FIGHTING RENIFORM NEMATODES WITH *BRASSICA CARINATA*

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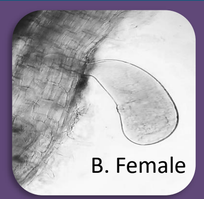
What is a nematode?

Nema=thread; tode=like

The most abundant animals on Earth	Colorless
Nematode	
Multicellular	Invertebrates

Some nematodes, as reniform nematode, are **pathogens of crops**, meaning that they can cause **significant losses in crop yield**

A. Juvenile



B. Female

Rotylenchulus reniformis (Reniform nematode, **RN**) affects different crops but is highly important in cotton

Crop Rotation

More environment-friendly strategy to manage RN than the traditional use of chemicals

Does not facilitate nematode population to increase

It acts as a non-host crop or has biofumigant properties

- Brassicas are considered biofumigant crops because of the presence of glucosinolates, but efficacy under field conditions may vary
- The emerging winter crop in the Southeast United States called *Brassica carinata* (carinata, Ca) could have the properties necessary to manage RN
- No previous studies have been done to evaluate if carinata may help manage RN

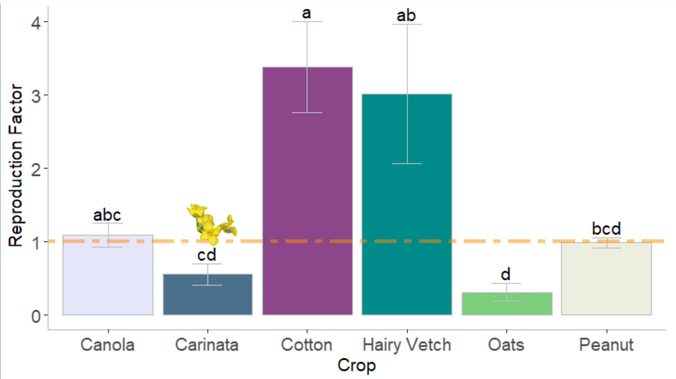
Why to consider carinata as a crop to manage reniform nematode?

Objective 1: To define the status of carinata as a reniform nematode host

Host: Plant in which the nematode lives on
Reproduction factor: final/initial population

Greenhouse experiment. Gainesville, FL.
Crops with known host status for RN were used to compare RN reproduction on carinata. The reproduction factor (indicating plant host status for RN. <1 =Non-host) was calculated two months after the nematode inoculation.

Carinata is a non-host crop of reniform nematode*

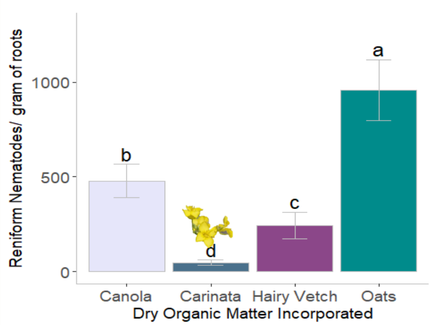


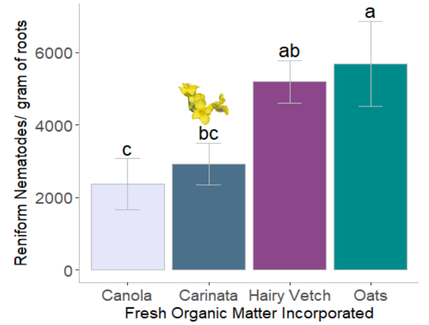
Objective 2: To compare the biofumigation, on reniform nematode, by carinata with those from other winter crops, under greenhouse conditions

Biofumigation: the use of a biological active compound of a plant againts a pathogen

Greenhouse experiment. Gainesville, FL.
winter crop shoot and root residues were applied at 2% dry or fresh tissue by weight relative to soil weight. Cotton was planted in each pot one week after the organic matter (OM) incorporation. RN juveniles and eggs were counted.

Carinata, fresh or dry tissue, incorporated into the soil reduced reniform nematode more than other winter crops under greenhouse conditions*

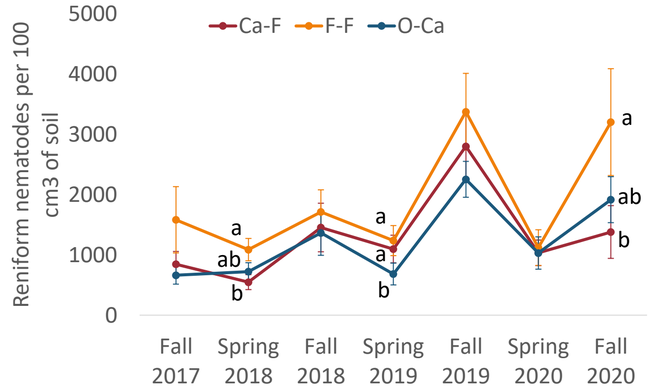




Objective 3: To determine the effect of carinata used as a winter rotation crop on reniform nematode

Field experiment. Quincy, FL.
A 4-year field crop rotation study
Winter crops: two-year rotations of: carinata-fallow, oats-carinata and fallow-fallow. Summer crops: corn-cotton-peanut-soybean rotation with all crops present each year
Nematodes were extracted from the soil by sugar-flotation and were counted

Reniform nematode population was lower when carinata was part of the winter rotation system*



*Mean separation: Fisher's protected LSD, p<0.05

Reniform nematode did not increase on carinata. The reproduction factor of RN carinata was <1 (poor host) and was separated from the crops defined as good hosts (cotton and hairy vetch)

In general, the number of reniform nematodes recovered from the cotton plants in which the dry tissue was incorporated was lower than from the plants in which the fresh tissue was applied

The number of RN was lower in the plants in which Ca was applied as a dry tissue, compared to the dry OM from the other crops used

Carinata can be consider as a winter crop to help in the management of reniform nematode in Florida

More research will be done to confirm the results

Acknowledgment

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