**2005 Sweet Corn Pest Control Selection Guide**. This guide was developed to assist in the selection of products available for pest control in sweet corn. It was developed as a convenience for producers and contents are not intended to be all-inclusive. Inclusion of a product in this guide should not be considered an endorsement of the product nor does the exclusion of a product mean that the product is not effective. This guide is produced for your information only and it remains the responsibility of the reader to check the specific product labels and follow the instructions as stated.

## SECTION A: WEED CONTROL

*Research has shown that the critical period for weed control in corn is from the 3 to 8 leaf stage. Excellent weed control must be maintained throughout this critical period. Corn kept weed free for approximately 34 days after planting or until 6 to 8 leaves have formed, should result in minimal yield loss ( 0 – 5% under conditions of heavy weed pressure). If weeds are controlled throughout this critical control period, later emerging weeds should not reduce yields.*

| | Herbicide Trade Name | Weed Control (only weeds controlled at 80% and higher are listed) | Product rates | Water volumes | Time of application | Comments (see labels for additional information and precautions) |
|---|---|---|---|---|---|---|
| **Soil applied *grass* herbicides (residual)** | **Dual II Magnum** | Barnyard grass, crabgrass, fall panicum, foxtails, witchgrass, nutsedge | 1.25 to 1.75 L/ha (0.5 to 0.7 L/acre) | Minimum of 150 L/ha (13 gal/ac) | 1) Pre-plant incorporated (ppi) 2) after planting but before weed and corn emergence (pre) | Contains benoxacor which improves corn tolerance. For pre-emergence applications rain is required within 10 days or a shallow cultivation is required. Can be used in conservation tillage systems. Liquid fertilizers may be used as a carrier in place of water when used pre or ppi. Will provide some limited broadleaf weed control. Should not be used alone for broad spectrum weed control. Registered for use with Atrazine and others to provide broad spectrum weed control. Excellent crop tolerance. |
| **Soil applied *broadleaf* herbicides (residual)** | **Callisto 480 SC** | Lamb's quarters, redroot pigweed, velvetleaf, wild mustard, common ragweed (suppression) | 0.30 L/ha (0.12 L/acre) | 200 L/ha and a minimum pressure of 206 Kpa | After planting- before corn and weeds emerge (pre) | Do not use on corn hybrids with CHU ratings of 2500 or less or in geographic regions with 2500 or less average seasonal CHU's. Do not apply more than 0.30 L product/ha per season. Certain crops may be sensitive to low concentrations in the soil (refer to label recropping guidelines). If an activating rain (12mm) is not received within 7-10 days after a preemergent application, rotary hoeing is suggested to activate the herbicide. PHI is 50 days. Controls triazine resistant weeds. |
