DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

ARKANSAS NEMATODE DIAGNOSTIC LABORATORY

2023 ANNUAL REPORT

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The Arkansas Nematode Diagnostic Laboratory is located on the campus of the University of Arkansas System Southwest Research and Extension Center, Hope, AR. Plant-parasitic nematodes are an economically important pest that affects many row crops, horticultural crops, golf courses, and trees and shrubs in Arkansas. The Arkansas Nematode Diagnostic Laboratory offers bioassay and quantification services. The nematode assay samples are submitted from various sources, including county extension agents, agricultural consultants, commercial operations, research and extension faculty, industry representatives, and regulatory inspectors.

A total of 2,450 (4,446 vials) samples were processed in 2023 (Fig. 1). Soil samples were received from 6 states other than Arkansas (Fig. 2). Within Arkansas, samples were received from 35 of the 75 counties in the state (Fig. 3). The majority of the samples received were from agronomic crops. The largest percentage of samples processed were from corn (42%), followed by soybean (26%), and cotton (13%); horticultural crops, turf, and regulatory samples made up the remainder of the samples (32%) (Fig. 4). This is the first time in the history of the lab that neither soybean nor cotton has been the top crop. Also, the percentage of turf samples received was much higher this year (11%) compared to last year (2%). This year was another atypical one in that the most samples were received in the second quarter of the year rather than the fourth (Fig. 5). Sample distribution was uneven among quarters one, two, three, and four at 7%, 47%, 9%, and 37%, respectively. Samples were processed on 26 different host species or categories and 17 genera of nematode were detected (Table 1). Greenhouse screening for root-knot resistance was provided for 387 pots of soybean.

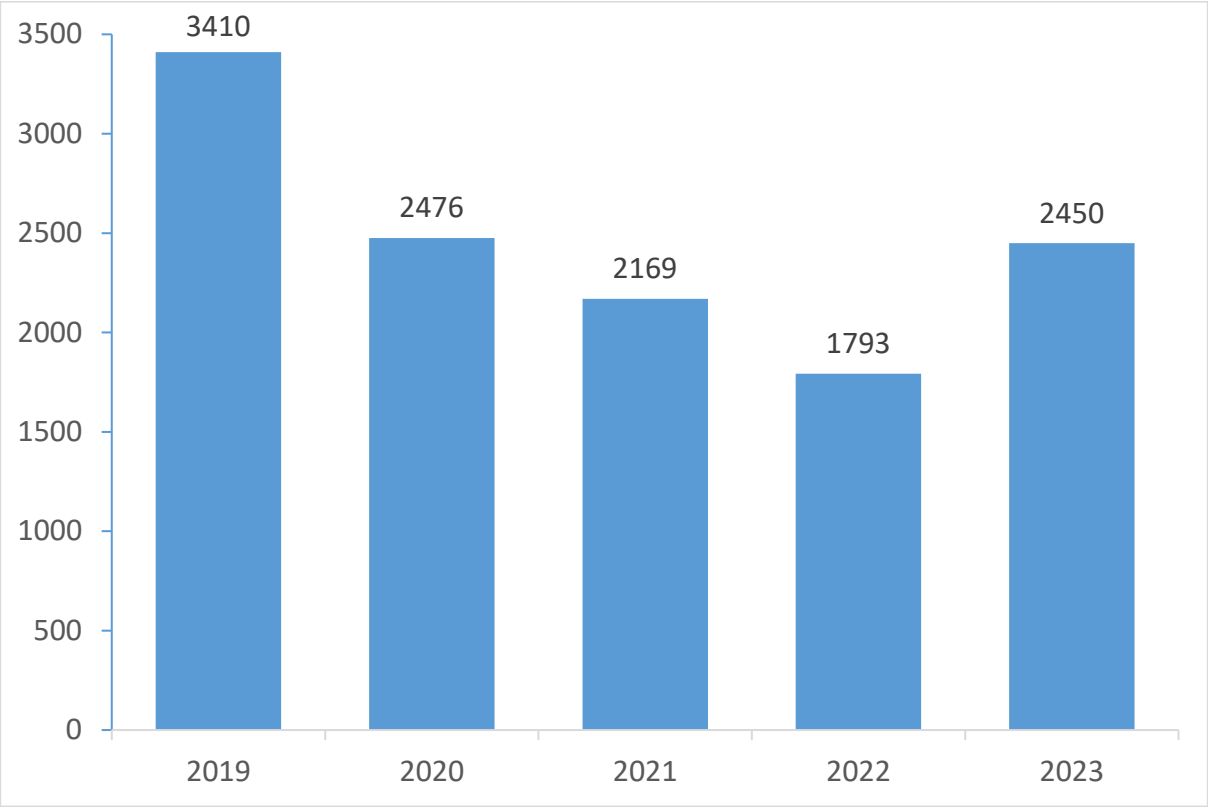
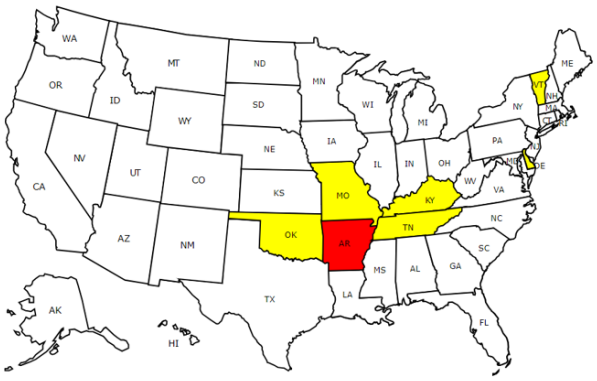


