeowners is available in [Home Vegetable Gardening Guide \(ID-128\)](#).



Private Pesticide Applicator Training

Our next Private Pesticide Applicator Training is on Thursday, May 9th, at 8:30 a.m. No registration is needed.

EVENTS

May 9

Private Applicator Training
Todd County Office, 8:30 AM
Elkton, KY

May 14

Wheat Field Day, 9:00 AM–Noon
UKREC, Princeton, KY

July 23

Corn, Soybean & Tobacco Field Day
UKREC, Princeton, KY

August 5

Rinse & Return for Pesticide
Containers, 9:00 – 11:00 AM
Todd County Road Department
411 Streets Avenue, Elkton, KY

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240 Pond River Road
Elkton, KY 42220
270-265-5659
traci.johnson@uky.edu

Submitting Plants for Diagnostics

UK Extension offers diagnostic services important to farmers. Plants can be submitted to the lab for pest identification and management recommendations. Diagnostic services also include insect and weed identification, which can often be done at the county extension office. This is an excellent service that's free of charge to residents.

Instructions for submitting plants for diagnostics:

- Plants should be collected/dug immediately before being brought to the Extension Office and kept in a cool, dry location until delivered.
- We would like to get your plant samples on Monday or Tuesday. Once we receive them, we ship these to UK's diagnostic lab. Plant samples are ideally shipped on Monday or Tuesday to ensure they arrive at the UK lab during the same week. Again, the goal is to get the sample quickly to the diagnostic lab before it begins to deteriorate.
- Getting the sample to the lab intact and fresh increases accuracy of diagnosis. Some diseases are not easily confirmed by visual symptoms. In that case, culturing the disease and allowing it to grow is needed to confirm its identity. Doing that requires fresh, living plants or plant materials.

Powdery Mildew



Powdery Mildew was recently noted in Todd County.

By the time powdery mildew has progressed to this level of infection, the grower has two choices: dispose of the plants in the trash or start an aggressive fungicide spray program to attempt to save these plants.

When diseased plants are thrown out, they need to be put in the trash or put far enough away that disease spores cannot continue to infect crop plants in or outside the greenhouse.

Once powdery mildew has been discovered in the greenhouse, growers should start spraying with a fungicide to prevent powdery mildew from spreading to other plant species.

Call the Extension Office for spray guides for ornamentals or vegetables. 270-265-5659

What's New...

I am offering e-mail news notifications for anyone interested. These will go out 2 – 3 times per month to update Todd County residents on important farm and home garden news and events. If you'd like to receive news by email – drop me a line at traci.johnson@uky.edu.

I'd also like your ideas on the types of farm and home garden classes you'd like to see at the Extension Office.

Unwanted Ag Chemical Collections Program – Kentucky Department of Agriculture

The Kentucky Department of Agriculture offers a pick-up program for unwanted agricultural pesticides. The program does not include items like motor oils, cleaners, paint, antifreeze, or industrial chemicals. There is NO COST to farmers to dispose of unwanted agricultural pesticides.

Kentucky Department of Agriculture field representatives will come to your farm to package, load and transport the unwanted chemicals from your farm. Once the unwanted chemicals leave the farm they are taken to an approved landfill or incinerator for proper disposal, reducing or eliminating the potential for pollution to the land and waters of Kentucky. The program is free – call 502-573-0282 to get on the list for pickup.

Todd County Ag Census

The 2022 Census of Agriculture was released recently. Some of the numbers that stood out:

- Reported land in farms was 187,183 acres in 2022. This represents an 11% increase since the last ag census in 2017. In 2017, land in farms here was reported at 167,953 acres.
- While Todd County had an increase in land in farms, Kentucky experienced farmland loss overall, from roughly 12.9 million acres of farmland in 2017 to roughly 12.4 million acres in 2022.
- In 2022, Todd County ranked 2nd in the state for vegetable production, 3rd in the state for hogs and pigs; 4th in the state for tobacco; and 6th in the state for milk.

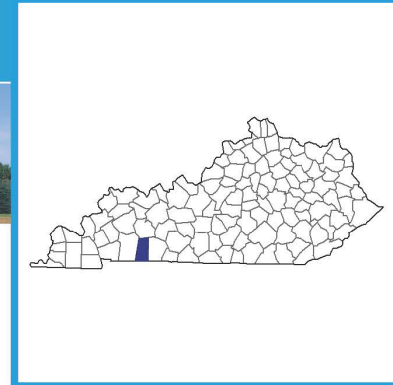
Read on to learn more.



