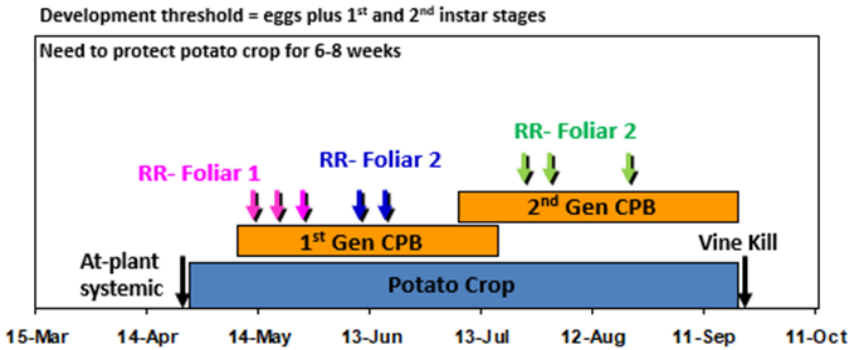
Insecticide options for controlling Colorado potato beetle in Wisconsin



For most CPB chemical management tools, timing application occurs with the appearance of first instar larvae in the field. Early instar larvae are the most susceptible life stage for chemical management, and applications should be timed with the midpoint of egg hatch. The first application should be followed up in 7-10 days later with a second application of the same compound depending on the formulation and label restrictions. Refer to the UW-Extension publication Commercial Vegetable Production in Wisconsin (A3422) for a list of registered insecticides and management recommendations.

Applications of ledprona (Calantha), novaluron (Rimon), tolfenpyrad (Torac), spinetoram (Radiant, Delegate), or abamectin (Agri-Mek) should be applied when nearly 50-75% of egg masses have hatched, and a few 2nd instar larvae are present from the earliest hatched egg masses. These 1st generation larvicides often require 2-3 subsequent re-applications spaced on a 7-10 day interval to achieve sufficient control. In northern Wisconsin, CPB adults are still colonizing fields, and mating and egg laying are just underway along field perimeters. With warm and dry daytime high and low temperatures forecast for the coming week, populations will move fast so don't delay! Careful scouting will reveal the exact timing! Recommended products for control are listed below:

At-plant systemic options

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar)	Late Larvae (3rd-4th instar)
Belay	clothianadin	4A	pH < 7	none (see notes)	0	12 fl oz	+	-	+++	++
1). consider soil surfactant to increase uniform movement in soil profile, 2.) season total maximum is only 0.2 lb a.i./ac for both soil-applied and foliar). Do not apply any Group 4A insecticides over the top of an at-plant application of Belay. Considerable resistance with CPB, very effective for potato leafhopper and colonizing aphids.										
Platinum 75SG	thiamethoxam	4A	pH < 7	none (see notes)	0	2.67 oz	+	-	+++	++
Note: 1). consider soil surfactant to increase uniform movement in soil profile, 2.) season total maximum varies by use pattern (soil-applied vs foliar). Can apply additional foliar applications of a Group 4A on an at-plant application. Considerable resistance with CPB, very effective for potato leafhopper and colonizing aphids.										
Admire Pro (generics)	imidacloprid	4A	pH < 7	none (see notes)	0	8.7 fl oz	+	-	+++	++
Note: 1). consider soil surfactant to increase uniform movement in soil profile, 2.) season total maximum varies by use pattern (soil-applied vs foliar). Can apply additional foliar applications of a Group 28 on an at-plant application. Considerable resistance with CPB, very effective for potato leafhopper and colonizing aphids.										
Verimark SC	cyantraniliprole	28	pH < 6.5	none (see notes)	0	13.5 fl oz	+	-	+++	++
Note: 1). consider soil surfactant to increase uniform movement in soil profile, 2.) season total maximum varies by use pattern (soil-applied vs foliar). Can apply additional foliar applications of a Group 28 on an at-plant application (not advisable!). Will provide only 45-60 days of control of CPB. Ineffective for potato leafhopper and mildly effective for aphids.										
Regent 4SC	fipronil	2B		none (see notes)	90	3.2 fl oz	-	-	-	-
Note: for use as an at-plant, distributed in-furrow application for the control of Asiatic garden beetle, other white grubs and wireworms.										

