

Chapter 11. Legume Production¹

Craig Frey, Peter J. Dittmar, Anna Mészáros, Dakshina R. Seal, Jawwad Qureshi, Shouan Zhang, Johan Desaegeer, and Qingren Wang²

Botany and Planting

Cluster bean/Guar—*Cyamopsis tetragonolobus*, Fabaceae (Leguminosae)

Edamame—*Glycine max*, Fabaceae (Leguminosae)

Fenugreek/Methi—*Trigonella foenum-gracum*, Fabaceae (Leguminosae)

Hyacinth bean/Lablab bean—*Lablab purpureus*, Fabaceae (Leguminosae)

Lima bean—*Phaseolus lunatus*, Fabaceae (Leguminosae)

Pigeon pea—*Cajanus cajan*, Fabaceae (Leguminosae)

Snapbean—*Phaseolus vulgaris*, Fabaceae (Leguminosae)

Snowpea—*Pisum sativum*, Fabaceae (Leguminosae)

Southernpea/Yard-long bean—*Vigna unguiculata*, Fabaceae (Leguminosae)

Winged bean—*Psophocarpus tetragonolobus*, Fabaceae (Leguminosae)

Table 1. Planting dates for legumes.

Planting Region	Dates					
	Snapbean Bush	Snapbean Pole	Lima Bean Bush	Lima Bean Pole	Southern Pea	Snowpea
North Florida	Mar–Apr Aug–Sept	Mar–Apr Aug–Sept	Mar–Apr Aug	Mar–Apr Aug	Mar–July	Jan–Mar
Central Florida	Feb–Apr Aug–Sept	Feb–Apr Aug–Sept	Feb–Mar Aug–Sept	Feb–Mar Aug–Sept	Feb–Aug	Nov–Feb
South Florida	Sept–Apr	Sept–Apr	Sept–Apr	Sept–Apr	Sept–Apr	Nov–Feb

Table 2. Planting information for legumes.

Planting Parameters	Measurements					
	Snapbean Bush	Snapbean Pole	Lima Bean Bush	Lima Bean Pole	Southern Pea	Snowpea
Distance between rows (in)	18–40	36–48	18–36	36–48	20–42	36 (2-row beds)
Number of rows/bed	1–2	–	–	–	–	–
Distance between rows/bed (in)	10–12	–	–	–	–	–
Distance between plants (in)	2–4	3–5	3–6	8–12	2–6	2–6
Seeding depth (in)	1–1.5	1–1.5	1–1.5	1–1.5	1–1.5	1–1.5
Seed per acre (lb)	45–80	30–45	40–60	20–40	15–30	25–50
Days to maturity from seed	45–60	50–70	60–80	80–100	75–90	60–80
Plant populations	52,272–172,240	58,000	116,160	21,780	104,544	87,120

Cultivars

Table 3. Commercial legume cultivars.

Legume	Cultivars
Snapbean—Green Bush	Affirmed, BA 0958, Caprice, Coyote, Desoto, Greencrop, Jackson, LaSalle, Momentum, PV 575, PV 857, PV 959, Sybaris (BA 1007), Valentino
Snapbean—Yellow Bush	Carson, Golden Rod, Gold Strike, SV1003GF
Snapbean—Green Pole	Dade, McCaslan 42
Lima	Bridgeton, Fordhook 242, Jackson Wonder, Thorogreen
Southern Pea	CA Blackeye No. 5, Cream 8, Cream 12, Coronet Pinkeye, Knuckle Purplehull, Pinkeye Purplehull, Quickpick, Texas Cream 40, Top Pick Cream, Top Pick Crowder, Top Pick Pinkeye, White Acre, Zipper Cream
Snowpea	Oregon Sugarpod II

Asian Legumes

The Asian legume group includes fruits (usually known as pods), which are eaten at the immature stage with edible immature seeds (green shell) and some young leaves and stem tips. For instance, the winged bean has edible leaves and roots, though the latter are rarely cultivated commercially in the continental United States. Pole bean, long (or yard long) bean (both dark and light green colors), broad bean, and lablab bean are commercially grown in south Florida. All pole or indeterminate types can be grown on raised beds with or without plastic mulch using drip, overhead, or subsurface irrigation. Fenugreek does not grow well in rocky soils, such as those found in Miami-Dade County. Pigeon pea is a semi-perennial shrub in

warmer areas. Many pigeon pea and winged bean varieties are short-day and only flower during the fall. Some day-neutral varieties are available for both crops. Many edamame varieties are sensitive to daytime length, so care must be taken to select varieties for one's growing area. Japanese varieties are classified as "summer" or "fall" types, indicating when they flower. Fertilizer recommendations for pole, long, or broad beans are generally applicable to this group. All of these crops start from seed, though winged beans require scarification prior to planting. All the indeterminate types need some kind of support, ranging from individual bamboo stakes to trellises. However, some bush-type broad beans (Indian type) do not need trellises.

Table 4. Planting dates for Asian legumes.

Planting Region	Dates							
	Cluster Bean/ Guar	Edamame	Fenugreek	Hyacinth Bean	Pigeon Pea	Snowpea	Winged Bean	Yard-long Bean
North Florida	Mar–Apr; Aug	Mar–Apr; Aug	Mar–Apr; Aug	Mar–Apr; Aug	Not recommended	Jan–Mar	Not recommended	Mar–July
Central Florida	Feb–Mar; Aug–Sept	Feb–Mar; Aug–Sept	Feb–Mar; Aug–Sept	Feb–Mar; Aug–Sept	Not recommended	Nov–Feb	Not recommended	Feb–Aug
South Florida	Sept–Apr	Sept–Apr	Sept–Apr	Sept–Apr	Nov–Feb	Nov–Feb	Mar–Apr	Sept–Apr

Table 5. Planting information for Asian legumes.

Planting Parameter	Measurements							
	Cluster Bean/ Guar	Edamame	Fenugreek	Hyacinth Bean	Pigeon Pea	Snowpea	Winged Bean	Yard-long Bean
Distance between rows (in)	24	20–30	9	20	24–36	36 (2-row beds)	36	20–42
Distance between plants (in)	6	2–6	2–3	4–6	2–6	2–6	8	2–6
Seeding depth (in)	1–1.5	1–1.5	1–1.5	1–1.5	1–1.5	1–1.5	1–1.5	1–1.5
Days to maturity from seed	90–120	80–120	90–120	90–120	180 (early); 270–365 (late)	60–80	90 (day-neutral varieties)	75–90
Plant populations	43,560	87,120	348,480	78,409	10,890	87,120	21,780	104,544

Table 6. Cultivars for Asian legumes.

Crop	Life Cycle	Cultivars	Trellising
Broad bean	Annual	–	Yes
Bush-type broad bean	Annual	Indian type	No
Cluster bean, guar	Annual	–	Yes
Edamame	Annual	Lucky Lion, Tohya, Triple Play, Chiba Green	No
Fenugreek, methi	Annual	–	No
Hyacinth bean, lablab bean	Annual	Akahana Fugimame	No
Long bean (dark- and light-green color)	Annual	–	Yes
Pigeon pea (a short-lived perennial)	Short-lived perennial	–	No
Snow/snap (edible podded) pea	Annual	Oregon Sugarpod II	Yes
Winged bean, goa bean	Annual	Winged Bean, Youdou	Yes
Yard-long bean	Annual	Orient Wonder, Stickless Wonder	Yes

The following tables list registered pesticides that should be integrated with other pest management methods. Additional information on integrated management methods can be requested from UF/IFAS Extension horticulture or agriculture agents. A list of local UF/IFAS Extension offices is available at <https://sfyl.ifas.ufl.edu/find-your-local-office/>.

Table 7. Herbicides approved for managing weeds in beans and peas. **Labels change frequently. Be sure to read a current product label before applying any chemical.** Contact: Peter J. Dittmar, UF/IFAS Department of Horticultural Sciences, Gainesville.

	Active Ingredient lb a.i./Acre	Trade Name Product/Acre	MOA Code	Crops	Weeds Controlled/Remarks
PREEMERGENCE	Carfentrazone up to 0.031	(Aim) 2.0 EC up to 2 fl oz	14	Bean (all), pea (all)	Apply as a preplant burndown for emerged broadleaf weeds. Use crop oil concentrate, methylated seed oil, or nonionic surfactant at recommended rates. No more than 0.096 lb a.i./A per season. No pretransplant interval.
	EPTC 2.0–4.0	(Eptam) 7E 2.25–4.5 pt	8	Bean (green, dry)	Broadleaf and nutsedge weeds. Incorporate in the same operation to reduce volatilization. No more than 9 pt/A per crop.
	Fomesafen 0.25–0.38	(Reflex) 2 EC 1.0–1.5 pt	14	Bean (dry, snap)	Annual broadleaf and grass weeds and nutsedge. Not for use in Miami-Dade County. No more than 1.5 pt/A per year.
	Glyphosate	(various formulations) consult labels	9	Bean (all), pea (all)	Emerged broadleaf and grass weeds. Consult individual labels for restrictions.
	Halosulfuron 0.02	(Sandea) 75 DF 0.5 oz	2	Bean (black-eyed, cowpea, southern pea)	Broadleaf weeds and nutsedge. Apply after planting but before crop emergence. May cause significant, temporary stunting and delayed maturity of peas, resulting in delayed harvest.
	Imazethapyr 0.02	(Pursuit) 2 L 1.5 fl oz	2	Bean (snap)	Only 1 application a year. Preplant incorporate within 1 week of planting, preemergence application within 1 week of planting, or preemergence application within 1 day after planting. PHI 3 days.
	Imazethapyr 0.05	(Pursuit) 2 L 3.0 fl oz	2	Bean (dry, lima, southern pea, cowpea), pea (dry, English), chickpea	Only 1 application a year. Preplant incorporate within 1 week of planting or preemergence application within 1 day after planting. Can apply up to 4 oz/A to southern pea only. Consult label for preharvest interval.
	Paraquat 0.5–1.0	(Gramoxone) 2 SL 2–4 pt (Firestorm) 3 SL 1.3–2.7 pt.	22	Bean (lima, snap), pea (all)	Emerged weeds. Apply prior, during, or after planting, but before crop emergence. No more than 3 applications per season. Use a nonionic surfactant.
	Pelargonic acid	(Scythe) 4.2 EC 3%–10% v/v	27	Bean (all), pea (all)	Emerged weeds. Apply before crop emergence. Product is a contact, nonselective, foliar-applied herbicide.
	Pendimethalin 0.50–0.75	(Prowl) 3.3 EC 1.2–1.8 pt (Prowl H20) 3.8 1.0–1.5 pt	3	Bean (dry, lima, snap, garbanzo), Bean (southern pea, cowpea), chickpea	Annual broadleaf and grass weeds. Incorporate 1–2 in. deep within 7 days of application.
	Pyraflufen ethyl 0.0008–0.003	(ET Herbicide/Defoliant) 0.5–2.0 fl. oz	14	Bean (all), pea (all)	Emerged broadleaf and grass weeds. Plant 1 day after application. Apply as a preplant burndown treatment.