Figure 1. Nematode samples processed by Arkansas Nematode Diagnostic Laboratory, 2019-2023.

State	Samples Rcvd
Arkansas	2,221
Delaware	27
Kentucky	14
Missouri	14
Oklahoma	7
Tennessee	163
Vermont	4
TOTAL	**2,450**

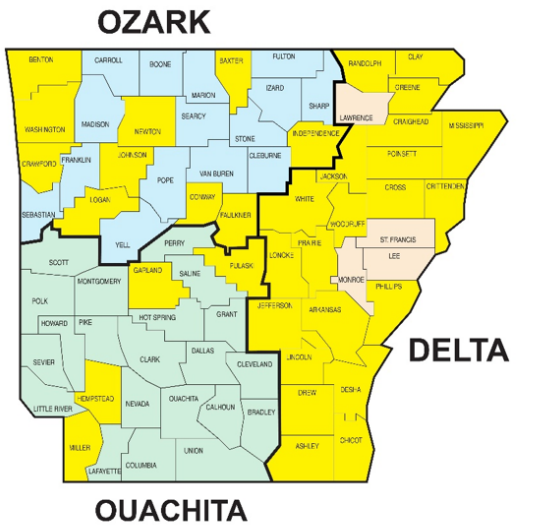


From Arkansas: 90%

From Other States: 10%

Figure 2. Nematode samples processed by state, Arkansas Nematode Diagnostic Laboratory, 2023.

County	No.	County	No.
Arkansas	23	Jackson	27
Ashley	4	Jefferson	37
Baxter	16	Johnson	33
Benton	3	Lincoln	25
Chicot	62	Logan	4
Clay	28	Lonoke	1003
Conway	1	Miller	3
Craighead	92	Mississippi	53
Crawford	19	Newton	1
Crittenden	19	Phillips	8
Cross	10	Poinsett	30
Desha	276	Prairie	2
Drew	29	Pulaski	1
Faulkner	3	Randolph	11
Garland	3	Washington	250
Greene	12	White	85
Hempstead	21	Woodruff	26
Independence	2		



Samples were submitted from 35 of 75 counties in 2023

Figure. 3. Nematode samples submitted by county, Arkansas Nematode Diagnostic Laboratory, 2023.

