Martin-Gatton
College of Agriculture, Food and Environment
Cooperative Extension Service

Plant Pathology Fact Sheet **PPFS-VG-41**

Cultural Calendar for Commercial Production of Broccoli, Cauliflower & Other Cole Crops

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Introduction

Integrated pest management (IPM) includes the combination of biological, cultural, physical, and chemical tools in efforts to manage diseases and pests while minimizing risks associated with pesticides. Cultural practices are an integral part of an IPM program and should be incorporated into all commercial systems whether large or small, conventional or organic. This publication provides recommended practices at approximate growth stages and / or production periods. However, these timelines are approximate and may require adjustment for particular conditions. Growers who encounter situations that may not align with suggestions here should contact their county Extension office for assistance. Extension offices can also provide updated pest management recommendations. This cultural guide serves as a supplement to published spray guides and scouting guides.

Broccoli in field production.

Spring-planted Cole Crops in Field Production

Time of Year[1]	Growth Stage	Target Organism	Cultural Management
March	**Indoor seeding**	**Disease** • Damping-off	Utilize new or pasteurized potting mix; Use new or sanitized trays/pots; Choose resistant or tolerant cultivars; Plant certified seed or opt for fungicide treated seed when possible; Heat-treat saved seed.
		Insects	Monitor thrips, aphids, mites, and whiteflies; Treat as needed.

[1] The growth stage indicated typically occurs during this time of year; however, this may vary from year to year depending on environmental conditions.

Spring-planted Cole Crops in Field Production

Time of Year[1]	Growth Stage	Target Organism	Cultural Management
March	**Field preparation**	**Plant health**	Ensure good drainage; Raise beds; Install drip irrigation; Deep till when soils are warm; Avoid tilling wet soils.
		Diseases	Avoid planting related crops in the same field for at least 3 years; Use wide spacing for air circulation; Use mulch to reduce soil contact.
		Insects • Cutworms • Flea Beetles	Prepare soil and eliminate weed hosts two to three weeks prior to transplanting.
		Weeds	Create a stale seed bed through use of solarization, application of silage mat, or burndown herbicide; Plant a cover crop such as buckwheat to suppress early season weeks; Use organic or plastic mulch under plants; For no-till systems, terminate and till-in cover crops before planting and plant through residue.
		Wildlife	Manage weeds to reduce rodent habitats; Scout for voles and treat as needed; Check and repair wildlife exclosures; Attract predators; Install raptor perches; Protect predators like coyotes; Remove any brush piles or weedy/woody cover near cultivation areas; Manage weeds around electric fences to prevent grounding.
March-April	**Direct seeding/ Transplanting**	**Diseases** • Damping-off • Pythium root & crown rot • White Mold (*Sclerotinia*)	Plant resistant cultivars; Plant certified seed or opt for fungicide treated seed when possible; Heat treat saved seed; Avoid planting related crops in the same field for at least 3 years; Plant into warm soils; Avoid planting into excessively we soils; Use wide spacing for air circulation; Maintain good drainage; Remove and destroy diseases plants.
		Insects • Aphids • Diamondback moth • Flea Beetles • Imported cabbageworm	Protect plants from insect feeding with row covers; If using row covers, monitor for aphids and release predators under row cover if needed; Scout for insects weekly to determine need for controls.
		Weeds	Use organic or plastic mulch under plants; Control weeds between rows with cultivation or mowing.
		Wildlife	Manage weeds to reduce rodent habitat; Scout for voles and treat as needed; Attract predators; Install raptor perches; Protect predators like coyotes; Check wildlife exclosures and repair as needed; Manage weeds around electric fences to prevent grounding.