	Active Ingredient lb a.i./Acre	Trade Name Product/Acre	MOA Code	Crops	Weeds Controlled/Remarks
	Saflufenacil 0.027	(Sharpen) 3.42 SL 1.0 fl oz	14	Bean (garbanzo), bean (dry, chickpea)	Broadleaf weeds. Apply as a preplant/preemergence burndown. Sequential application can be applied within 14 days between timings. No more than 2 fl oz/A per season.
	S-metolachlor 0.95–1.27	(Brawl, Dual Magnum) 7.62 EC 1.0–1.33 pt	15	Bean (lima, mung, pinto, snap), bean (southern pea), pea (English)	Annual broadleaf and grass weeds and yellow nutsedge. Consult label for rate based on soil type and specific tank mix directions.
	Sulfentrazone 0.07–0.09	(Willowood sulfentrazone) 4 SC 2.25–3.0 fl oz	14	Bean and pea (dry shelled)	Broadleaf and grass weed control, nutsedge suppression. Do not apply on sands with less than 1% organic matter. No more than 8 fl oz/A within a 12-month period. Trial on a small area.
	Sulfentrazone 0.07–0.12	(Willowood sulfentrazone) 4 SC 2.25–3.75 fl oz	14	Succulent pea	Broadleaf and grass weed. Nutsedge suppression. Do not apply on sands with less than 1% organic matter. No more than 6 fl oz/A within a 12-month period. Trial on a small area.
	Trifluralin 0.50–0.75	(Treflan, Trust) 4 EC 1.0–1.5 pt (Treflan, Trifluralin) 10 G 5.0–7.5 lb	3	Bean (lima, mung, guar, snap), bean (southern pea), pea (dry, English)	Annual broadleaf and grass weeds. Incorporate 4 in. or less within 8 hr. Results in Florida are erratic on soils with low organic matter and clay content. Consult label for rotation restrictions.
POSTEMERGENCE	Bentazon 0.5–1.0	(Basagran) 4 L 1.0–2.0 pt	6	Bean (dry, succulent), bean (southern pea), pea (garden, English)	Broadleaf weeds. Apply after the first trifoliate leaf is fully expanded in bean and 3 pairs of leaves in pea. Yellowing, bronzing, speckling, or leaf burning may occur under certain conditions. This injury is generally outgrown without delaying pod set or maturity. PHI 30 days.
	Carfentrazone Up to 0.031	(Aim) 2 EC up to 2 fl oz	14	Bean (all), pea (all)	Emerged broadleaf control. Direct application to row middles. Include crop oil concentrate or nonionic surfactant in recommended rates. PHI 0 days.
	Clethodim 0.094–0.25 0.07–0.25	(Arrow) 2 EC 6–16 fl oz (Select Max) 1 EC 9–32 fl oz	1	Bean (succulent), pea (succulent)	Annual and perennial grass control. Consult label for bean types. PHI 21 days.
	EPTC 3.1–4.0	(Eptam) 7 E 3.5–4.5 pt	8	Bean (green, dry)	Broadleaf and nutsedge weeds. Apply as layby treatment during the last cultivation of the season. Direct spray solution to the base of the crop. No more than 9 pt/A per crop.
	Fluazifop 0.19–0.38	(Fusilade DX) 2 EC 12–24 fl oz	1	Bean (dry)	Annual and perennial grass weeds. Do not apply to cowpea. No more than 48 fl oz/A per season. Include a COC or NIS in the spray solution. PHI 60 days.

	Active Ingredient lb a.i./Acre	Trade Name Product/Acre	MOA Code	Crops	Weeds Controlled/Remarks
	Fomesafen 0.25–0.38	(Reflex) 2 EC 1.0–1.5 pt	14	Bean (dry, snap)	Annual broadleaf and grass weeds and nutsedge. Not for use in Miami-Dade County. Consult label for rate based on size of specific weed species. No more than 1.5 pt/A per year.
	Halosulfuron 0.02–0.03	(Sandeia) 75 DF 0.5–0.66 oz	2	Bean (dry)	Broadleaf weeds and nutsedge. Row middles only. Avoid contact with planted crop. No more than 1 oz/A per crop.
	Halosulfuron 0.02–0.03	(Sandeia) 75 DF 0.5–0.66 oz	2	Bean (snap, lima)	Broadleaf weeds and nutsedge. Directed sprays. Apply after the 2–4 trifoliate leaf stage, but before flowering.
	Imazethapyr 0.14	(Pursuit) 2 L 3.0 oz	2	Bean (dry), bean (southern pea), pea (dry, English)	Do not apply before bean has at least 1 trifoliate leaf. Apply to peas at least 3 inches in height but prior to the fifth node and before flowering. Consult label for preharvest intervals.
	Pelargonic acid	(Scythe) 4.2 EC 3%–10% v/v	27	Bean (all), pea (all)	Emerged weeds, row middles only. Use a shielded sprayer directed to the row middles to reduce drift to the crop.
	Quizalofop 0.04–0.08	(Assure II) 6–12 fl oz	1	Bean (dry, snap, chickpea), pea (succulent, dry)	Annual and perennial grass weeds. Allow 7 days between sequential applications to allow for regrowth. Include a COC or NIS in the spray solution. PHI 30 days for succulent pea and dry bean. PHI 60 days for dry pea.
	Sethoxydim 0.19–0.47	(Poast) 1.5 EC 1.0–2.5 pt	1	Bean (dry, succulent), pea (dry, succulent)	Growing grass weeds. No more than 4.0 pt/A per season. Include a COC in the spray solution. PHI 30 days for dry bean and dry pea. PHI days for succulent bean and succulent pea.

Table 8. Insecticides approved for managing arthropod pests of beans and peas. **Labels change frequently. Be sure to read a current product label before applying any chemical. Please refer to chapter 19 for information on biopesticides, including materials labeled for certified organic production.** Contact: Anna Meszaros, UF/IFAS Extension Palm Beach County.

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
Aphids	1A	*Lannate LV; *SP (methomyl)	LV: 1.50–3 pt SP: 0.5–1.0 lb	LV: 15 pt SP: 5.0 lb	48	Varies with rate and crop use.	–
	1B	*Dibrom 8E (naled)	1.0 pt	4.5 pt	48	1	Ground application only; not for cowpeas and field peas intended for livestock feed.
	1B	Dimethoate 4EC (dimethoate)	0.5–1.0 pt	2.0 pt per year	48	Mechanical harvesting: 0	Do not use on field peas.
	1B	Malathion 8F (malathion)	1.0 pt	2.0 pt	12	3	Green and dried peas only. Do not graze or feed forage to livestock.
	1B	Orthene 97 (acephate)	0.50–1.0 lb	2.0 lb a.i.	24	Dry succulent: 14 Lima beans succulent form: 1	Do not apply to succulent beans for fresh market or processing. Do not feed treated vines or seeds to livestock.
	3A	*Asana XL (esfenvalerate)	5.8–9.6 fl oz	38.4 fl oz	12	Snap: 3 Dry beans and peas: 21	Do not feed or graze livestock on treated vines.
	3A	*Brigade 2 EC (bifenthrin)	2.1–6.4 fl oz	Succulent: 12.8 fl oz Dry: 19.2 fl oz	12	Succulent: 3 Dry: 14	–
	4A	Admire Pro (imidacloprid)	Soil: 7–10.5 fl oz Foliar: 1.2 fl oz	Soil: 10.5 fl oz Foliar: 3.6 fl oz	12	Soil: 21 Foliar: 7	Do not apply to both soil and foliage. Do not use other 4A insecticides if imidacloprid is used.
	4A	Assail 30SG (acetamidprid)	2.5–5.3 fl oz	16 fl oz	12	7	Edible podded legumes, succulent shelled peas and beans.
	4A	Transform WG (sulfoxaflor)	0.75–1.0 oz	8.5 oz	24	7	Succulent, edible podded, and dry beans.
	4A + 15	Cormoran (novaluron + acetamiprid)	9–12 fl oz	36 fl oz	12	7	–
	4D	Sivanto Prime (flupyradifurone)	7.0–10.5 fl oz	28.0 fl oz per year	4	7	Reapplications at least 10 days apart.
	23	Movento (spirotetramat)	4–5 fl oz	10 fl oz	24	Succulent: 1 Dry: 7	–

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
Armyworm, corn earworm, lesser cornstalk borer, loopers, cutworm, caterpillar, grubs, root maggots, wireworms	1A	*Lannate LV; *SP (methomyl)	LV: 1.50–3 pt SP: 0.50–1.0 lb	LV: 15 pt SP: 5.0 lb	48	See label: varies with rate and crop use.	–
	1A	Sevin 4F (carbaryl)	0.50–1.5 qt	6.0 qt per year	12	Fresh beans and peas: 3 Grazing or forage: 14 Dried beans seed or hay: 21	Use on succulent shelled peas and beans prohibited. Harmful to bees.
	1B	*Diazinon 50W AG 500 (diazinon)	50W: 4.8 lb AG500: 2–4 qt	–	72	Broadcast at planting	Only for cutworms and wireworms. Succulent beans and peas only. Soil application only. No more than 1 application per year.
	1B	*Dibrom 8E (naled)	1–1.5 pt	4.5 pt	48	1	Ground application only. Not for cowpeas and field peas intended for livestock forage.
	1B	Orthene 97 (acephate)	0.75–1.0 lb	2.0 lb a.i.	24	Dry or succulent: 14 Lima beans, succulent form: 1	Do not apply to succulent beans for fresh market or processing. Do not feed treated vines or seeds to livestock.
	3A	*Asana XL (esfenvalerate)	5.8–9.6 fl oz	38.4 fl oz	12	Snap: 3 Dry beans and peas: 21	Do not feed or graze livestock on treated vines.
	3A	*Baythroid XL (beta-cyfluthrin)	Dry beans and peas: 0.8–3.2 fl oz Southern pea: 0.8–2.1 fl oz	Dry beans and peas: 6.4 fl oz Southern peas: 10.5 fl oz	12	Dry beans and peas: 7 Southern pea: 3	Not for use on succulent beans or peas. Do not feed treated vines or hay to livestock.
	3A	*Brigade 2 EC (bifenthrin)	2.1–6.4 fl oz	Succulent: 12.8 fl oz Dry: 19.2 fl oz	12	Succulent: 3 Dry: 14	–
	3A	*Capture LFR (bifenthrin)	3.4–6.8 fl oz	25.5 fl oz	12	At plant	Do not exceed allowed amounts including use of other products containing bifenthrin.
	3A	*Declare Insecticide (gamma-cyhalothrin)	1.54 fl oz	0.38 pt	24	Edible podded and succulent shelled: 7 Dry beans and peas: 21	For control before larvae bore into the plant stalk or pods. Do not graze livestock in treated areas or harvest vines for forage or hay.

