

# Fumigant and Nonfumigant Nematicides Labeled for Agronomic Crops in Florida<sup>1</sup>

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Plant-parasitic nematodes can cause severe yield loss of agronomic crops in Florida. Chemical products for managing plant-parasitic nematodes are called conventional nematicides. There are a few nematicides registered for use in Florida; however, some can only be used on one or two agronomic crops. Nematicides must be applied as indicated on the product label, including the crops listed and methods described. As an aid for Florida agricultural professionals, conventional, chemical-based nematicide products labeled and available for Florida agronomic crops at the time of publication are listed in Table 1.

Conventional nematicides can be divided into two categories: fumigants and nonfumigants. Fumigants are broad-spectrum pesticides where the active ingredient moves through the soil as a gas. Fumigants are not taken up by plants or bound by soil, so they do not have a long period of residual pesticidal activity. Nonfumigants are formulated in liquid or granular states and are moved through the soil by water. Nonfumigants may have activity against multiple pests, particularly if they contain more than one active ingredient, but generally, they have a narrower spectrum of activity than that of fumigants. Some but not all nonfumigant nematicides are systemic, meaning the active ingredient is taken up by the plant and translocated throughout the plant. Further information about how nematicides work can be found in EDIS publication ENY-041, *Movement and Toxicity of Nematicides in the Plant Root Zone*.

There are a variety of different methods by which nematicides are applied, and they must be applied as specified on the label. Fumigant nematicides, and some liquid nonfumigants, may be injected into the soil with a shank or similar equipment. Some nematicides may be applied through irrigation systems, a process called chemigation. Chemigation can only be done through drip irrigation systems for some nematicides, particularly fumigants, while some nematicides, particularly liquid nonfumigants, may be applied through overhead sprinkler irrigation systems. Some liquid nonfumigants may be sprayed onto foliage, onto soil, or into the planting furrow. Depending on the product, granular nematicides may be applied in-furrow, as a broadcast, in a band over the closed furrow, or in a band where the crop will be planted. They must be mechanically incorporated into the soil. Application methods and the activity spectrum for agronomic crop nematicides are summarized in Table 2.

Nematicides are also available as seed treatments for some seed-grown agronomic crops. Generally, the seeds will come pretreated with the nematicidal product, so growers do not have to determine if a product is labeled for a given crop. Seed treatments may protect early growth stages of the crop from nematodes, resulting in some yield increase, but are unlikely to have large impacts on yield or nematode population densities because nematicides applied as a seed treatment are not distributed widely in the soil.

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Table 1. Conventional fumigant and nonfumigant nematicides labeled for specific Florida agronomic crops. Contact: Zane Grabau, UF/IFAS Entomology and Nematology Department.<sup>1</sup>

	Nematicidal active ingredient(s) <sup>2</sup>	Product(s)	Crop							
			Corn	Cotton	Peanut	Potato	Soybean	Sorghum	Sugarcane	Tobacco
<b>Fumigants</b>	<b>Allyl isothiocyanate</b>	<b>Dominus</b>				yes				
	<b>Metam Potassium</b>	<b>K-Pam HL<sup>2</sup></b>	yes	yes	yes	yes	yes			yes
	<b>1,3-Dichloropropene</b>	<b>Telone II, InLine<sup>2</sup></b>	yes	yes	yes	yes	yes	yes	yes	yes
		<b>Telone C17, Telone C35, Pic Chlor 60EC<sup>3</sup></b>	yes	yes	yes	yes	yes	yes	yes	yes
	<b>Chloropicrin</b>	<b>Chloropicrin 99%<sup>2</sup></b>	yes	yes	yes	yes	yes	yes	yes	yes
	<b>Metam Sodium</b>	<b>Vapam HL<sup>3</sup></b>	yes	yes	yes	yes	yes			yes
<b>Nonfumigants</b>	<b>Aldicarb</b>	<b>AgLogic 15GG</b>		yes	yes					
	<b>Terbufos</b>	<b>Counter 20G</b>	yes					yes		
	<b>Ethoprop</b>	<b>Mocap 15G</b>	yes			yes			yes	yes
	<b>Ethoprop</b>	<b>Mocap EC</b>				yes				
	<b>Spirotetramat</b>	Movento				yes				
	Fluensulfone	Nimitz				yes				yes
	Fluopyram	Propulse <sup>4</sup>	yes							
	Fluazaindolizine	Salibro				yes				
	Fluopyram	Velum	yes	yes	yes		yes	yes		yes
	Fluopyram	Velum Prime				yes				
	Fluopyram	Velum Rise <sup>4</sup>				yes				
	<b>Oxamyl</b>	<b>Vydate C-LV<sup>3</sup></b>		yes	yes	yes				yes
	<b>Oxamyl</b>	<b>Vydate L<sup>3</sup></b>								yes