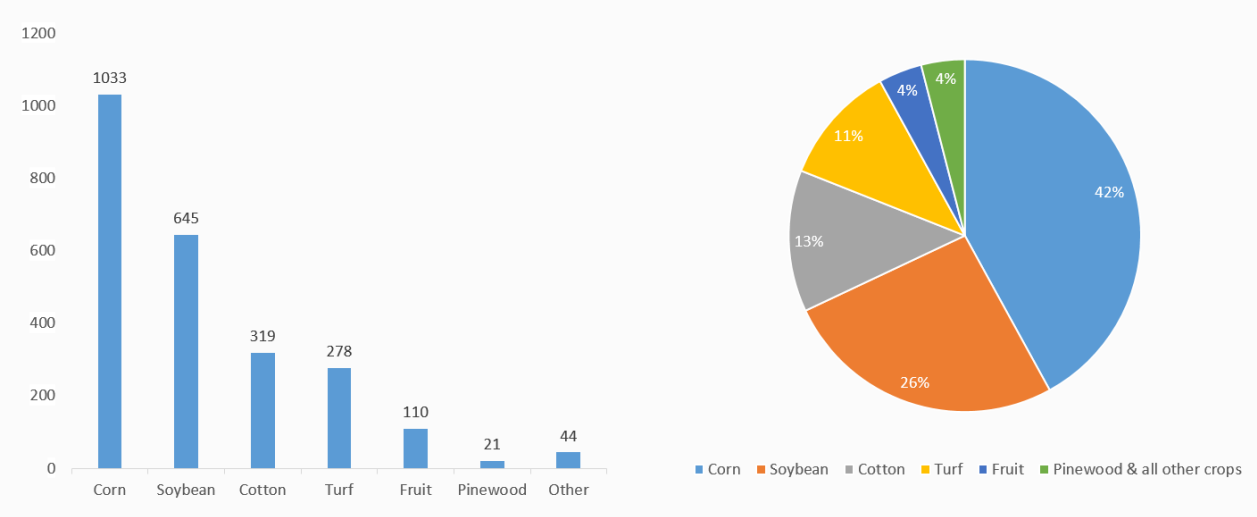


Figure 4. Number and percentage of nematode samples by crop, Arkansas Nematode Diagnostic Laboratory, 2023.

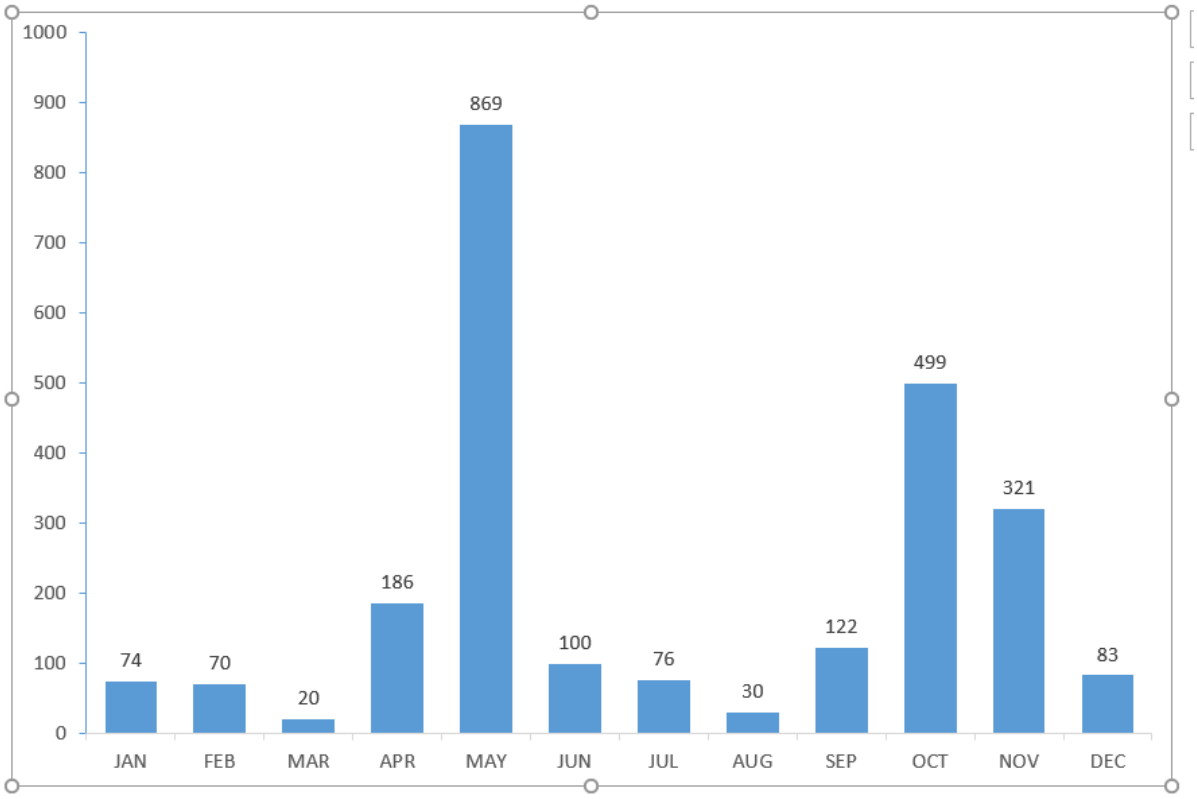


Figure 5. Nematode samples received by month, Arkansas Nematode Diagnostic Laboratory, 2023.