| | **Atrazine 480**<br><br>**Aatrex Nine-O**<br>**Atrazine 90 WDG** | Wild buckwheat, corn spurry, lady's thumb, lamb's quarters (non triazine resistant), mustards, pigweeds, hempnettle | 2.1 to 3.1 L/ha (0.85 to 1.25 L/acre)<br><br>1.12 to 1.65 kg/ha (0.45 to 0.67 kg/acre) | Min 150 L/ha (13 gal/ac) | 1) Before planting – preplant incorporated 2) After planting before corn and weeds emerge (pre) | Can be applied in liquid fertilizers. Rainfall within 10 days of application is required for activation, otherwise a shallow cultivation is necessary. Continued use can encourage development of triazine resistant weeds when used alone. Greater chance of carryover from post planting treatments. Red clover may be sensitive to atrazine residues the year after application. Timothy, barley, oats , wheat and alfalfa should be tolerant in most years when low atrazine rates have been applied and if Atrazine has not been applied continuously. Registered for use with Dual II Magnum and others. Excellent crop tolerance. |
| **Soil applied *broadleaf & grass* herbicides (residual)** | **Any of above combinations which are registered** | | | | | |
| | **Primextra II Magnum (Atrazine/Dual II Magnum)** | Barnyard grass, crabgrass, fall panicum, foxtails, witchgrass, wild buckwheat, corn spurry, lady's thumb, lamb's quarters, mustards, pigweeds, hempnettle | 3 to 4 L/ha (1.2 to 1.6 L/acre) | Minimum of 150 L/ha (13 gal/ac) | 1) Before planting – preplant incorporated 2) After planting before corn and weeds emerge | Rain required within 10 days of pre application to activate. Fields should be mold board ploughed and tilled before planting back to soybeans, oats or barley and not underseeded the following year. Use the lower rates for light weed infestations and the higher rates for heavy weed infestations. Excellent crop tolerance. The 3 L/ha rate is equivalent to 1.3 L/ha of Dual II Magnum + 2L/ha of Aatrex 480. The 4 L/ha rate is equivalent to 1.75 L/ha of Dual II Magnum + 2.7 L/ha Aatrex 480. |
| **Post emergent *grass* herbicides** | **Dual II Magnum** | Barnyard grass, crabgrass, fall panicum, foxtails, witchgrass, | 1.25 to 1.75 L/ha (0.5 to 0.7 L/acre) | Minimum of 150 L/ha (13 gal/ac) | Corn – up to the 6 leaf annual grasses – less than 2 leaf. | Contains benoxacor which improves corn tolerance. Apply before weeds pass the two leaf stage. Should not be used alone for broad spectrum weed control. Registered for use with Atrazine and others to provide broad spectrum weed control. Used mostly for annual grass control. Provides residual control. Excellent crop tolerance. |
| | **Accent + non ionic surfactant (Citowett plus, Agral 90 or Agsurf)**<br><br>*** (For use on specific varieties)** | Quackgrass**,** barnyard grass, fall panicum, foxtails, old witch grass | 33 g/ha (13g/acre) + 2L per 1000L water surfactant | 140-190 L/ha (12.5 – 17 gal/ac) | Corn – 1 to 8 leaf Annual grasses 1-6 leaf Quackgrass 3-6 leaf | Provides control of emerged quackgrass. Weak control on crabgrass. Warm, moist conditions after application promote Accent activity. If corn is under stress it may be injured. Rainfall within 2-4 hours may reduce activity. Weeds emerging after application will not be controlled (no residual control). See label for yellow foxtail control instructions. Will not control broadleaf weeds. Registered for use with Pardner (4 to 8 leaf). Product must be used within 24 hours of mixing. Do not apply if corn has been treated with an organophosphorous insecticide. Merge or Suremix Oil concentrates can also be used in place of the listed surfactants (see label for rates). Good to excellent crop tolerance. |