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Spring-planted Cole Crops in Field Production

Time of Year[1]	Growth Stage	Target Organism	Cultural Management
May - June	**Vegetative growth through harvest**	**Diseases** • Alternaria leaf spot • Bacterial soft rot • Black leg • Black rot • Cercospora leaf spot	Remove infected plants and plant tissues; Do not compost diseased material; Manage weeds; Clean and sanitize tools and equipment after use.
		• Pythium root & crown rot	Remove diseased plants and roots; Do not compost.
		Insects • Beet armyworm • Cabbage looper • Cross-striped cabbageworm • Diamondback moth • Fall armyworm • Harlequin bug • Imported cabbageworm • Southern cabbageworm • Yellowstriped armyworm	Protect plants with row covers; Monitor insects pests weekly, checking undersides of leaves and determine need for control based on scouting results; Hand pick and remove individual insects when populations are low; Keep records.
		Weeds	Control weeds with cultivation and/or low mowing between rows.
		Wildlife	Check exclosures frequently and repair as needed; Mow grass and/or remove brush piles and grassy areas near cultivated sites to reduce rodent habitat; Manage weeds around electric fences to prevent grounding.
May-June	**End of Season**	**Diseases** • Bacterial soft rot • Black leg • Black rot • Cercospora leaf spot • Pythium root & crown rot	Gather all remaining plants and plant tissues and destroy; Do not compost diseased material; Deep till to encourage decomposition; Do not save seed from infected fruit; Clean and sanitize tools and equipment; Clean and sanitize irrigation lines and weed mats or discard those that cannot be sanitized.
		Insects • Aphids • Diamondback moth • Flea beetles • Imported cabbageworm	Gather all remaining plants and plant tissues and destroy; Do not compost diseased material; Deep till to encourage decomposition; Do not save seed from infected fruit; Clean and sanitize tools and equipment; Clean and sanitize irrigation lines and weed mats or discard those that cannot be sanitized.
		Weeds	Plant a cover crop to suppress summer annuals (timing may vary).
		Wildlife	Check future cultivation locations for rodent presence; Treat voles where needed at this time; Promote deer hunting (seasonal) if deer are overpopulated/causing damage, focus on adult female deer removal; Remove raptor perches temporarily if any rodenticides are used and replace perches four weeks after treatment ends; If raccoons, squirrels, or groundhogs are causing issues, encourage hunting or trapping on the property to lower populations, continue this effort through the fall and early winter as currently those hunting and trapping seasons are open well into mid-winter.

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Fall-planted Cole Crops in Field Production

Time of Year[1]	Growth Stage	Target Organism	Cultural Management
July	**Indoor seeding**	**Disease** • Damping-off	Utilize new or pasteurized potting mix; Use new or sanitized trays/pots; Plant certified seed or opt for fungicide treated seed when possible; Heat treat saved seed.
		Insects	Monitor thrips, aphids, mites, and whiteflies; Treat as needed.
July	**Field preparation**	**Plant health**	Ensure good drainage; Raise beds; Install drip irrigation.
		Diseases	Avoid planting related crops in the same field for at least 3 years; Use wide spacing for air circulation; Use mulch to reduce soil contact.
		Insects • Cutworms	Prepare soil and eliminate weed hosts two to three weeks prior to transplanting.
		Weeds	Create a stale seed bed through use of solarization, application of silage mat, or burndown herbicide; Plant a cover crop such as buckwheat to suppress early season weeds; Use organic or plastic mulch under plants; For no-till systems, terminate and till-in cover crops before planting; Plant through residue.
		Wildlife	Manage weeds to reduce rodent habitats; Scout for voles and treat as needed; Check and repair wildlife exclosures; Attract predators; Install raptor perches; Protect predators like coyotes; Remove any brush piles or weedy/woody cover near cultivation areas; Manage weeds around electric fences to prevent grounding.
July-August	**Direct seeding/ Transplanting**	**Diseases** • Damping-off • Pythium root & crown rot • Rhizoctonia crown & root rot	Plant resistant cultivars; Plant certified seed or opt for fungicide treated seed when possible; Heat treat saved seed; Avoid planting related crops in the same field for at least 3 years; Plant into warm soils; Avoid planting into excessively we soils; Use wide spacing for air circulation; Maintain good drainage; Remove and destroy diseases plants.
		Insects • Beet armyworm • Cabbage looper • Cross-striped cabbageworm • Diamondback moth • Fall armyworm • Harlequin bug • Imported cabbageworm • Southern cabbageworm • Yellowstriped armyworm	Protect plants with row covers; Monitor insects pests weekly, checking undersides of leaves and determine need for control based on scouting results; Hand pick and remove individual insects when populations are low; Keep records; Reflective mulches reduce aphid and thrips colonization until plants begin to cover mulch.
		Weeds	Use organic or plastic mulch under plants; Control weeds between rows with cultivation or mowing.
		Wildlife	Manage weeds to reduce rodent habitat; Scout for voles and treat as needed; Attract predators; Install raptor perches; Protect predators like coyotes; Check wildlife exclosures and repair as needed; Manage weeds around electric fences to prevent grounding.