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
	3A	*Mustang *Mustang Maxx (zeta-cypermethrin)	3.0–4.3 oz Maxx: 1.28–4.0 oz	25.8 oz Maxx: 24 oz	12	Succulent: 1 Dried shelled peas or beans: 21	Can also be applied at planting for control of cutworms, white grubs, and wireworms. See label.
	3A	*Warrior II (lambda-cyhalothrin)	0.96–1.92 fl oz	7.68 fl oz	24	Edible podded and succulent shelled: 7 Dried, shelled: 21	Do not graze livestock in treated areas.
	3A + 28	*Besiege (lambda-cyhalothrin + chlorantraniliprole)	5–10 fl oz	31 fl oz	24	Edible podded and succulent shelled: 7 Dry shelled: 21	–
	5	Entrust SC (spinosad)	1.25–2.0 oz	Succulent: 9.0 fl oz Dry: 3.75 fl oz	4	Succulent: 3 Dry: 28	Do not feed forage or hay to meat or dairy animals.
	5	Radiant SC (spinetoram)	4–8 fl oz	Succulent: 28.0 fl oz Dry: 12.0 fl oz	4	Succulent: 3 Dry: 28	–
	6 + 28	*Minecto Pro (abamectin + cyantraniliprole)	7.5–10 fl oz	20 fl oz	12	7	–
	15	Rimon 0.83 EC (novaluron)	6–12 fl oz	36.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
	18	Intrepid 2F (methoxyfenozide)	4–16 fl oz	64 fl oz	12	7	–
	22	Avaunt (indoxacarb)	3.5 oz	14 fl oz	12	7	Southern pea (dry) varieties only.
	28	Coragen (chlorantraniliprole/rynaxypyr)	3.5–7.5 fl oz	15.4 fl oz of chlorantraniliprole products per year	4	1	Foliar application only.
Cucumber beetle, bean leaf beetle, Mexican bean beetle, cowpea curculio	28	Exirel (cyantraniliprole/cyazypyr)	10.5–20.5 oz	0.4 lb a.i. of Group 28 products	12	Succulent: 1 Dried: 7	Label contains pollinator warning language.
	1A	*Lannate LV; *SP (methomyl)	LV: 0.75–3 pt SP: 0.25–1.0 lb	LV: 15 pt SP: 5.0 lb	48	See label; varies with rate and crop	–
	1A	Sevin 4F (carbaryl)	0.50–1.5 qt	6.0 qt per year	12	Fresh beans and peas: 3 Grazing or forage: 14 Dried beans, peas, seed, or hay: 21	Use on succulent shelled peas and beans prohibited. Harmful to bees.
	1B	Dimethoate 4EC (dimethoate)	0.5–1.0 pt	2.0 pt per year	48	Mechanical harvesting: 0	Do not feed treated vines. Do not use on field peas.

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
	1B	Orthene 97 (acephate)	0.50–1.0 lb	2.0 lb a.i.	24	Dry succulent: 14 Lima beans succulent form: 1	Do not apply to succulent beans for fresh market or processing.
	1B	*Thimet 20G EZ Load (phorate)	4.9–9.4 oz/1000 ft row	–	48	60	Poison. Label pending in Florida. Do not graze livestock on treated forage. No direct contact with seed. No more than 1 application, only applied at plant.
	3A	*Baythroid XL (beta-cyfluthrin)	Dry beans and peas: 0.8–3.2 fl oz Southern pea: 0.8–2.1 fl oz	Dry beans and peas: 6.4 fl oz Southern pea: 10.5 fl oz	12	Dry beans and peas: 7 Southern pea: 3	Not for use on succulent beans or peas. Do not feed treated vines or hay to livestock.
	3A	*Brigade 2 EC (bifenthrin)	2.1–6.4 fl oz	Succulent: 12.8 fl oz Dry: 19.2 fl oz	12	Succulent: 3 Dry: 14	–
	3A	*Declare Insecticide (gamma-cyhalothrin)	1.02–1.54 fl oz	0.38 pt	24	Edible podded and succulent shelled: 7 Dry beans and peas: 21	For control before larvae bore into the plant stalk or pods. Do not graze livestock in treated areas or harvest vines for forage or hay.
	3A	*Mustang *Mustang Maxx (zeta-cypermethrin)	3.0–4.3 oz Maxx : 2.72–4.0 oz	25.8 oz Maxx : 24.0 oz	12	Succulent: 1 Dried shelled peas or beans: 21	–
	3A	*Warrior II (lambda-cyhalothrin)	0.96–1.92 fl oz	7.68 fl oz	24	Edible podded and succulent shelled: 7 Dried, shelled: 21	–
	3A + 28	*Besiege (lambda-cyhalothrin + chlorantraniliprole)	5–10 fl oz	31 fl oz	24	Edible podded succulent shelled: 7 Dry shelled: 21	–
	4A	Assail 30SG (acetamidprid)	2.5–5.3 fl oz	16 fl oz	12	7	Edible podded legumes and succulent shelled peas and beans.
	4A + 15	Cormoran (novaluron + acetamiprid)	9–12 fl oz	36 fl oz	12	7	–
	15	Rimon 0.83 EC (novaluron)	9–12 fl oz	36.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
Fire ants	7A	Extinguish (S-methoprene)	1–1.5 lb broadcast	No limit	4	0	IGR (insect growth regulator). Colonies will get reduced after 3 weeks and eliminated after 8–10 weeks.
	7C	Esteem Ant Bait (pyriproxyfen)	1.5–2.0 lb	0.134 lb a.i.	12	1	IGR. Apply at first sign of ant activity.
Grasshoppers	1B	Dimethoate 4EC (dimethoate)	0.5–1.0 pt	2.0 pt per year	48	Mechanical harvesting: 0	Do not feed treated vines. Do not use on field peas.
	3A	*Asana XL (esfenvalerate)	5.8–9.6 fl oz	38.4 fl oz	12	Snap: 3 Dry beans and peas: 21	Do not feed or graze livestock on treated vines.
	3A	*Baythroid XL (beta-cyfluthrin)	Beans and peas: 2.4–3.2 fl oz Southern pea: 1.6–2.1 fl oz	Beans and peas: 6.4 fl oz Southern pea: 10.5 fl oz	12	Dry beans and peas: 7 Southern pea: 3	Not for use on succulent beans or peas. Do not feed treated vines.
	3A	*Brigade 2 EC (bifenthrin)	2.1–6.4 fl oz	Succulent: 12.8 fl oz Dry: 19.2 fl oz	12	Succulent: 3 Dry: 14	–
	3A	*Declare Insecticide (gamma-cyhalothrin)	1.02–1.54 fl oz	0.38 pt	24	Edible podded and succulent shelled: 7 Dry: 21	For control before larvae bore into the plant stalk or pods. Do not graze livestock in treated areas or harvest vines for forage or hay.
	3A	*Mustang *Mustang Maxx (zeta-cypermethrin)	3.0–4.3 oz Maxx : 3.2–4.0 oz	25.8 oz Maxx : 24.0 oz	12	Succulent: 1 Dried shelled peas or beans: 21	–
	3A	*Warrior II (lambda-cyhalothrin)	1.28–1.92 fl oz	7.68 fl oz	24	Edible podded and succulent shelled: 7 Dried, shelled: 21	Do not graze livestock in treated areas.
	3A + 28	*Besiege (lambda-cyhalothrin + chlorantraniliprole)	5–10 fl oz	31 fl oz	24	Edible podded and succulent shelled: 7 Dry shelled: 21	–
Leafhopper	1A	*Lannate LV; *SP (methomyl)	LV : 0.75–3 pt SP : 0.25–1.0 lb	LV : 15 pt SP : 5.0 lb	48	See label; varies with rate and crop.	–
	1B	*Dibrom 8E (naled)	1.0 pt	4.5 pt	48	1	Ground application only; not for cowpeas and field peas intended for livestock forage.

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
	1B	Dimethoate 4EC (dimethoate)	0.5–1.0 pt	2.0 pt per year	48	Mechanical harvesting: 0	Do not feed treated vines. Do not use on field peas.
	3A	*Brigade 2 EC (bifenthrin)	2.1–6.4 fl oz	Succulent: 12.8 fl oz Dry: 19.2 fl oz	12	Succulent: 3 Dry: 14	–
	3A	*Mustang *Mustang Maxx (zeta-cypermethrin)	3.0–4.3 oz Maxx : 2.72–4.0 oz	25.8 oz Maxx : 24.0 oz	12	Succulent: 1 Dried shelled peas or beans: 21	–
	3A	*Warrior II (lambda-cyhalothrin)	1.28–1.92 fl oz	7.68 fl oz	24	Edible podded and succulent shelled: 7 Dried, shelled: 21	Do not graze livestock in treated areas.
	4A	Admire Pro (imidacloprid)	Soil: 7–10.5 fl oz Foliar: 1.2 fl oz	Soil: 10.5 fl oz Foliar: 3.6 fl oz	12	Soil: 21 Foliar: 7	Do not apply to both soil and foliage. Do not use other 4A insecticides if imidacloprid is used.
	4A	Assail 30SG (acetamidprid)	2.5–5.3 fl oz	16 oz	12	7	Edible podded legumes and succulent shelled peas and beans.
	15 + 4A	Cormoran (novaluron + acetamiprid)	9–12 fl oz	36 fl oz	12	7	–
	4D	Sivanto Prime (flupyradifurone)	7.0–10.5 fl oz	28.0 fl oz per year	4	7	Reapplications at least 10 days apart.
	16	Courier 40 SC (buprofezin)	9.0–13.6 fl oz	27.2 fl oz	12	14	IGR. For succulent beans only. Good coverage essential.
	28	Exirel (cyantraniliprole/cyazapyr)	10.5–20.5 oz	0.4 lb a.i. of Group 28 products	12	Succulent: 1 Dried: 7	Label contains pollinator protection warnings.
Liriomyza leafminers	5	Radiant SC (spinetoram)	5–8 fl oz	Succulent: 28 fl oz Dry: 12 fl oz	4	Succulent: 3 Dry: 28	Time applications to small larvae.
	6	*Agri-Mek SC (abamectin)	1.75–3.5 fl oz	10.5 fl oz	12	7	To avoid illegal residues, must be mixed with a nonionic activator-type wetting, spreading and/or penetrating spray adjuvant. Do not feed treated vines or hay to livestock.
	6 + 28	*Minecto Pro (abamectin + cyantraniliprole)	7.5–10 fl oz	20 fl oz	12	7	–
	17	Trigard (cyromazine)	2.66 oz 1 packet	0.75 lb a.i.	12	7	Not for use on soybeans or peas.