| | Herbicide Trade Name | Weed Control (only weeds controlled at 80% and higher are listed) | Product rates | Water volumes | Time of application | Comments (see labels for additional information and precautions) |
|---|---|---|---|---|---|---|
| **Post emergent b*roadleaf* herbicides** | **Atrazine 480**<br><br>**Aatrex Nine-O**<br>**Atrazine 90 WDG**<br><br>**+ OIL** | Wild buckwheat, corn spurry, lady's thumb, lamb's quarters (non triazine resistant), mustards, pigweeds | 2.1 to 3.1 L/ha<br>(0.85 to 1.25 L/acre)<br><br>1.12 to 1.65 kg/ha<br>(0.45 to 0.67 kg/acre)<br><br>+ 10 to 17 L/ha oil<br>(Oil rates will vary depending upon product) | Min 150 L/ha<br>(13 gal/ac) | Corn – tolerant at all stages. Best before 30 cm (12 inches) however.<br><br>See Pardner labels for tank mix timings | Post emergent activity increased when applied with an oil. With this combination, broadleaf weeds up to 10 cm should be controlled. Corn injury could result if applied during periods of cold, unstable weather. Continued use of atrazine alone could promote triazine resistance in some weeds. Applications up to 30 cm corn will favour breakdown during the growing season and reduce carryover threat. Fall plowing (moldboard) will reduce triazine injury more than a spring plowing. Do not apply within 45 days of harvest. Can be mixed with Pardner and Dual II Magnum and others (see labels). Red clover may be sensitive to atrazine residues the year after application. Timothy, barley, oats, wheat and alfalfa should be tolerant in the following year when atrazine has been applied at the low rates and not continuously. Rainfall within 2 hours of application may reduce control. Good crop tolerance. |
| | **Basagran Forte**<br>**or**<br><br>**Basagran**<br>**+**<br>**Assist** | Corn spurry, lady's thumb<br>lambs quarters, mustards, pigweeds, nutsedge, Canada thistle | 1.75 to 2.25 L/ha<br>(0.7 to 0.9 L/acre)<br>or<br>1.75 to 2.25 L/ha<br>(0.7 to 0.9 L/acre)<br>+ 2 L/ha of Assist (0.8 L/acre) | 100 – 300 L/ha<br>(9 – 27 gal/ac)<br><br>use higher volume for weeds at their upper limit | Corn – tolerant at all stages. 1-5 leaf is optimal.<br><br>Weeds- small and actively growing | Contact herbicide – good coverage important. Weeds emerging after application will not be controlled. Grasses are not controlled. Triazine resistant weeds are controlled. Use in hot humid weather may cause temporary (10 days) leaf yellowing, flecking, or bronzing. Rainfall within 6 hours of application may reduce control. Excellent crop tolerance. |
| | **Laddok (basagran/atrazine)**<br><br>**+ Assist** | Wild buckwheat, corn spurry, lady's thumb, lamb's quarters (non triazine resistant), mustards, pigweeds | 2 to 4 L/ha<br>(0.8 to 1.6 L/acre)<br><br>+ 1 L Assist per 100 L of water<br><br>The 4L/ha rate is equivalent to 1.67 L/ha of Aatrex 480. | 200 to 400 L/ha<br>(18 – 36 gal/ac)<br><br>use higher volumes for dense weed infestations or weeds at upper limit | Corn – tolerant at any stage. Most effective when applied between 1 and 5 leaves.<br><br>Weeds – small and actively growing | Apply 3 to 4 L/ha of Laddok for weed control. The lower rates can be applied if Dual II Magnum was applied pre. See label for application rate table on a weed species and size basis. Grasses will not be controlled. Most effective control usually achieved 18 to 28 days after planting. Corn tolerant at all stages but temporary (10 days) slight leaf speckling may occur. Triazine resistant weeds are controlled. Not registered for use with other herbicides. Lower rates are used when mixed or used in sequence with other herbicides. Rainfall within 6 to 8 hours of application may reduce activity. Excellent crop tolerance. |
| | **Primextra II Magnum (Atrazine/Dual II Magnum)** | Barnyard grass, crabgrass, fall panicum, foxtails, witchgrass, wild buckwheat, corn spurry, lady's thumb, lamb's quarters, mustards, pigweeds, hempnettle | 3 to 4 L/ha<br>(1.2 to 1.6 L/acre) | Minimum of 150 L/ha (13 gal/ac) | Corn - up to 6 leaf<br>Weeds- before 2 leaf | Use lower rates for light weed infestations and higher rates for heavy weed infestations. Provides residual control. Registered for use with Banvel II and others (see label). Fields should be mold board ploughed and tilled before planting back to soybeans, oats or barley. Fields should not be underseeded the following year. The 3 L/ha rate is equivalent to 1.3 L/ha of Dual II Magnum + 2L/ha of Aatrex 480. The 4 L/ha rate is equivalent to 1.75 L/ha of Dual II Magnum + 2.7 L/ha Aatrex 480. Excellent crop tolerance. Weed control will be reduced if weeds have more than 2 leaves. |
| | **Pardner**<br><br>**or**<br>**Koril** | Wild buckwheat, lady's thumb, lamb's quarters, mustards, pigweeds | 1 to 1.2 L/ha<br>(0.4 to 0.48 L/acre)<br><br>1.2 to 1.4 L/ha<br>(0.48 to 0.56 L/acre) | 200-300 L/ha<br>(18 – 27 gal/ac) | Corn 4 to 8 leaf<br><br>Weed 1-4 leaf stage | Use higher rate for heavier weed infestations. Pardner and Koril are contact herbicides so good coverage on weeds is essential. Weeds emerging after application will not be controlled (no residual activity). Good to excellent crop tolerance. Temporary crop injury in the form of scorching may result in adverse growing conditions. Will control triazine resistant lamb's quarters. Grasses or weeds emerging after application will not be controlled. Pardner can be mixed with Atrazine .and others. Rainfall within 1 hour of application may reduce control. |