Traci Johnson
Agriculture & Natural Resources Agent
240 Pond River Road, Elkton, KY
42220
270-265-5659
traci.johnson@uky.edu



2022 CENSUS OF AGRICULTURE County Profile



Todd County Kentucky

Total and Per Farm Overview, 2022 and change since 2017

	2022	% change since 2017
Number of farms	551	-7
Land in farms (acres)	187,183	+11
Average size of farm (acres)	340	+20
Total	(\$)	
Market value of products sold	224,451,000	+28
Government payments	2,414,000	+13
Farm-related income	7,748,000	-5
Total farm production expenses	154,983,000	+17
Net cash farm income	79,631,000	+48
Per farm average	(\$)	
Market value of products sold	407,353	+38
Government payments ^a	11,332	+36
Farm-related income ^a	25,657	+24
Total farm production expenses	281,276	+26
Net cash farm income	144,520	+59

3 Percent of state agriculture sales

Share of Sales by Type (%)

Crops	55
Livestock, poultry, and products	45

Land in Farms by Use (acres)

Cropland	139,477
Pastureland	13,359
Woodland	28,144
Other	6,203

Acres irrigated: 450

(Z)% of land in farms

Land Use Practices (% of farms)

No till	34
Reduced till	16
Intensive till	21
Cover crop	17

Farms by Value of Sales

	Number	Percent of Total ^b
Less than \$2,500	170	31
\$2,500 to \$4,999	26	5
\$5,000 to \$9,999	47	9
\$10,000 to \$24,999	52	9
\$25,000 to \$49,999	36	7
\$50,000 to \$99,999	35	6
\$100,000 or more	185	34

Farms by Size

	Number	Percent of Total ^b
1 to 9 acres	14	3
10 to 49 acres	143	26
50 to 179 acres	201	36
180 to 499 acres	108	20
500 to 999 acres	35	6
1,000+ acres	50	9



Market Value of Agricultural Products Sold

	Sales (\$1,000)	Rank in State ^c	Counties Producing Item	Rank in U.S. ^c	Counties Producing Item
Total	224,451	10	120	730	3,078
Crops	124,004	7	120	688	3,074
Grains, oilseeds, dry beans, dry peas	101,803	9	116	615	2,917
Tobacco	13,286	4	78	21	267
Cotton and cottonseed	-	-	-	-	647
Vegetables, melons, potatoes, sweet potatoes	3,429	2	119	495	2,831
Fruits, tree nuts, berries	449	13	118	918	2,711
Nursery, greenhouse, floriculture, sod	2,844	9	111	625	2,660
Cultivated Christmas trees, short rotation woody crops	-	-	32	-	1,274
Other crops and hay	2,193	50	120	1,364	3,035
Livestock, poultry, and products	100,447	12	120	678	3,076
Poultry and eggs	58,336	9	120	311	3,027
Cattle and calves	10,743	37	120	1,224	3,047
Milk from cows	11,677	6	70	439	1,770
Hogs and pigs	19,211	3	115	333	2,814
Sheep, goats, wool, mohair, milk	91	54	117	1,490	2,967
Horses, ponies, mules, burros, donkeys	360	35	111	758	2,907
Aquaculture	-	-	24	-	1,190
Other animals and animal products	29	51	115	1,447	2,909

Producers ^d	948	Percent of farms that:	Top Crops in Acres ^e
Sex		Have internet access	57
Male	656		
Female	292		
Age		Farm organically	3
<35	152		
35 – 64	546		
65 and older	250		
Race		Sell directly to consumers	4
American Indian/Alaska Native	2		
Asian	1		
Black or African American	11		
Native Hawaiian/Pacific Islander	-		
White	934	Hire farm labor	31
More than one race	-		
Other characteristics		Are family farms	94
Hispanic, Latino, Spanish origin	3		
With military service	44		
New and beginning farmers	282		
			Livestock Inventory (Dec 31, 2022)
			Broilers and other meat-type chickens
			342,033
			Cattle and calves
			19,568
			Goats
			79
			Hogs and pigs
			24,564
			Horses and ponies
			876
			Layers
			2,266,614
			Pullets (D)
			Sheep and lambs
			632
			Turkeys (D)

^a Average per farm receiving. ^b May not add to 100% due to rounding. ^c Among counties whose rank can be displayed. ^d Data collected for a maximum of four producers per farm. ^e Crop commodity names may be shortened; see full names at www.nass.usda.gov/go/cropnames.pdf. ^f Position below the line does not indicate rank. (D) Withheld to avoid disclosing data for individual operations. (NA) Not available. (Z) Less than half of the unit shown. (-) Represents zero.