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
	28	Coragen (chlorantraniliprole/rynaxypyr)	7.5 fl oz	15.4 fl oz of chlorantraniliprole products per year	4	1	Foliar application only.
	28	Exirel (cyantraniliprole/cyazapyr)	10.5–20.5 oz	0.4 lb a.i. of Group 28 products	12	Succulent: 1 Dry: 7	–
Lygus bug, stink bug, kudzu bug	1A	*Lannate LV; *SP (methomyl)	LV: 1.50–3 pt SP: 0.50–1.0 lb	LV: 15 pt SP: 5.0 lb	48	See label; varies with rate and crop.	–
	1A	Sevin 4F (carbaryl)	1.0–1.5 qt	6.0 qt per year	12	Fresh beans and peas: 3 Grazing or forage: 14 Dried beans, peas, seed, or hay: 21	Use on succulent shelled peas and beans prohibited. Harmful to bees.
	1B	*Dibrom 8E (naled)	1–1.5 pt	4.5 pt	48	1	Ground application only; not for cowpeas and field peas intended for livestock feed.
	1B	Dimethoate 4EC (dimethoate)	0.5–1.0 pt	2.0 pt per year	48	Mechanical harvesting: 0	Do not feed treated vines. Do not use on field peas.
	3A	*Baythroid XL (beta-cyfluthrin)	Beans and peas: 2.4–3.2 fl oz Southern pea: 1.6–2.1 fl oz	Beans and peas: 6.4 fl oz Southern pea: 10.5 fl oz	12	Dry beans and peas: 7 Southern pea: 3	Not for use on succulent beans or peas. Do not feed treated vines or hay to livestock.
	3A	*Brigade 2 EC (bifenthrin)	5.12–6.4 fl oz	Succulent: 12.8 fl oz Dry: 19.2 fl oz	12	Succulent: 3 Dry: 14	–
	3A	*Declare Insecticide (gamma-cyhalothrin)	1.02–1.54 fl oz	0.38 pt	24	Edible podded and succulent shelled: 7 Dry beans and peas: 21	For control before larvae bore into the plant stalk or pods. Do not graze livestock in treated areas or harvest vines for forage or hay.
	3A	*Mustang *Mustang Maxx (zeta-cypermethrin)	3.4–4.3 oz Maxx: 3.2–4.0 oz	25.8 oz Maxx: 24.0 oz	12	Succulent: 1 Dried shelled peas or beans: 21	–
	3A	*Warrior II (lambda-cyhalothrin)	1.28–1.92 fl oz	7.68 fl oz	24	Edible podded and succulent shelled: 7 Dried, shelled: 21	–
	3A + 28	*Besiege (lambda-cyhalothrin + chlorantraniliprole)	5–10 fl oz	31 fl oz	24	Edible podded succulent shelled: 7 Dry shelled: 21	–

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
	4A	Transform WG (sulfoxaflor)	2.25 oz	8.5 oz	24	7	Succulent, edible podded, and dry beans. Stink bug suppression.
	15 + 4A	Cormoran (novaluron + acetamiprid)	12 fl oz	36 fl oz	12	7	–
	15	Rimon 0.83 EC (novaluron)	12 fl oz	36.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
Mites: twospotted, southern, red	3A	*Brigade 2 EC (bifenthrin)	5.12–6.4 fl oz	Succulent: 12.8 fl oz Dry: 19.2 fl oz	12	Succulent: 3 Dry: 14	–
	6	*Agri-Mek SC (abamectin)	1.75–3.5 fl oz	10.5 fl oz	12	7	To avoid illegal residues, must be mixed with a nonionic activator-type wetting to spread and/or penetrate spray adjuvant. Do not feed treated vines or hay to livestock.
	6 + 28	*Minecto Pro (abamectin + cyantraniliprole)	7.5–10 fl oz	20 fl oz	12	7	–
	20B	Kanemite 15 SC (acequinocyl)	31 fl oz	62 fl oz	12	7	Succulent beans, including succulent soybean vegetable only.
	20D	Acramite-50WS (bifentzate)	1.0–1.5 lb	3.0 lb	12	3	Succulent beans, peas, and soybean.
	21A	Magister (Fenazaquin)	24–36 fl oz	36 fl oz	12	3	No more than 1 application per year.
	21A	Portal (fenpyroximate)	2.0 pt	4.0 pt	12	1	Snap bean only. Reapplications at least 14 days apart.
Thrips	1A	*Lannate LV; *SP (methomyl)	LV: 1.50–3 pt SP: 0.50–1.0 lb	LV: 15 pt SP: 5.0 lb	48	See label: varies with rate and crop use	–
	3A	*Hero (zeta-cypermethrin + bifenthrin)	10.3 oz	27.39 oz	12	Succulent: 3 Dry: 21	–
	3A+ 28	*Besiege (lambda-cyhalothrin + chlorantraniliprole)	6–10 fl oz	31 fl oz	24	Edible podded and succulent shelled: 7 Dry shelled: 21	Does not include Western Flower Thrips.

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
	4A	Admire Pro (imidacloprid)	7–10.5 fl oz	10.5 fl oz	12	21	Only soil applied Admire Pro is labeled. For foliar-feeding thrips only.
	4A	Assail 30SG (acetamiprid)	4.5–5.3 fl oz	16 oz	12	7	Edible podded legumes and succulent shelled peas and beans.
	4A	Transform WG (sulfoxaflor)	2.25 oz	8.5 oz	24	7	Succulent, edible podded, and dry beans.
	4A + 15	Cormoran (novaluron + acetamiprid)	12 fl oz	36 fl oz	12	7	No more than 2 applications against thrips per season.
	5	Radiant SC (spinetoram)	5–8 fl oz	Succulent: 28 fl oz Dry: 12 fl oz	4	Succulent: 3 Dry: 28	–
	6 + 28	*Minecto Pro (abamectin + cyantraniliprole)	10 fl oz	20 fl oz	12	7	Suppression of foliage-feeding only.
	15	Rimon 0.83 EC (novaluron)	12 fl oz	36.0 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
	23	Movento (spirotetramat)	4–5 fl oz	10.0 fl oz	24	Succulent: 1 Dry: 7	–
	28	Exirel (cyantraniliprole/cyazapyr)	10.5–20.5 oz	0.4 lb a.i. of Group 28 products	12	Succulent: 1 Dried: 7	Label contains pollinator protection warnings.
Whiteflies	3A	*Brigade 2 EC (bifenthrin)	2.1–6.4 fl oz	Succulent: 12.8 fl oz Dry: 19.2 fl oz	12	Succulent: 3 Dry: 14	–
	3A	*Mustang *Mustang Maxx (zeta-cypermethrin)	3.4–4.3 oz Maxx: 3.2–4.0 oz	25.8 oz Maxx: 24.0 oz	12	Succulent: 1 Dried shelled peas or beans: 21	–
	4A	Admire Pro (imidacloprid)	Soil: 7–10.5 fl oz Foliar: 1.2 fl oz	Soil: 10.5 fl oz Foliar: 3.6 fl oz	12	Soil: 21 Foliar: 7	Do not apply to both soil and foliage. Do not use other 4A insecticides if imidacloprid is used.
	4A	Assail 30SG (acetamiprid)	4.0–5.3 fl oz	16 oz	12	7	Edible podded legumes and succulent shelled peas and beans.
	4A + 15	Cormoran (novaluron + acetamiprid)	12 fl oz	36 fl oz (see remarks)	12	7	No more than 2 applications against whiteflies per season.
	4D	Sivanto Prime (flupyradifurone)	10.5–14 fl oz	28.0 fl oz per year	4	7	Reapplications at least 10 days apart.

Insect or Mite Pest	MOA Code ¹	Trade Name (Active Ingredient)	Max Rate/Acre		REI (Hours)	Days to Harvest	Remarks ³
			Appl.	Season ²			
	6 + 28	*Minecto Pro (abamectin + cyantraniliprole)	10 fl oz	20 fl oz	12	7	–
	7C	Knack IGR (pyriproxyfen)	8–10 fl oz	20 fl oz	12	7	–
	15	Rimon 0.83 EC (novaluron)	12 fl oz	24 fl oz	12	1	Rimon disrupts molting and has no effect on adult insects.
	16	Courier 40 SC (buprofezin)	9.0–13.6 fl oz	27.2 fl oz	12	14	For succulent beans only. Reapplications at least 14 days apart.
	21A	Magister (Fenazaquin)	24–36 fl oz	36 fl oz	12	3	No more than 1 application per year.
	23	Movento (spirotetramat)	4–5 fl oz	10.0 fl oz	24	Succulent: 1 Dry: 7	–
	28	Exirel (cyantraniliprole/cyazapyr)	10.5–20.5 oz	0.4 lb a.i. of Group 28 products	12	Succulent: 1 Dried: 7	–

¹ Mode of Action (MOA) codes for plant pest insecticides from the Insecticide Resistance Action Committee (IRAC) Mode of Action Classification v.11.1 January 2024. Number codes are used to distinguish the main insecticide mode of action groups, with additional letters for certain subgroups within each main group. All insecticides within the same group (with same number) indicate the same active ingredient or similar mode of action. This information must be considered for the insecticide resistance management decisions.

U = unknown, or a mode of action that has not been classified yet.

² Always double-check labels regarding maximum application limits. Many labels are changing from a maximum rate per season (or crop cycle) to a maximum rate per year.

