

ANALYSIS OF DOMINANCE PATTERNS AND ROOT– RHIZOSPHERE DISTRIBUTION OF DOG ROSE NEMATODES IN SURKHANDARYA REGION

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Abstract

This article re-analyzes existing phytohelminthological observations of nematodes associated with dog rose (*Rosa canina* L.) in Surkhandarya Region with particular attention to dominance and distribution within the root–rhizosphere system. Its purpose is to provide an evidence-based interpretation, identify limitations of the available records, and propose practical monitoring priorities. Dominance cannot be inferred from occurrence alone; standardized individual counts and separate host-specific records are required. Comparisons with published studies are used to develop methodological recommendations without presenting unverified experimental results.

Keywords

Rosa canina L., nematodes, Surkhandarya, rhizosphere, phytohelminthology, dominance.

Introduction

Identifying biological factors associated with the underground organs of medicinal plants is essential for their conservation. Dog rose is important both as a component of natural vegetation and as a source of medicinal raw materials. Nematodes include root-feeding parasites on the one hand and free-living groups associated with microbial activity on the other.

It is ecologically incorrect to treat different trophic groups as a single category of “pests.” Regional species inventories therefore need to be evaluated separately in terms of biological functions, associations with plants, and diagnostic reliability.

Research objective: To analyze dominance patterns and distribution of dog rose nematodes within the root–rhizosphere system of Surkhandarya Region using existing regional observations and verifiable international sources.

Materials and Methods

For this analysis, observations of nematodes from the roots and rhizosphere soil of wild medicinal plants in Surkhandarya were compared with relevant scientific publications from 2023–2024. Existing results were evaluated as material for secondary analysis, not as a new laboratory experiment.

Taxonomic analysis distinguishes species, genera, and higher systematic units. Ecological assessment considers nematode feeding habits, root associations, and the context of observation. Species occurrence, abundance, and damage to plants are treated as independent indicators.

For future primary investigations, standardized volumes of soil and root samples, replicated plots, seasonal observations, morphometric descriptions, and molecular identification where necessary are recommended. No new measurements, p-values, or percentages of treatment efficacy were calculated in this article.

Results

Records of occurrence across the studied medicinal plants indicate the presence of nematode taxa with different abundances. However, species-specific dominance in dog rose cannot be quantified without separate individual counts for this host.

These groups refer to the combined study dataset. They must not be interpreted as exact percentages for the dog rose rhizosphere alone.

1. Criteria for dominance

The issue of criteria for dominance demonstrates the need to distinguish accurately among taxa recorded in the root–soil system of dog rose. Although a species list defines the scope of observation, the ecological role, site of occurrence, and effects on plants of each taxon must be investigated separately. Therefore, scientific conclusions in this area should be based not merely on taxon names but on examined samples, diagnostic characters, and repeated observations.

In practical terms, it is advisable to establish a standardized recording form for this topic: the sampling date, geographical plot, soil moisture, plant developmental stage, visible root symptoms, and identified nematode taxon should be recorded separately. Such information prevents inappropriate generalizations in subsequent comparisons and makes ecological monitoring results reproducible.

2. Root and rhizosphere compartments

The issue of root and rhizosphere compartments demonstrates the need to distinguish accurately among taxa recorded in the root–soil system of dog rose. Although a species list defines the scope of observation, the ecological role, site of occurrence, and effects on plants of each taxon must be investigated separately. Therefore, scientific conclusions in this area should be based not merely on taxon names but on examined samples, diagnostic characters, and repeated observations.

3. Spatial differences

The issue of spatial differences demonstrates the need to distinguish accurately among taxa recorded in the root–soil system of dog rose. Although a species list defines the scope of observation, the ecological role, site of occurrence, and effects on plants of each taxon must be investigated separately. Therefore, scientific conclusions in this area should be based not merely on taxon names but on examined samples, diagnostic characters, and repeated observations.

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4. Effects of sampling intensity

The issue of effects of sampling intensity demonstrates the need to distinguish accurately among taxa recorded in the root–soil system of dog rose. Although a species list defines the scope of observation, the ecological role, site of occurrence, and effects on plants of each taxon must be investigated separately. Therefore, scientific conclusions in this area should be based not merely on taxon names but on examined samples, diagnostic characters, and repeated observations.

5. Seasonal variation

The issue of seasonal variation demonstrates the need to distinguish accurately among taxa recorded in the root–soil system of dog rose. Although a species list defines the scope of observation, the ecological role, site of occurrence, and effects on plants of each taxon must be investigated separately. Therefore, scientific conclusions in this area should be based not merely on taxon names but on examined samples, diagnostic characters, and repeated observations.

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6. Statistical reliability

The issue of statistical reliability demonstrates the need to distinguish accurately among taxa recorded in the root–soil system of dog rose. Although a species list defines the scope of observation, the ecological role, site of occurrence, and effects on plants of each taxon must be investigated separately. Therefore, scientific conclusions in this area should be based not merely on taxon names but on examined samples, diagnostic characters, and repeated observations.

Discussion

Discussion focus 1 criteria for dominance. International literature interprets nematode community composition as a dynamic system influenced by the host plant, soil, moisture, and management conditions. From this perspective, comparing species recorded in Surkhandarya with inventories from other regions is useful; however, differences in species richness cannot be equated directly with phytosanitary risk or soil degradation. Conclusions must be expressed cautiously when observation methods, sample numbers, or the depth of identification differ.

The scientific and practical significance of criteria for dominance is that separating control and experimental plots, collecting repeated samples, and documenting morphological characters will strengthen the evidentiary basis of subsequent research. In particular, for plant-parasitic species, plant symptoms, root damage, and nematode identification must be consistent with one another. This sequence helps ensure that recommendations have a biological basis.

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Conclusions

1. Species occurrence and numerical dominance are different indicators; valid dominance estimates require standardized counts and an explicit sampling denominator.
2. Distribution between root tissue and rhizosphere soil should be examined separately using comparable samples.
3. Evidence specific to dog rose should be interpreted separately from the results for the combined group of medicinal plants.
4. Future studies should use replicated sampling, diagnostic verification, and monitoring programs adapted to local conditions.

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