Table 1. Number of samples and diagnosis by host and 26type, Arkansas Nematode Diagnostic Laboratory, 2023.		
Bentgrass (*Agrostis* sp./spp.) – 1		
	Free Living	1
	Lance (*Hoplolaimus* sp./spp.)	1
Bermudagrass (*Cynodon dactylon*) – 8		
	Free Living	8
	Ring (*Mesocriconema* sp./spp.)	7
	Root-knot (*Meloidogyne* sp./spp.)	3
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	7
	Stubby-root (Paratrichodorus sp./spp.)	1
	Stunt (Tylenchorhynchus sp./spp.)	1
Blackberry (*Rubus* sp./spp) – 58		
	Cyst (*Heterodera* sp./spp.)	1
	Dagger (*Xiphenema* sp./spp.)	50
	Free Living	58
	Lesion (*Pratylenchus* sp./spp.)	36
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	54
	Stubby-root (Paratrichodorus sp./spp.)	30
	Stunt (Tylenchorhynchus sp./spp.)	16
Blueberry (*Vaccinium* sp./spp.) – 21		
	Dagger (*Xiphenema* sp./spp.)	5
	Free Living	21
	Lance (Hoplolaimus sp./spp.)	1
	Lesion (*Pratylenchus* sp./spp.)	9
	Root-knot (*Meloidogyne* sp./spp.)	1
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	3
	Stubby-root (Paratrichodorus sp./spp.)	2
	Stunt (Tylenchorhynchus sp./spp.)	3
Corn (*Zea mays*) – 1,033		
	Cyst (*Heterodera* sp./spp.)	111
	Dagger (*Xiphenema* sp./spp.)	10
	Free Living	1,025
	Lance (Hoplolaimus sp./spp.)	32
	Lesion (*Pratylenchus* sp./spp.)	376
	Needle (Longidorus sp./spp.)	15
	Pin (*Paratylenchus* sp./spp)	1
	Ring (*Mesocriconema* sp./spp.)	2
	Root-knot (*Meloidogyne* sp./spp.)	147
	Sheath (*Hemicycliophora* sp./spp.)	5
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	239
	Stubby-root (*Paratrichodorus* sp./spp.)	146
	Stunt (*Tylenchorhynchus* sp./spp.)	538

Cotton (*Gossypium hirsutum*) – 319		
	Cyst (*Heterodera* sp./spp.)	12
	Dagger (*Xiphenema* sp./spp.)	49
	Free Living	310
	Lance (*Hoplolaimus* sp./spp.)	26
	Lesion (*Pratylenchus* sp./spp.)	58
	Needle (Longidorus sp./spp.)	1
	Reniform (*Rotylenchulus reniformis*)	96
	Ring (*Mesocriconema* sp./spp.)	3
	Root-knot (*Meloidogyne* sp./spp.)	132
	Sheath (*Hemicycliophora* sp./spp.)	1
	Sheathoid (*Hemicriconemoides* sp./spp.)	1
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	122
	Stubby-root (*Paratrichodorus* sp./spp.)	77
	Stunt (*Tylenchorhynchus* sp./spp.)	61
Cover crop (species not identified) – 4		
	Free Living	4
Cucumber (*Cucumis* sp./spp.) – 1		
	Free Living	1
	Root-knot (*Meloidogyne* sp./spp.)	1
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	1
Eastern Red Cedar (*Juniperus virginiana*) – 21		
	No Nematode Found	21
Fallow – 6		
	Free Living	5
	Lesion (*Pratylenchus* sp./spp.)	4
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	1
Garlic (*Allium sativum*) – 4		
	No Nematode Found	4
Grain sorghum (*Sorghum bicolor*) – 1		
	Free Living	1
	Lesion (*Pratylenchus* sp./spp.)	1
	Stunt (*Tylenchorhynchus* sp./spp.)	1
Muscadine Grape (*Vitis rotundifolia*) – 3		
	Dagger (Xiphenema sp./spp.)	3
	Free Living	3
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	3
	Stunt (*Tylenchorhynchus* sp./spp.)	1
Peach (*Prunus persica*) – 24		
	Dagger (*Xiphenema* sp./spp.)	2
	Free Living	24
	Lesion (*Pratylenchus* sp./spp.)	20
	Root-knot (*Meloidogyne* sp./spp.)	2
	Stunt (*Tylenchorhynchus* sp./spp.)	1
Peanut (*Arachis hypogaea*) – 5		