³ Information provided in the table applies only to Florida. Be sure to read a current product label before applying any product. The use of brand names and any mention or listing of commercial products or services in the publication does not imply endorsement by UF/IFAS Extension nor discrimination against similar products or services not mentioned.

*Restricted use insecticide

Table 9. Bean, pea, and other legume fungicides ordered by disease and then FRAC group according to their mode of action. **Labels change frequently. Be sure to read a current product label before applying any chemical. Please refer to chapter 19 for information on biopesticides, including materials labeled for certified organic production.** Contact: Shouan Zhang, UF/IFAS Tropical Research and Education Center.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
Alternaria blight/leaf spot	3	Provysol fungicide (mefentrifluconazole)	5 fl oz	15 fl oz	21	0.5	–
	3	Tilt (propiconazole)	4 fl oz	12 fl oz	7	0.5	–
	7	Fontelis (penthiopyrad)	30 fl oz	Dry: 41 fl oz Succulent: 72 fl oz	Dry: 21 Succulent: 0	0.5	–
	11	Acadia LFC (azoxystrobin)	19.5 fl oz	116 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	(azoxystrobin) Many brands available: Aframe, Arius 250, Atticus Acadia 2SC, A-Zox 25SC, AzoxyStar, Azoxystrobin SC, GCS Azoxy 2SC, Quadris Flowable, Satori Fungicide, Tetraban Fungicide, Trevo	15.5 fl oz	92.3 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	AZteroid FC 3.3 (azoxystrobin)	9.7 fl oz	58.2 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	Evito 480SC (fluoxastrobin)	4.75 fl oz	9.5 fl oz	7	0.5	–
	11	Headline fungicide Headline SC fungicide (pyraclostrobin)	9 fl oz	18 fl oz	7 or 21 SC: 7	4 hr SC: 0.5	–
	3 + 7	Revylok Fungicide (mefentrifluconazole + fluxapyroxad)	6.5 fl oz	13 fl oz	21	0.5	–
	3 + 7	Zorina Fungicide (mefentrifluconazole + boscalid)	20 fl oz	60 fl oz	21	0.5	–
	3 + 11	Veltyma fungicide (pyraclostrobin + mefentrifluconazole)	10 fl oz	20 fl oz	21	0.5	–
	11 + 3	(azoxystrobin + propiconazole) Many brands available: Aframe PlusAtticus Aquila XL, Cover XL, GCS AzoxyProp,MiCrop Fungicide, Propaz, Quilt Xcel, Trevo P	14 fl oz	42 fl oz	Dry: 14 Succulent: 7	0.5	–

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin)	8 fl oz	16 fl oz	7	0.5	No more than 2 applications per season. Crop cannot be used for livestock until 14 days after last application.
	7 + 12	Miravis Prime (pydiflumetofen + fludioxonil)	9.2 fl oz	–	14	0.5	Reapplications at least 14 days apart.
	3 + 7 + 11	Revytek Fungicide (mefentrifluconazole + fluxapyroxad + pyraclostrobin)	13 fl oz	26 fl oz	21	0.5	–
	7 + 3 + 11	Miravis Neo (pydiflumetofen + propiconazole + azoxystrobin)	13.7 fl oz	27.4 fl oz	14	0.5	Reapplications at least 14 days apart.
Anthracnose	M1	AmeriCop 40 DF (copper hydroxide)	1.5 lb	11.8 lb	0	2	–
	M1	Cueva Fungicide Concentrate (copper octanoate)	30 gal	–	0	4 hr	OMRI-listed. ³
	M1	Nordox 75 WG (cuprous oxide)	2.5 lb	–	–	0.5	–
	M1 + M1	Badge SC Badge X2 (copper hydroxide + copper oxychloride)	2 pt	SC: 16.6 pt X2: 16.9 pt	0	Greenhouse: 1 Field: 2	–
	M1 + M1	C-O-C-S WDG (basic copper sulfate + copper oxychloride)	1.5 lb	9.2 lb	–	2	–
	1	(thiophanate-methyl) Many brands available: 3336 EG, 3336 F, Incognito 4.5F, Incognito 85 WDG, Nufarm T-Methyl 4.5F Fungicide, Nufarm T-Methyl SPC 4.5F Fungicide, Talaris 4.5 F, Talaris 50 WPS, Talaris 70 WSB, Topsin 4.5FL Fungicide, Topsin M WSB Fungicide	See individual label	See individual label	14 to 28 (see label)	Succulent beans: 1 Dry beans: 3	Apply once at 50%–70% bloom or twice (max = 1.5 lb per application) with first at 10%–30% bloom and second at peak bloom.
	3	Ace 3.8L ST (ipconazole)	0.085 fl oz/100 lb seed	–	–	0.5	Partial control for seed-borne <i>Colletotrichum</i> .

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	3	Tilt (propiconazole)	4 fl oz	12 fl oz	7	0.5	Supplemental label: For control of web blight caused by <i>Rhizoctonia solani</i> . Not labeled for cowpea used for livestock feed.
	7	Fontelis (penthiopyrad)	30 fl oz	72 fl oz	0	0.5	No more than 2 sequential applications before alternating to a non-FRAC 7 fungicide.
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin)	8 fl oz	16 fl oz	7	0.5	No more than 2 applications per season. Crop cannot be used for livestock until 14 days after last application.
	11	(azoxystrobin) Many brands available: Aframe, Arius 250, Atticus Acadia 2SC, A-Zox 25SC, AzoxyStar, Azoxystrobin SC, GCS Azoxy 2SC, Quadris Flowable, Satori Fungicide, Tetraban Fungicide, Trevo	15.5 fl oz	92.3 fl oz	Dry: 14 Succulent: 0	4 hr	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.
	11	Acadia LFC (azoxystrobin)	19.5 fl oz	116 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	Azteroid FC 3.3 (azoxystrobin)	9.7 fl oz	58.2 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	Headline fungicide Headline SC fungicide (pyraclostrobin)	9 fl oz	18 fl oz	7 or 21 SC: 7	4 hr SC: 0.5	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.
	11	Evito 480SC (fluoxastrobin)	4.75 fl oz	9.5 fl oz	7	0.5	–
	1 + 3 + 11	Trevo Packed (thiophanate-methyl + tebuconazole + azoxystrobin)	30 fl oz	–	Fresh: 14 Dry: 28	1	–
	3 + 7 + 11	Revytek Fungicide (mefentrifluconazole + fluxapyroxad + pyraclostrobin)	13 fl oz	26 fl oz	21	0.5	–
	3 + 7 + 11	Miravis Neo (propiconazole + pydiflumetofen + azoxystrobin)	13.7 fl oz	27.4 fl oz	14	0.5	–

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	3 + 11	Veltyma fungicide (pyraclostrobin + mefentrifluconazole)	10 fl oz	20 fl oz	21	0.5	–
	11 + 3	(azoxystrobin + propiconazole) Many brands available: Aframe Plus, Atticus Aquila XL, Cover XL, GCS AzoxyProp, MiCrop Fungicide, Propaz, Quilt Xcel, Trevo P	14 fl oz	42 fl oz	Dry: 14 Succulent: 7	0.5	Supplemental label: Do not use on cowpea cultivars intended for livestock.
Ascochyta blight	3	Ace 3.8L ST (ipconazole)	0.085 fl oz/100 lb seed	–	–	0.5	For seedling blight
	3	Tilt (propiconazole)	4 fl oz	12 fl oz	7	0.5	Supplemental label: For control of web blight caused by <i>Rhizoctonia solani</i> . Not labeled for cowpea used for livestock feed.
	3	Provysol fungicide (mefentrifluconazole)	5 fl oz	15 fl oz	21	0.5	Only labeled for chickpea, lentils, and dry-edible peas and beans.
	7	Bonafide (boscalid)	6 oz	22 oz	Dry: 14 Succulent: 7	0.5	Make application at the beginning of flowering.
	7	Endura fungicide (boscalid)	11 oz	22 oz	Dry: 21 Succulent: 7	0.5	No more than 2 applications per crop, and alternate chemistry.
	7	Fontelis (penthiopyrad)	30 fl oz	72 fl oz	0	0.5	No more than 2 sequential applications before alternating to a non-FRAC 7 fungicide.
	3 + 7	Revylok Fungicide (mefentrifluconazole + fluxapyroxad)	6.5 fl oz	13 fl oz	21	0.5	–
	3 + 7	Zorina Fungicide (mefentrifluconazole + boscalid)	20 fl oz	60 fl oz	21	0.5	–
	3 + 7 + 11	Revytek Fungicide (mefentrifluconazole + fluxapyroxad + pyraclostrobin)	13 fl oz	26 fl oz	21	0.5	–
	7 + 3 + 11	Miravis Neo (pydiflumetofen + propiconazole + azoxystrobin)	13.7 fl oz	27.4 fl oz	14	0.5	Reapplications at least 14 days apart.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin)	8 fl oz	16 fl oz	7	0.5	No more than 2 applications per season. Crop cannot be used for livestock until 14 days after last application.
	7 + 12	Miravis Prime (pydiflumetofen + fludioxonil)	9.2 fl oz	36.5 fl oz	14	0.5	Reapplications at least 14 days apart.
	11	Acadia LFC (azoxystrobin)	19.5 fl oz/1000 row ft	116 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	Headline fungicide Headline SC fungicide (pyraclostrobin)	9 fl oz	18 fl oz	7 or 21	4 hr	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.
	11	(azoxystrobin) Many brands available: Aframe, Arius 250, Atticus Acadia 2SC, A-Zox 25SC, AzoxyStar, Azoxystro bin SC, GCS Azoxy 2SC, Quadris Flowable, Satori Fungicide, Tetraban Fungicide, Trevo	15.5 fl oz	92.3 fl oz	Dry: 14 Succulent: 0	4 hr	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.
	11	Azteroid FC 3.3 (azoxystrobin)	9.7 fl oz	58.2 fl oz	Dry: 14 Succulent: 0	4 hr	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.
	11	Evito 480SC (fluoxastrobin)	4.75 fl oz	9.5 fl oz	7	0.5	–
	3 + 11	Veltyma fungicide (pyraclostrobin + mefentrifluconazole)	10 fl oz	20 fl oz	21	0.5	–
	11 + 3	(azoxystrobin + propiconazole) Many brands available: Aframe Plus, Atticus Aquila XL, Cover XL, GCS AzoxyProp, MiCrop Fungicide, Propaz, Quilt Xcel, Trevo P	14 fl oz	42 fl oz	Dry: 14 Succulent: 7	0.5	Supplemental label: Do not use on cowpea cultivars intended for livestock.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
Bacterial brown spot, Bacterial blight, Common blight, Halo blight	M1	(copper compounds) Many brands available: Americop 40 DF, Basic Copper 53, Champ Dry Prill, Champ Formula 2 Flowable, ChampION++, Champ WG, Cueva Fungicide Concentrate, Cuprofix Flex, Kalmor, Kocide 2000, Kocide 3000, KOP-Hydroxide, KOP-Hydroxide 50W, Kop-5, MasterCop, Nordox 75 WG, Nu-Cop 30 HB, Nu-Cop 3 L, Nu-Cop 50 DF, Nu-Cop 50 WP, Nu-Cop HB, Nu-Cop XLR, Previsto	See individual label	See individual label	Varies	Varies from 4 hr to 2 days	–
	M1 + M1	Badge SC Badge X2 (copper hydroxide + copper oxychloride)	2 pt	SC: 16.6 pt X2: 16.9 pt	0	Greenhouse: 1 Field: 2	–
	M1 + M1	C-O-C-S WDG (basic copper sulfate + copper oxychloride)	1.5 lb	9.2 lb	–	2	–
Bean Rust (<i>Uromyces appendiculatus</i>)	M2	(sulfur) Many brands available: Microfine Sulfur, Microthiol Disperss, Suffa, Sulfur 80 WDG, Sulfur 90W, THAT Flowable Sulfur, Thiolux	See individual label	–	1	–	Do not apply during periods of warm weather to avoid phytotoxicity.
	M5	(chlorothalonil) Many brands available: Bravo Ultrex, Bravo Weather Stik, Bravo ZN, Chlorothalonil 720, Echo 720, Echo 90 DF, Echo Zn, Equus 720 SST, Initiate 720, Initiate ZN, Oranil 6L, Praiz, Praiz NG, Rialto 720 F	See individual label	Snap: 12 pt Dry: 8 pt	Snap: 7 Dry: 14	0.5	Do not use on crops for livestock.
	3	(tebuconazole) Many brands available: Monsoon, Onset 3.6L Fungicide, Tebucon 3.6F, Tebu-Crop 3.6F, TebuStar 3.6L, Tebuzol 3.6F, Toledo, Willowood Teb 3.6SC	6 fl oz	Fresh: 24 fl oz Dry: 12 fl oz	7	0.5	–
	3	Tilt (propiconazole)	4 fl oz	12 fl oz	7	0.5	–