<sup>1</sup> This information was compiled as a quick reference for commercial Florida agronomic professionals. The mention of a chemical or proprietary product in this publication does not constitute a written recommendation or an endorsement for its use by the University of Florida Institute of Food and Agricultural Sciences and does not imply its approval to the exclusion of other products or practices that may be suitable. Products mentioned in this publication are subject to changing state and federal rules, regulations, and restrictions. Product names may change and additional products may become available or approved for use. Growers have the final responsibility to guarantee that each product is use legally.

<sup>2</sup> Restricted use pesticides are listed in bold

<sup>3</sup> For these active ingredients, multiple products and formulations may be available. Product names are listed as examples only and are not inclusive of every option.

<sup>4</sup> Propulse and Velum Rise formulations also include the fungicides prothiconazole and penflufen respectively.

Table 2. Properties of fumigant and nonfumigant nematicides labeled for specific Florida agronomic crops. Contact: Zane Grabau, UF/IFAS Entomology and Nematology Department.<sup>1</sup>

	Product name(s) <sup>2</sup>	Application Methods	Timing	Systemic?	Activity against other pathogens or pests		
					Fungal pathogens	Insects	Weeds
<b>Fumigant<sup>3</sup></b>	<b>Dominus</b>	I,D	Preplant		yes	Yes <sup>4</sup>	yes
	<b>K-Pam HL, Vapam HL</b>	I,O,D	Preplant		yes	Yes <sup>4</sup>	yes
	<b>Telone II, Telone C35</b>	I	Preplant		yes	Yes <sup>4</sup>	yes
	<b>Telone EC, InLine</b>	D	Preplant		yes	Yes <sup>4</sup>	yes
<b>Nonfumigant</b>	<b>AgLogic 15GG</b>	G	At-plant	yes		yes	
	<b>Counter 20G</b>	G	At-plant	yes		yes	
	<b>Mocap 15G</b>	G	Preplant or at-plant			Yes <sup>4</sup>	
	<b>Mocap EC</b>	SS	Preplant or a-plant			Yes <sup>4</sup>	
	Movento	O,FS,SS	?	yes		yes	
	Nimitz	D,O,SS	Preplant				
	Propulse	IS, FS	At-plant or in-season		yes		
	Salibro	D,SS,IS	Flexible				
	Velum	IS,O,D	Flexible		yes	yes	
	Velum Prime	IS,O,D	At-plant or in-season		yes		
	Velum Rise	SS,IS	Preplant or at-plant		yes		
	<b>Vydate C-LV</b>	FS,SS,I,O	Flexible	yes		yes	
	<b>Vydate L</b>	SS,IS	Flexible	yes		yes	

<sup>1</sup> Consult label for legal application methods. Some methods may not be allowed for particular crops. I=injection, D=application through drip irrigation, O=chemigation through overhead irrigation systems, G=granular nematicide incorporated into soil, FS=foliar spray, SS=soil spray, IS=in-furrow soil spray

<sup>2</sup> Restricted use pesticides are listed in bold

<sup>3</sup> Fumigants are grouped by application method. Product names are listed as examples only and are not inclusive of every option.

<sup>4</sup> Fumigants and ethoprop products have activity against soil insects only.