ARKANSAS COUNTY CORN NEMATODE SURVEY

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Need/Goal

Arkansas County boasts a rich farming history, with corn emerging as a major crop in our region over the past decade. Despite its relatively recent prominence, corn has swiftly become integral to our agricultural landscape, significantly boosting the state's output. As a vital component of our crop rotation system alongside rice and soybeans, corn offers a plethora of benefits, including enhanced weed control through additional herbicide action modes. However, the threat of pests, such as nematodes, looms large, posing a significant risk to yields and often resulting in misattributed reductions.

Arkansas County Corn Acres Since 2009

Year	Corn Acres	County Rank in Arkansas
2023	56,400	1
2022	53,900	1
2021	53,400	2
2020	42,300	1
2019	54,000	2
2018	44,500	1
2017	46,200	1
2016	46,400	2
2015	30,200	2
2014	33,000	2
2013	58,500	3
2012	38,700	5
2011	22,500	10
2010	6,400	20
2009	8,800	17

Objective

To determine if corn nematode levels are a risk to county corn production.

Materials and Methods

- Fields were randomly selected across the county with corn in the V3 to V4 growth stage
- A regular tube-type soil probe, was used to collect the samples. Samples were collected 6-8" deep near the root zone.
- 10-20 cores were collected in a zig zag pattern with the cores being combined and 1 pint of soil was placed in a plastic bag for shipment to the lab.
- Samples were sent to the Arkansas Nematode Diagnostic Laboratory in Hope, AR for analysis.

Survey Results

Year	Sample Number	Lance	Dagger	Ring	Root-knot	Lesion	Spiral	Stubby-root	Stunt
2020	1	0	0	0	0	0	808	0	0
2020	2	0	0	0	0	0	692	0	0
2020	3	0	0	0	0	0	38	0	0
2020	4	0	0	0	0	8	231	0	0
2020	5	0	0	0	0	0	200	0	0
2020	6	0	0	0	0	0	38	0	0
2020	7	0	0	0	0	0	423	0	0
2020	8	0	0	0	0	0	85	0	0
2020	9	0	0	0	0	31	192	0	0
2020	10	0	0	0	0	0	477	0	0
2020	11	0	0	0	0	0	162	0	0
2020	12	0	0	0	0	461	231	0	423
2020	13	0	0	0	0	192	130	38	0
2020	14	53	0	0	0	76	38	0	115
2020	15	0	0	0	0	0	38	0	0
2020	16	0	0	0	0	0	85	0	0
2020	17	8	0	0	0	8	38	0	0
2020	18	0	0	0	0	0	0	0	38
2020	19	0	0	0	0	0	192	0	0
2020	20	0	0	0	0	8	77	0	0

Year	Sample Number	Lance	Dagger	Ring	Root-knot	Lesion	Spiral	Stubby-root	Stunt
2021	1	0	0	0	0	0	231	0	0
2021	2	0	0	0	0	8	200	0	0
2021	3	0	0	0	0	31	308	0	0
2021	4	0	0	0	0	0	316	0	0
2021	5	0	0	8	0	0	77	0	0
2021	6	38	0	0	0	0	162	0	0
2021	7	0	0	0	0	0	0	0	200
2021	8	38	0	0	0	0	154	0	0
2021	9	0	0	0	0	46	200	0	0
2021	10	0	0	0	0	0	53	0	38
2021	11	0	0	0	0	15	38	0	0
2021	12	0	0	0	0	0	146	0	0
2021	13	0	0	0	0	61	0	0	0
2021	14	0	0	0	0	31	192	0	0
2021	15	0	0	0	0	0	38	0	462
2021	16	38	0	0	0	0	115	0	0
2021	17	0	0	0	0	0	85	0	38
2021	18	38	0	0	0	76	0	0	0
2021	19	8	0	0	0	0	77	0	0
2021	20	0	0	0	0	331	23	0	0
2021	21	0	0	0	0	0	0	0	0
2021	22	0	0	0	8	85	154	0	0
2021	23	0	0	0	0	8	115	0	0

Year	Sample Number	Lance	Dagger	Ring	Root-knot	Lesion	Spiral	Stubby-root	Stunt
2022	1	0	0	0	0	0	346	0	0
2022	2	0	0	0	0	0	138	0	0
2022	3	0	0	0	0	38	316	0	0
2022	4	0	0	0	0	0	192	38	0
2022	5	0	0	0	0	154	354	0	0
2022	6	0	0	0	0	0	970	0	0
2022	7	0	0	0	0	0	154	0	0
2022	8	0	0	0	0	62	154	0	38
2022	9	0	0	0	0	46	38	0	0
2022	10	15	0	0	0	62	115	0	0
2022	11	8	0	0	0	0	115	0	0
2022	12	23	0	0	0	77	77	0	0

Year	Sample Number	Lance	Dagger	Ring	Root-knot	Lesion	Spiral	Stubby-root	Stunt
2023	1	0	0	0	0	0	8	0	0
2023	2	0	0	0	0	0	277	0	0
2023	3	0	0	0	0	0	154	0	0
2023	4	0	0	0	0	0	38	0	0
2023	5	0	0	0	0	8	77	0	0
2023	6	0	0	0	0	0	1354	0	0
2023	7	0	0	0	0	0	308	0	0
2023	8	0	0	0	0	0	962	0	77
2023	9	0	0	0	0	0	0	0	0
2023	10	0	0	0	0	0	0	0	423
2023	11	0	0	0	0	0	0	0	0
2023	12	0	0	0	0	108	385	0	0
2023	13	0	0	0	0	0	207	0	0

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Economic Thresholds

04-2022

ARKANSAS NEMATODE DIAGNOSTIC LABORATORY

Nematodes of Economic Concern & Threshold Levels
For Cotton, Soybean, and Corn

Crop	Nematode	Economic Threshold[1]/ 100 cm^3 of soil
Cotton	Reniform	1,000/200[2]
	Root-knot	50
Soybean	Soybean Cyst	200
	Lesion	200
	Reniform	200
	Root-knot	60
Corn[3]	Columbia lance	100
	Dagger	200
	Ring	200
	Root-knot	300
	Lesion	500
	Spiral	500
	Sting	4
	Stubby-Root	40
	Stunt	500
All	Free Living	N/A[4]

[1]If above the economic threshold, yield loss is likely to occur. Yield loss is STRONGLY related to nematode population density. So the higher the population is above the threshold, the greater the potential for major economic loss. Consult your county agent or consultant for advice on nematode management. If below the economic threshold, continue to monitor the population and sample the field again in August-October to determine if an economic threshold has been reached.

[2]For cotton: The economic threshold is 200 for December-May and 1,000 for June-November.

[3]There are no thresholds established for corn in Arkansas. In other states, high population levels of the nematodes listed can be of economic concern in corn. These thresholds are for sandy soil. If the crop is in clay loam/clay soil, higher nematode populations can be tolerated.

[4]Free Living nematodes are not plant parasitic.

Conclusion

Over a period of four years, we processed 68 corn nematode samples. Out of these, five fields exhibited nematode levels exceeding the economic threshold. All five fields were infested with Spiral nematodes, which are more prevalent in heavier soils. The symptoms of Spiral nematode infestation are subtler compared to other nematodes and may include small root systems, root decay, and stunted plant growth. Despite these symptoms, Spiral nematodes are considered to pose a low economic risk to corn.

Based on these findings, the use of nematicides and seed-applied nematicides is not recommended in the county.

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