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	3	Provysol fungicide (mefentrifluconazole)	5 fl oz	15 fl oz	21	0.5	–
	3	Rally 40WSP Fungicide Relix 40 WSP (myclobutanil)	5 oz	1.25 lb	0	1	30-day plant-back interval
	7	Fontelis (penthioopyrad)	30 fl oz	72 fl oz	0	0.5	–
	3 + 7	Luna Experience (tebuconazole + fluopyram)	12.8 fl oz	25.6 fl oz	14	0.5	–
	3 + 7	Revyllok Fungicide (mefentrifluconazole + fluxapyroxad)	6.5 fl oz	13 fl oz	21	0.5	–
	3 + 7	Zorina Fungicide (mefentrifluconazole + boscalid)	20 fl oz	60 fl oz	21	0.5	–
	3 + 11	Veltyma fungicide (pyraclostrobin + mefentrifluconazole)	10 fl oz	20 fl oz	21	0.5	–
	1 + 3 + 11	Trevo Packed (thiophanate-methyl + tebuconazole + azoxystrobin)	30 fl oz	–	Fresh: 14 Dry: 28	1	–
	7 + 3 + 11	Miravis Neo (pydiflumetofen + propiconazole + azoxystrobin)	13.7 fl oz	27.4 fl oz	14	0.5	Reapplications at least 14 days apart.
	3 + 7 + 11	Revytek Fungicide (mefentrifluconazole + fluxapyroxad + pyraclostrobin)	13 fl oz	26 fl oz	21	0.5	–
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin)	8 fl oz	16 fl oz	7	0.5	No more than 2 applications per season. Crop cannot be used for livestock until 14 days after last application.
	11	Acadia LFC (azoxystrobin)	19.5 fl oz	116 fl oz	Dry: 114 Succulent: 0	4 hr	–
	11	(azoxystrobin) Many brands available: Aframe, Arius 250, Atticus Acadia 2SC, A-Zox 25SC, AzoxyStar, Azoxystrobin SC, GCS Azoxy 2SC, Quadris Flowable, Satori Fungicide, Tetraban Fungicide, Trevo	6 fl oz	92.3 fl oz	Dry beans: 14 Succulent: 0	4 hr	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	11	Azteroid FC 3.3 (azoxystrobin)	3.9 fl oz	58.2 fl oz	Dry: 14 Succulent: 0	4 hr	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.
	11	Headline fungicide Headline SC fungicide (pyraclostrobin)	9 fl oz	18 fl oz	Succulent: 7 Dry: 21	0.5	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.
	11	Evito 480SC (fluoxastrobin)	4.75 fl oz	9.5 fl oz	7	0.5	No more than 2 sequential applications before alternating to a non-FRAC 11 fungicide.
	11	Flint Extra (trifloxystrobin)	3.8 fl oz	15.2 fl oz	7	0.5	No more than 4 applications per year.
	11 + 3	(azoxystrobin + propiconazole) Many brands available: Aframe Plus, Atticus Aquila XL, Cover XL, GCS AzoxyProp, MiCrop Fungicide, Propaz, Quilt Xcel, Trevo P	14 fl oz	42 fl oz	Dry: 14 Succulent: 7	0.5	Supplemental label: Do not use on cowpea cultivars intended for livestock.
Botrytis or Gray mold	M1	Cueva Fungicide Concentrate (copper octanoate)	30 gal	–	0	4 hr	OMRI-listed. ³
	M5	(chlorothalonil) Many brands available: Bravo Ultrex, Bravo Weather Stik, Bravo ZN, Chlorothalonil 720, Chlorothalonil-Zn, Echo 720, Echo 90 DF, Echo Zn, Equus 720 SST, Initiate 720, Initiate ZN, Oranil 6L, Praiz, Praiz NG, Rialto 720 F	See individual label	Snap: 12 pt Dry: 8 pt	Succulent: 7 Dry: 14	0.5	Do not use on crops for livestock.
	1	(thiophanate-methyl) Many brands available: 3336 EG, 3336 F, Incognito 4.5 F, Incognito 85 WDG, Nufarm T-Methyl 4.5 F Fungicide, Talaris 4.5 F, Talaris 50 WSP, Talaris 70 WSB, Topsin 4.5 FL Fungicide, Topsin M WSB Fungicide	See individual label	See individual label	14–28 (see label)	Succulent: 1 Dry: 3	Apply once at 50%–70% bloom or twice (max = 1.5 lb per application) with first at 10%–30% bloom and second at peak bloom.
	2	Meteor Fungicide, Rovral 4 Flowable (iprodione)	2 pt	4 pt	0	1	No more than 2 applications per season. Not for use as livestock feed.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	7	Endura fungicide, Bonafide (boscalid)	11 oz	22 oz	Succulent: 7 Dry: 21	0.5	No more than 2 applications per crop, and alternate chemistry.
	7	Fontelis (penthioopyrad)	30 fl oz	72 fl oz	0	0.5	–
	7	Kenja 400SC fungicide (isofetamid)	17 fl oz	34 fl oz	Snap bean: 7 Dry bean: 30	0.5	–
	9	Vango WG (cyprodinil)	7 oz	28 oz	7	0.5	–
	29	Omavo, Orbus 4 F (fluazinam)	13.6 fl oz	84 fl oz	Succulent: 14 Dry: 30	0.5	–
	29	Omega 500F (fluazinam)	13.6 fl oz	81.6 fl oz	14	0.5	–
	29	Vantana (fluazinam)	13.6 fl oz	27.2 fl oz	Succulent: 14 Dry: 30	0.5	–
	3 + 7	Zorina Fungicide (mefentrifluconazole + boscalid)	20 fl oz	60 fl oz	21	0.5	–
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin)	8 fl oz	16 fl oz	7	0.5	No more than 2 applications per season. Crop cannot be used for livestock until 14 days after last application.
	7 + 12	Miravis Prime (pydiflumetofen + fludioxonil)	13.4 fl oz	36.5 fl oz	14	0.5	Reapplications at least 14 days apart.
	9 + 12	Alterity 62.5 WG Switch 62.5WG Xuvia (cyprodinil + fludioxonil)	14 oz	56 oz	7	0.5	–
	1 + 3 + 11	Trevo Packed (thiophanate-methyl + tebuconazole + azoxystrobin)	30 fl oz	–	Fresh: 14 Dry: 28	1	–
	3 + 7 + 11	Revytek Fungicide (mefentrifluconazole + fluxapyroxad + pyraclostrobin)	13 fl oz	26 fl oz	21	0.5	–