1st generation Colorado potato beetle materials

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar)	Late Larvae (3rd-4th instar)
Rimon 0.83EC	novaluron	15	pH < 6.5	NIS (0.25-0.5% V:V)	14	9,8,7 fl oz 10,8,8 fl oz	-	+++	++	++
Initiate applications when egg deposition first appears in outer rows (0-48rows) of the field. Initial foliar application (9.0 fl oz/ac) can be applied as a 'ring' application, treating only the outer-most rows of the field. Subsequently, apply 2nd foliar application (8.0 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application (7.0 fl oz/ac) 7 days after prior application. Continue to scout the field, if an additional application is necessary, apply a final application (8.0 fl oz) to the interior of the field, not initially treated during the ring application. Must be applied with an adjuvant (NIS), and consider application outside of mid-day hours (10:00 - 16:00 h). Slightly acidify tank mix prior to application (pH < 6.5). Caution when tank-mixing this product with fungicides containing proprietary stickers (e.g., WeatherStik). Both ground and aerial application are appropriate.										
Agri-Mek SC	abamectin	6	pH < 6.5	NIS (0.5% V:V)	14	3.0-3.25 fl oz	+	-	+++	++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (3.25 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (3.0 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7 days after previous application with another larvicide that is effective on later stage larvae (e.g., Radiant @ 8 fl oz/ac). Must be applied with an adjuvant (NIS), and consider application outside of mid-day hours (10:00 - 16:00 h). Slightly acidify tank mix prior to application (pH < 6.5). Caution when tank-mixing this product with fungicides containing proprietary stickers (e.g., WeatherStik). Both ground and aerial application are appropriate. Only two successive applications of Agri-Mek SC allowed per crop season.										
Torac	tolfenpyrad	21A	pH = 6.5	NIS (0.5% V: V)	14	14-21 fl oz	++	++	+++	++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (21.0 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (21.0 fl oz/ac) over entire field two weeks later. Continue to scout field and consider a 3rd foliar application with another larvicide that is effective on later stage larvae as needed. Must be applied with an adjuvant (NIS), and consider application outside of mid-day hours (10:00 - 16:00 h). Slightly acidify tank mix prior to application (pH < 6.5). Both ground and aerial application are appropriate. Only two successive applications of Torac allowed per crop season.										
Blackhawk 36WDG	spinosad	5	pH = 7	NIS (0.125 - 0.25% V:V)	7	3.0-3.3 oz	+	-	+++	+++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (3.3 oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (3.0 oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7 days after previous application with another larvicide that is effective on later stage larvae (e.g., Agri-Mek SC @ 3.25 fl oz/ac). Can be applied with an adjuvant (NIS), and consider application outside of mid-day hours (10:00 - 16:00 h). Neutral tank pH is appropriate for this application (pH = 7.0). Both ground and aerial application are appropriate. Only two successive applications of Blackhawk allowed in succession per crop season.										
Radiant SC / Delegate WG	spinetoram	5	pH = 7	NIS (0.125 - 0.25% V:V)	7	Radiant 6.5-8.0 fl oz/A, Delegate 2.5 – 4.0 oz/A	++	-	+++	+++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (8.0 oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (6.5 oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7 days after previous application with another larvicide that is effective on later stage larvae (e.g., Agri-Mek SC @ 3.25 fl oz/ac). Can be applied with an adjuvant (NIS) and consider application outside of mid-day hours (10:00 - 16:00 h). Neutral tank pH is appropriate for this application (pH = 7.0). Both ground and aerial application are appropriate. Only two successive applications of Radiant or Delegate allowed in succession per crop season.										
Calantha	ledprona	35	pH < 6.5	NIS (0.125 - 0.25% V:V)	0	16.0 fl oz	++	-	+++	++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (16.0 fl oz/ac) can be applied to the field perimeter and all subsequent applications (16.0 fl oz/ac) can occur over the entire field one week later. Continue to scout field and consider a 3rd or 4th foliar application 7 days after previous application as needed through only the 1st generation of CPB. Do not use Calantha on 2nd generation if used earlier in the same year. Can be applied with an adjuvant (NIS). Both ground and aerial application are appropriate. No more than four successive applications of Calantha are allowed in succession per crop season.										