	Dagger (Xiphenema sp./spp.)	1
	Free Living	5
	Root-knot (*Meloidogyne* sp./spp.)	1
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	1
Peony (*Paeonia sp./spp.)* – 2		2
	Free Living	2
Pumpkin (*Cucurbita pepo*) – 2		
	Free Living	2
	Root-knot (*Meloidogyne* sp./spp.)	1
	Stunt (*Tylenchorhynchus* sp./spp.)	1
Raspberry (*Rubus idaeus*) – 1		
	Dagger (*Xiphenema* sp./spp.)	1
	Free Living	1
	Root-knot (*Meloidogyne* sp./spp.)	1
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	1
Rice (*Oryza sativa*) – 1		
	Cyst (*Heterodera* sp./spp.)	1
	Free Living	1
	Root-knot (*Meloidogyne* sp./spp.)	1
Soybean (*Heterodera glyclines*) – 645		
	Cyst (*Heterodera* sp./spp.)	104
	Dagger (*Xiphenema* sp./spp.)	30
	Free Living	631
	Lance (*Hoplolaimus* sp./spp.)	56
	Lesion (*Pratylenchus* sp./spp.)	299
	Needle (Longidorus sp./spp.)	17
	Reniform (*Rotylenchulus reniformis*)	45
	Root-knot (*Meloidogyne* sp./spp.)	306
	Sheath (Hemicycliophora sp./spp.)	8
	Sheathoid (*Hemicriconemoides* sp./spp.)	1
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	292
	Sting (*Belonolaimus* sp./spp.)	1
	Stubby-root (*Paratrichodorus* sp./spp.)	145
	Stunt (*Tylenchorhynchus* sp./spp.)	302
St. Augustinegrass (*Stenotaphrum secundatum*) – 2		
	Free Living	2
	Ring (*Mesocriconema* sp./spp.)	1
	Root-knot (*Meloidogyne* sp./spp.)	2
	Spiral (*Helicotylenchus* sp./spp. and Scutellonema sp./spp.)	38
	Stunt (*Tylenchorhynchus* sp./spp.)	2
Turfgrass, (species not identified) – 262		
	Dagger (*Xiphenema* sp./spp.)	4
	Free Living	255
	Lance (*Hoplolaimus* sp./spp.)	62
	Lesion (*Pratylenchus* sp./spp.)	10
	Needle (Longidorus sp./spp.)	1

	Pin (*Paratylenchus* sp./spp)	2
	Ring (*Mesocriconema* sp./spp.)	71
	Root-knot (*Meloidogyne* sp./spp.)	37
	Sheathoid (*Hemicriconemoides* sp./spp.)	25
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	58
	Sting (*Belonolaimus* sp./spp.)	2
	Stubby-root (*Paratrichodorus* sp./spp.)	40
	Stunt (*Tylenchorhynchus* sp./spp.)	22
Vegetables (mixed species) – 7		
	Dagger (Xiphenema sp./spp.)	1
	Free Living	7
	Lesion (*Pratylenchus* sp./spp.)	1
	Pin (*Paratylenchus* sp./spp)	1
	Ring (*Mesocriconema* sp./spp.)	2
	Root-knot (*Meloidogyne* sp./spp.)	4
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	6
	Stubby-root (*Paratrichodorus* sp./spp.)	1
Wheat (*Triticum* sp./spp.) – 4		
	Cyst (*Heterodera* sp./spp.)	1
	Free Living	4
	Lesion (*Pratylenchus* sp./spp.)	3
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	2
Zoysiagrass (*Zoysia japonica* sp./spp.) – 5		
	Dagger (Xiphenema sp./spp.)	1
	Free Living	5
	Lance (*Hoplolaimus* sp./spp.)	1
	Lesion (*Pratylenchus* sp./spp.)	2
	Needle (Longidorus sp./spp.)	1
	Ring (*Mesocriconema* sp./spp.)	2
	Root-knot (*Meloidogyne* sp./spp.)	3
	Spiral (*Helicotylenchus* sp./spp. and *Scutellonema* sp./spp.)	2
	Stunt (*Tylenchorhynchus* sp./spp.)	2
Crop Not Specified – 10		
	Aphelenchoides sp./spp.	1
	Dagger (Xiphenema sp./spp.)	2
	Free Living	7
	Lesion (*Pratylenchus* sp./spp.)	4
	Ring (*Mesocriconema* sp./spp.)	1
	Spiral (Helicotylenchus sp./spp. and Scutellonema sp./spp.)	1
	Stubby-root (*Paratrichodorus* sp./spp.)	1
	Root-knot (*Meloidogyne* sp./spp.)	3