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
Cercospora leaf spot	M1	AmeriCop 40 DF (copper hydroxide)	1.5 lb	11.8 lb	0	2	–
	M1	Nordox 75 WG (cuprous oxide)	2.5 lb	–	–	0.5	–
	M1	Previsto (copper hydroxide)	2 pt	62 pt	–	2	–
	M1 + M1	Badge SC Badge X2 (copper hydroxide + copper oxychloride)	2 pt	SC: 16.6 pt X2: 16.9 pt	0	Greenhouse: 1 Field: 2	–
	M1 + M1	C-O-C-S WDG (basic copper sulfate + copper oxychloride)	1.5 lb	9.2 lb	–	2	–
	3	Provysol fungicide (mefentrifluconazole)	5 fl oz	15 fl oz	21	0.5	–
	7	Fontelis (penthiopyrad)	30 fl oz	72 fl oz	0	0.5	–
	3 + 7	Revylok fungicide (mefentrifluconazole + fluxapyroxad)	6.5 fl oz	13 fl oz	21	0.5	–
	3 + 7	Zorina Fungicide (mefentrifluconazole + boscalid)	20 fl oz	60 fl oz	21	0.5	–
	3 + 11	Veltyma fungicide (pyraclostrobin + mefentrifluconazole)	10 fl oz	20 fl oz	21	0.5	–
	3 + 7 + 11	Miravis Neo (pydiflumetofen + propiconazole + azoxystrobin)	13.7 fl oz	27.4 fl oz	14	0.5	No more than 2 applications per crop. Reapplications at least 14 days apart.
	3 + 7 + 11	Revytek Fungicide (mefentrifluconazole + fluxapyroxad + pyraclostrobin)	13 fl oz	26 fl oz	21	0.5	–
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin)	8 fl oz	16 fl oz	7	0.5	No more than 2 applications per season. Crop cannot be used for livestock until 14 days after last application.
	7 + 12	Miravis Prime (pydiflumetofen + fludioxonil)	9.2 fl oz	36.5 fl oz	14	0.5	Reapplications at least 14 days apart.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	11	Headline fungicide Headline SC fungicide (pyraclostrobin)	9 fl oz	18 fl oz	Succulent: 7 Dry: 21	0.5	No more than 2 applications per crop, and alternate chemistry.
Downy mildew	M1	(copper compounds) Many brands available: AmeriCop 40 DF, Basic Copper 53, Champ Formula 2 Flowable, ChampION++, Cueva Fungicide Concentrate, Cuprofix Flex, Kalmor, Kocide 2000, Kocide 3000, Nordox 75 WG, Nu-Cop 30 HB, Previsto	See individual label	See individual label	4 hr to 2 days (see label)	–	–
	M1 + M1	Badge SC Badge X2 (copper hydroxide + copper oxychloride)	2 pt	SC: 16.6 pt X2: 16.9 pt	0	Greenhouse: 1 Field: 2	–
	M1 + M1	C-O-C-S WDG (basic copper sulfate + copper oxychloride)	1.5 lb	9.2 lb	–	2	–
	M1 + 4	Ridomil Gold/Copper (copper hydroxide + mefenoxam)	2 lb	8 lb	3	2	No more than 4 applications per crop.
	4	Ridomil Gold SL ReCon Bold SL (mefenoxam)	0.2 pt	0.8 pt	3	2	Apply on a 14-day schedule before infection. Must be tank mixed with other effective fungicides.
	4	Thrive 4M (mefenoxam)	3.1 fl oz	15.7 fl oz	3	2	–
	4	Ultra Flourish (mefenoxam)	0.4 pt	Soil: 2.0 pt Foliar: 1.6 pt	3	2	Must be tank mixed with other effective fungicides.
	3 + 11	Veltyma fungicide (pyraclostrobin + mefentrifluconazole)	10 fl oz	20 fl oz	21	0.5	Suppression only.
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin)	8 fl oz	16 fl oz	7	0.5	No more than 2 applications per season. Crop cannot be used for livestock until 14 days after last application.
	3 + 7 + 11	Revytek Fungicide (mefentrifluconazole + fluxapyroxad + pyraclostrobin)	13 fl oz	26 fl oz	21	0.5	Suppression only.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	11	Headline fungicide Headline SC fungicide (pyraclostrobin)	9 fl oz	18 fl oz	7	0.5	No more than 2 applications per crop, and alternate chemistry.
	21	Ranman 400SC Fungicide (cyazofamid)	2.75 fl oz	16.5 fl oz	0	0.5	Not labeled for cowpea used for livestock feed. No more than 3 sequential applications before rotating chemistry.
	40	Revus (mandipropamid)	8 fl oz	32 fl oz	1	4 hr	–
Fusarium seeding blight, Fusarium root rot (Most are biologicals and biorationals – see Chapter 19)	3	Ace 3.8L ST (ipconazole)	0.085 fl oz/100 lb seed	–	–	0.5	–
Phytophthora (Most are biologicals and biorationals – see Chapter 19)	4	STartUp MEFEN (mefenoxam)	0.47 fl oz/100 lb seed	–	–	0.5	Seed treatment.
	21	Ranman 400SC Fungicide (cyazofamid)	2.75 fl oz	16.5 fl oz	0	0.5	–
Powdery mildew	M1	Cueva Fungicide Concentrate (copper ocanoate)	30 gal	–	0	4 hr	OMRI-listed. ³
	M2	(sulfur) Many brands available: Microfine Sulfur, Microthiol Disperss, Suffa, Sulfur 80 WDG, Sulfur 90W, THAT Flowable Sulfur, Thiolux, Wettable Sulfur	See individual label	See individual label	1	–	Do not apply during periods of warm weather to avoid phytotoxicity.
	3	Provysol fungicide (mefentrifluconazole)	5 fl oz	15 fl oz	21	0.5	–
	7	Fontelis (penthiopyrad)	30 fl oz	72 fl oz	0	0.5	–
	3 + 7	Revylok Fungicide (mefentrifluconazole + fluxapyroxad)	6.5 fl oz	13 fl oz	21	0.5	–

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	3 + 7	Zorina Fungicide (mefentrifluconazole + boscalid)	20 fl oz	60 fl oz	21	0.5	–
	3 + 11	Veltima fungicide (pyraclostrobin + mefentrifluconazole)	10 fl oz	20 fl oz	21	0.5	–
	7 + 3	Luna Experience (fluopyram + tebuconazole)	12.8 fl oz	25.6 fl oz	14	0.5	No more than 2 sequential applications of Luna Experience or any Group 7– or Group 3–containing fungicide before rotating with a fungicide of a different group.
	7 + 12	Miravis Prime (pydiflumetofen + fludioxonil)	9.2 fl oz	36.5 fl oz	14	0.5	Reapplications at least 14 days apart.
	3 + 7 + 11	Miravis Neo (pydiflumetofen + propiconazole + azoxystrobin)	13.7 fl oz	27.4 fl oz	14	0.5	Reapplications at least 14 days apart.
	3 + 7 + 11	Revvytek Fungicide (mefentrifluconazole + fluxapyroxad + pyraclostrobin)	13 fl oz	26 fl oz	21	0.5	–
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin)	8 fl oz	16 fl oz	Succulent: 7 Dry: 21	0.5	No more than 2 applications per season.
	11	Aproach (picoxystrobin)	12 fl oz	24 fl oz	14	0.5	–
	11	Flint Extra (trifloxystrobin)	3.8 fl oz	15.2 fl oz	7	0.5	No more than 4 applications per year.
	11	Headline fungicide Headline SC fungicide (pyraclostrobin)	9 fl oz	18 fl oz	7	0.5	No more than 2 applications per crop, and alternate chemistry.
Pythium damping-off and root rot	4	ReCon 4F (metalaxyl)	2 pt	–	–	2	May be made preplant incorporated or as a soil surface spray after planting.
	4	ReCon Bold SL (mefenoxam)	1.0 pt	1.0 pt	–	2	May be made preplant incorporated or as a soil surface spray after planting.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	4	Ridomil Gold SL (mefenoxam)	0.2 pt	0.8 pt	3	2	Must be tank-mixed with other effective fungicides.
	4	STartUp MEFEN (mefenoxam)	0.47 fl oz/100 lb seed	–	–	0.5	Seed treatment.
	4	Thrive 4M (mefenoxam)	3.1 fl oz	15.7 fl oz	3	2	For succulent beans.
	4	Ultra Flourish (mefenoxam)	2 pt	–	–	2	Apply as a broadcast soil application at preplant or as a surface application at planting.
	4	Xyler FC Fungicide (metalaxyl)	45.7 fl oz	45.7 fl oz	–	2	Broadcast or banded application as a soil application prior to planting.
	4 + 11	Uniform (mefenoxam + azoxystrobin)	0.34 fl oz/1000 ft row	–	–	0	–
Rhizoctonia diseases	3	Ace 3.8L ST (ipconazole)	0.085 fl oz/100 lb seed	0.00545 lb	–	0.5	For seed rot, damping off, and seedling blights by seed- and/or soil-borne <i>Rhizoctonia</i> .
	3	Tilt (propiconazole)	4 fl oz	12 fl oz	7	0.5	For web blight (<i>Rhizoctonia solani</i>).
	7	Zeltera Fungicide (inpyrfluxam)	0.2 fl oz/100 lb seed	–	–	0.5	–
	3 + 7 + 11	Miravis Neo (pydiflumetofen + propiconazole + azoxystrobin)	13.7 fl oz	27.4 fl oz	14	0.5	For web blight (<i>Rhizoctonia solani</i>).
	4 + 11	Uniform (mefenoxam + azoxystrobin)	0.34 fl oz/1000 ft row	–	–	0	No more than 1 application per season.
	11	Acadia LFC (azoxystrobin)	1.0 fl oz/1000 row ft	116 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	(azoxystrobin) Many brands available: Aframe, Arius 250, Atticus Acadia 2 SC, Azoxystrobin SC, GCS Azoxy 25C, Quadris	0.8 fl oz/1000 row ft	–	Dry: 14 Succulent: 0	4 hr	For <i>Rhizoctonia</i> root rot (<i>Rhizoctonia solani</i>).
	11	AzoxyStar (azoxystrobin)	3.75 fl oz/100 lb seed	–	–	4 hr	Seed treatment.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	11	Azteroid FC 3.3 (azoxystrobin)	9.7 fl oz	58.2 fl oz	Dry: 14 Succulent: 0	4 hr	For web blight (<i>Rhizoctonia solani</i>).
	11	Evito 480SC (fluoxastrobin)	0.24 fl oz/1000 row feet	–	7	0.5	–
	11	(azoxystrobin) Many brands available: A-Zox 25SC, Quadris Flowable, Tetraban Fungicide, Trevo	15.5 fl oz	92.3 fl oz	Dry: 14 Succulent: 0	4 hr	For web blight (<i>Rhizoctonia solani</i>).
	11	(azoxystrobin) Many brands available: Satori Fungicide, Tetraban Fungicide, Trevo	0.8 fl oz/1000 row ft	–	–	–	For <i>Rhizoctonia</i> root rot (<i>Rhizoctonia solani</i>).
	11 + 3	(azoxystrobin + propiconazole) Many brands available: Aframe Plus, Atticus Aquila XL, Cover XL, GCS AzoxyProp, MiCrop Fungicide, Propaz, Quilt Xcel, Trevo P	14 fl oz	42 fl oz	Dry: 14 Succulent: 7	0.5	For web blight (<i>Rhizoctonia solani</i>).
Southern blight	11	(azoxystrobin) Many brands available: Aframe, Arius 250, Atticus Acadia 2SC, A-Zox 25SC, AzoxyStar, Azoxystrobin SC, GCS Azoxy 2SC, Quadris Flowable, Satori Fungicide, Tetraban Fungicide, Trevo	15.5 fl oz	92.3 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	Acadia LFC (azoxystrobin)	19.5 fl oz/1000 row ft	116 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	Azteroid FC 3.3 (azoxystrobin)	9.7 fl oz	58.2 fl oz	Dry: 14 Succulent: 0	4 hr	–
	11	Evito 480SC (fluoxastrobin)	4.75 fl oz	9.5 fl oz	7	0.5	–
	3	Tilt (propiconazole)	4 fl oz	12 fl oz	7	0.5	–
	11 + 3	(azoxystrobin + propiconazole) Many brands available: Aframe Plus, Atticus Aquila XL, Cover XL, GCS AzoxyProp, MiCrop Fungicide, Propaz, Quilt Xcel, Trevo P	14 fl oz	42 fl oz	Dry: 14 Succulent: 7	0.5	–