2nd generation Colorado potato beetle materials

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar)	Late Larvae (3rd-4th instar)
Coragen 1.67SC / Vantacor 5SC	chlorantraniliprole	28	pH < 6.5	MSO (0.25-0.5 % V:V)	14	variable and formulation dependent (fl oz/A)	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (7.5 fl oz/ac, Coragen) can be applied to the entire field. Subsequently, apply 2nd foliar application (5.5 fl oz/ac, Coragen) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Up to 4 successive applications of Coragen allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Exirel 0.83SC	cyantraniliprole	28	pH < 6.5	MSO (0.25-0.5 % V:V)	7	5.0-13.5 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (13.5 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (10 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Only two successive applications of Exirel allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Minecto Pro	abamectin + cyantraniliprole	6 + 28	pH < 6.5	MSO (0.25-0.5 % V:V)	14	5.5-10 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (10 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (7.5 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Only two successive applications of Minecto Pro allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Besiege	chlorantraniliprole + lambda-cyhalothrin	28 + 3	pH < 6.5	MSO (0.25-0.5 % V:V)	14	6.0-9.0 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (9.0 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (7.0 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Three successive applications of Besiege are allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Elevest	chlorantraniliprole + bifenthrin	28 + 3	pH < 6.5	MSO (0.125 – 0.25% V:V)	21	5.6-9.6 fl oz/A	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (9.6 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (7.5 fl oz/ac) over entire field one week later. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Two successive applications of Elevest are allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Voliam Flexi	chlorantranilprole + thiamethoxam	28+4A	pH < 6.5	MSO (0.25-0.5 % V:V)	14	4.0 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (4.0 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (3.5 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Only two successive applications of Voliam Flexi are allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										

Other options

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar	Late Larvae (3rd-4th instar)
Admire Pro (foliar)	imidacloprid	4A	pH < 7	none (see notes)	7	1.3 fl oz	+	-	++	+
Apply Admire Pro as a foliar insecticide for control of late-season potato leafhopper and aphids where no Group 4A insecticide was used as an at-plant insecticide starter.										
Actara 25WG (foliar)	thiamethoxam	4A	pH < 7	none (see notes)	14	1.5-3.0 oz	+	-	++	+
Apply Actara 25WG as a foliar insecticide for control of late-season potato leafhopper and aphids where no Group 4A insecticide was used as an at-plant insecticide starter.										
Assail 30SG (foliar)	acetamiprid	4A	pH < 7	NIS (0.25-0.5 % V:V)	7	1.5-4.0 oz	+	-	++	+
Apply Assail 30SG as a foliar insecticide for control of late-season potato leafhopper and aphids where no Group 4A insecticide was used as an at-plant insecticide starter.										
Venom	dinotefuran	4A	pH < 7	none (see notes)	7	1.0-1.5 oz	+	-	++	+
Apply Venom as a foliar insecticide for control of late-season potato leafhopper and aphids where no Group 4A insecticide was used as an at-plant insecticide starter.										
Avaunt eVo	indoxacarb	22	pH < 7	NIS (0.25% V:V)	7	3.5-6.0 fl oz	+++	-	-	-
Apply Avaunt insecticide targeting only adult Colorado potato beetle. Applications can be tank mixed with Rimon 0.83EC during early season applications to kill adults, alternatively a tank mix application can be applied during later 2nd generations to target adults only. The addition of piperonyl butoxide (PBO) is necessary to increase the efficiency of adult control. Use a formulation of PBO that contains > 90% active ingredient. Apply only two successive applications, spaced 5-7 days apart.										
Brigade 2EC	bifenthrin	3A	N/A	N/A	21	2.1-6.4 fl oz	+	-	-	-
Apply Brigade insecticide targeting only adult Colorado potato beetle. Applications can be applied during later 2nd generations to target adults only. The addition of piperonyl butoxide may increase the efficiency of adult control. Apply only two successive applications, spaced 5-7 days apart.										
Imidan 70W	phosmet	1B	pH < 6.5	N/A	7	1.33	+	-	+	-
DO NOT Re-enter fields within 5 days (5-day REI)! Apply Imidan insecticide targeting only adult Colorado potato beetle. Applications can be applied during later 2nd generations to target adults only. Apply successive applications spaced no less than 10 days apart.										

Definitions:

- PHI: Post-harvest interval (time that must elapse after last application and before any harvesting of the crop, given in hours)
- Activity icons: (-) no activity, (+) very little activity, (++) moderate activity, (+++) excellent activity