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Fall-planted Cole Crops in Field Production

Time of Year[1]	Growth Stage	Target Organism	Cultural Management
August-October	**Vegetative growth through harvest**	**Diseases** • Alternaria leaf spot • Bacterial soft rot • Black rot • Cercospora leaf spot	Remove infected leaves, fruit, and plant tissues; Do not compost diseased material; Manage weeds; Prune and stake plants to increase air circulation; Use mulch to reduce soil contact; Clean and sanitize tools and equipment after use.
		• Pythium root & crown rot • Rhizoctonia root & crown rot	Remove diseased plants and roots; Do not compost.
		Insects • Beet armyworm • Cabbage looper • Cross-striped cabbageworm • Diamondback moth • Fall armyworm • Harlequin bug • Imported cabbageworm • Southern cabbageworm • Yellowstriped armyworm	Protect plants with row covers; Monitor insects pests weekly, checking undersides of leaves and determine need for control based on scouting results; Hand pick and remove individual insects when populations are low; Keep records.
		Weeds	Control weeds with cultivation and/or low mowing between rows.
		Wildlife	Check exclosures frequently and repair as needed; Mow grass and/or remove brush piles and grassy areas near cultivated sites to reduce rodent habitat; Manage weeds around electric fences to prevent grounding.
October	**End of season**	**Diseases** • Alternaria leaf spot • Bacterial soft rot • Black rot • Cercospora leaf spot • Pythium root & crown rot • Rhizoctonia root & crown rot	Gather all remaining plants and plant tissues and destroy; Do not compost diseased material; Deep till to encourage decomposition; Do not save seed from infected fruit; Clean and sanitize tools and equipment; Clean and sanitize irrigation lines and weed mats or discard those that cannot be sanitized.
		Insects • Beet armyworm • Cabbage looper • Cross-striped cabbageworm • Diamondback moth • Fall armyworm • Harlequin bug • Imported cabbageworm • Southern cabbageworm • Yellowstriped armyworm	Gather all remaining plants and plant tissues and destroy; Do not compost diseased material; Deep till to encourage decomposition; Do not save seed from infected fruit; Clean and sanitize tools and equipment; Clean and sanitize irrigation lines and weed mats or discard those that cannot be sanitized.

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Fall-planted Cole Crops in Field Production

Time of Year[1]	Growth Stage	Target Organism	Cultural Management
October *(cont'd)*	**End of season** *(cont'd)*	**Weeds**	Plant a cover crop to suppress winter annuals and early spring weeds (timing may vary).
		Wildlife	Check future cultivation locations for rodent presence; Treat voles where needed at this time; Promote deer hunting (seasonal) if deer are overpopulated/causing damage, focus on adult female deer removal; Remove raptor perches temporarily if any rodenticides are used and replace perches four weeks after treatment ends; If raccoons, squirrels, or groundhogs are causing issues, encourage hunting or trapping on the property to lower populations, continue this effort through the fall and early winter as currently those hunting and trapping seasons are open well into mid-winter.

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Additional Resources

Additional information can be found at the following University of Kentucky websites

- Department of Horticulture https://horticulture.ca.uky.edu/
- Department of Entomology https://entomology.ca.uky.edu/
- Department of Forestry https://forestry.ca.uky.edu/
- Department of Plant Pathology https://plantpathology.ca.uky.edu/extension/publications

These resources can be found on the Department of Plant Pathology website

- IPM Scouting Guide for Common Pests of Solanaceous Crops in Kentucky (ID-172)
- Vegetable Production Guide for Commercial Growers (ID-36)
- Southeastern U.S. Vegetable Crop Handbook (SEVEW)

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