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
White mold	M1	Cueva Fungicide Concentrate (copper ocanoate)	30 gal	–	0	4 hr	OMRI-listed. ³
	1	(thiophanate-methyl) Many brands available: 3336 EG, 3336 F, Incognito 4.5 F, Incognito 85 WDG, Nufarm T-Methyl 4.5 F Fungicide, Nufarm T-Methyl SPC 4.5 F Fungicide, Talaris 4.5 F, Talaris 50 WSP, Talaris 70 WSB, Topsin 4.5FL Fungicide, Topsin M WSB Fungicide	See individual label	See individual label	14–28 (see label)	Succulent: 1 Dry: 3	Apply once at 50%–70% bloom or twice (max = 1.5 lb per application) with first at 10%–30% bloom and second at peak bloom.
	1 + 3 + 11	Trevo Packed (thiophanate-methyl + tebuconazole + azoxystrobin)	30 fl oz	–	Fresh: 14 Dry: 28	1	–
	2	Meteor Fungicide, Rovral 4 Flowable Fungicide (iprodione)	2 pt	4 pt	0	1	No more than 2 applications per season. Not for use as livestock feed.
	7	Bonafide (boscalid)	11 oz	22 oz	Dry: 14 Succulent: 7	0.5	Make application at the beginning of flowering. No more than 2 sequential applications before alternating to a non-FRAC 7 fungicide.
	7	Endura Fungicide (boscalid)	11 oz	22 oz	Succulent: 7	0.5	No more than 2 applications per crop, and alternate chemistry.
	7	Kenja 400SC fungicide (isofetamid)	17 fl oz	34 fl oz	Snap bean: 7 Dry bean: 30	0.5	–
	7	Fontelis (penthiopyrad)	30 fl oz	72 fl oz	0	0.5	No more than 2 sequential applications before alternating to a non-FRAC 7 fungicide.
	3 + 7	Zorina Fungicide (mefentrifluconazole + boscalid)	20 fl oz	60 fl oz	21	0.5	–
	7 + 11	Priaxor Xemium (fluxapyroxad + pyraclostrobin) (Suppression only)	8 fl oz	16 fl oz	7 or 21	0.5	No more than 2 applications per season. Crop cannot be used for livestock until 14 days after last application.

Pertinent Diseases or Pathogens	Fungicide Group ¹	Chemical (Active Ingredients)	Max Rate/Acre		Min. Days to		Remarks ³
			Appl.	Season ²	Harvest	Reentry	
	7 + 12	Miravis Prime (pydiflumetofen + fludioxonil)	13.4 fl oz	36.5 fl oz	14	0.5	Suppression only. Reapplications at least 14 days apart.
	9 + 12	Alterity 62.5 WG Switch 62.5 WG Xuvia (cyprodinil + fludioxonil)	14 oz	56 oz	7	0.5	–
	29	Omavo Orbus 4 F (fluazinam)	13.6 fl oz	84 fl oz	Succulent: 14 Dry: 30	0.5	–
	29	Omega 500F (fluazinam)	13.6 fl oz	81.6 fl oz	Edible, podded, and succulent beans: 14	2	–
	29	Vantana (fluazinam)	13.6 fl oz	27.2 fl oz	Succulent: 14 Dry: 30	0.5	–
	7 + 3 + 11	Miravis Neo (pydiflumetofen + propiconazole + azoxystrobin)	13.7 fl oz	27.4 fl oz	14	0.5	Suppression only. Reapplications at least 14 days apart.

¹ FRAC code (fungicide group): Numbers and letters are used to distinguish the fungicide mode of action groups. All fungicides within the same group (with same number or letter) indicate same active ingredient or similar mode of action. This information must be considered for the fungicide resistance management decisions. Source: FRAC Code List; <https://www.frac.info/> (FRAC = Fungicide Resistance Action Committee).

² Always double-check labels regarding maximum application limits. Many labels are changing from a maximum rate per season (or crop cycle) to a maximum rate per year.

³ Information provided in this table applies only to Florida. Be sure to read a current product label before applying any chemical. The use of brand names and any mention or listing of commercial products or services in the publication does not imply endorsement by UF/IFAS Extension nor discrimination against similar products or services not mentioned. OMRI-listed: Listed by Organic Materials Review Institute for use in organic production.

Table 10. Nonfumigant nematicides for legume crops in Florida.

Product	Application Directions
Mocap 15G (a.i. ethoprop)	Apply 13 lb/A (36 in. row spacing) or 0.9 lb/1,000 linear row ft in a band of 15 in. wide on the row at-planting. Mix with the top 2–4 in. of soil with mechanical equipment right after application. If broadcast, apply 34 lb/A from 1 week before planting to at planting time and mix with 2–4 in. of soil. DO NOT use as a seed furrow treatment or allow granules to contact the seed. No more than 1 application per season.
Velum (a.i. fluopyram)	Apply 4.0–5.0 fl oz/A in seed furrow and cover with soil, or chemigation into root-zone through low-pressure drip or trickle irrigation. No more than 13.7 fl oz of Velum (0.446 lb fluopyram) per acre per year, regardless of formulation or method of application (soil or foliar). Do not apply within 14 days of harvest.
Biological nematicides	See chapter 19.

Table 11. Fumigant nematicides for legume crops in Florida.

Nematicide	Broadcast Application ¹		In-the-Row Applications
	Gallons per Acre	fl oz/1000 ft/chisel-spaced 12" apart	
Telone II ^{2,3}	9–12	26–35	For any row spacing, application rates given may be concentrated in the row but shall never exceed the labeled maximum for broadcast applications. Consult the product label for additional detail.
Telone C-17 ^{2,3}	10.8–17.1	31.8–50.2	For any row spacing, application rates given may be concentrated in the row but shall never exceed the labeled maximum for broadcast applications. Consult the product label for additional detail.
Telone C-35 ^{2,3}	13–20.5	38–60	For any row spacing, application rates given may be concentrated in the row but shall never exceed labeled maximum for broadcast applications. Consult the product label for additional detail.
Pic-Clor 60	19–31.5	57–90	For any row spacing, application rates should never exceed the labeled maximum for broadcast applications. Consult the product label for additional detail.
Vapam HL	75	–	For drip or in-row chisel fumigation, consult product label for proportionately reduced overall rates, drip concentration, and flow-modifying directions and procedures.
KPam HL	60	–	For drip or in-row chisel fumigation, consult product label for proportionately reduced overall rates, drip concentration, and flow-modifying directions.
Allyl Isothiocyanate (AITC) Dominus	40	–	For drip or in-row fumigation and crop termination, consult product label for overall rates, drip concentration, and other flow-modifying directions.

¹ Gallons/acre and fl oz/1000 ft provided only for mineral soils. Higher rates may be possible for heavier-textured (loam, silt, clay) or highly organic soils.

² All of the fumigants mentioned are for retail sale and use only by state-certified applicators or persons under their direct supervision. New supplemental labeling for the Telone products must be in the hands of the user at the time of application. See new label details for additional use restrictions based on soil characteristics, buffer zones, requirements for Fumigant Management Plans (FMP) and personal protective equipment (PPE), mandatory good agricultural practices (GAPs), product and applicator training certification, and other rate-modifying recommendations with use of highly retentive mulch films.

³ Higher application rates are possible in the presence of cyst-forming nematodes.

Rates are believed to be correct for products named, and similar products of other brand names, when applied to mineral soils. Higher rates are required for muck (organic) soils. However, the **grower** has the final responsibility to see that each product is used legally; **read the label** of the product to be sure that you are using it properly.

¹ This document is HS727, one of a series of the Department of Horticultural Sciences, UF/IFAS Extension. Original publication date June 1995. Revised annually. Most recent revision August 2026. Visit the Ask IFAS website at <https://ask.ifas.ufl.edu> for the currently supported version of this publication. © 2026 UF/IFAS. This publication is licensed under [CC BY-NC-ND 4.0](#).

² Craig J. Frey, county Extension director and Extension agent III, multi-county commercial vegetable production, M.S., UF/IFAS Extension Hendry County, Labelle, FL; Peter J. Dittmar, associate professor, weed science, UF/IFAS Department of Horticultural Sciences, Gainesville, FL; Anna Mészáros, Extension agent II, M.S., commercial horticulture, vegetable crop production, UF/IFAS Extension Palm Beach County, Belle Grande, FL; Dakshina R. Seal, scientist, pest management, UF/IFAS Tropical Research and Education Center, Homestead, FL; Jawwad Qureshi, professor, Department of Entomology and Nematology, UF/IFAS Southwest Florida Research and Education Center, Immokalee, FL; Shouan Zhang, professor, vegetable and tropical fruit disease management, Department of Plant Pathology, UF/IFAS Tropical Research and Education Center, Homestead, FL; Johan Desaegeer, associate professor, nematology, Department of Entomology and Nematology, UF/IFAS Gulf Coast Research and Education Center, Wimauma, FL; Qingren Wang, Extension agent IV, Ph.D., vegetable crops, UF/IFAS Extension Miami-Dade County, Homestead, FL; UF/IFAS Extension, Gainesville, FL 32611.

The use of trade names in this publication is solely for the purpose of providing specific information. UF/IFAS does not guarantee or warranty the products named, and references to them in this publication do not signify our approval to the exclusion of other products of suitable composition.

Use pesticides safely. Read and follow directions on the manufacturer's label.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information, and other services only to individuals and institutions that operate in compliance with applicable federal and state non-discrimination laws and policies. For more information on obtaining other UF/IFAS Extension publications, contact your county's UF/IFAS Extension office. U.S. Department of Agriculture, UF/IFAS Extension Service, University of Florida, IFAS, Florida A&M University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Andra Johnson, Dean for UF/IFAS Extension.