* For use only on the following varieties: **Bonus BT, Elite, Crisp-N-Sweet, Trinity, GSS 7831, FTF 222, 710R, CNS 710, FTF243, Legacy, Honey Select, Krispy King, FTF 246, Marvel, GH 2690, GG 445, Candy Corner, Calico Belle, GSS 9299, Sensor**

**SECTION B: SEED TREATMENTS (Insect and Disease)**

*Corn seed treatment usually includes chemicals to control both insect and disease pests. Some insecticide seed treatments control only soil pests such as corn seed maggot and wireworm while others can also give protection against seedling pests such flea beetles and cutworms. Fungicide seed treatments may contain two chemicals, one effective against Pythium plus a second chemical active against other fungi such as Fusarium and Rhizoctonia. Seed treatment is most likely to improve plant stand in soils which are cold (less than 13 C), wet or compacted. Treated seed may not flow through a seed drill at the same rate as untreated seed. Recalibrate the seed drill before planting treated seed.*

| Seed Treatment Trade Name | Active (s) | Pests controlled | Product rates | Comments (see labels for additional information and precautions) |
|---|---|---|---|---|
| **Insect Control Only** | | | | |
| **Poncho 600 FS** | clothianidin | White grub, seedcorn maggot, wireworm and black cutworm | 33.3 to 66.6, and 166.7 ml/80 000 seeds | The type of insects controlled depends on rate. The lowest rate (33.3ml/80000 seeds) will control white grub and seedcorn maggot. Middle rates (33.3 to 66.6ml/80000 seeds) will also control wireworm, corn flea beetle and black cutworm. Treated seed is toxic to birds and animals and should not be left exposed. Use of this seed treatment in permeable soils or where the water table is shallow may result in ground water contamination. There is a one year plant back required for leafy, root and tuber vegetables. |
| **Disease Control Only** | | | | |
| **Allegiance FL** | metalaxyl | Pythium seed decay and seedling blight | 46 to 110 ml/100 kg seed | Registered only as a pre-purchase seed treatment. |
| **Apron FL** | metalaxyl | Pythium seed decay and seedling blight | 46 to 110 ml/100 kg seed | Registered only as a pre-purchase seed treatment. |
| **Apron XL LS** | metalaxyl | Pythium seed decay and seedling blight | 20 to 40 ml/100 kg seed | Registered only as a pre-purchase seed treatment. |
| **Captan FL** | captan | Seed decay | 60 - 85 ml/25 kg seed | Label treated seed if not for immediate use. Insure seed is dry before storing. |
| **Thiram 75 WP** | thiram | Seed decay | 55 g/25 kg seed | Label treated seed if not for immediate use. Insure seed is dry before storing. |
| **Maxim 480 FS** | fludioxonil | Seed decay and seedling blight caused by Rhizoctonia, Fusarium and other fungi. (Does not control Pythium) | 5.2 to 10.4 ml/100 kg seed | Registered only as a pre-purchase seed treatment. |
| **Maxim XL** | fludioxonil + metalaxyl -M | Seed decay and seedling blight caused by Rhizoctonia, Fusarium and other fungi including Pythium. | 10.9 to 21.8 ml/100 kg of seed | Registered only as a pre-purchase seed treatment. |
| **Insect and Disease Control** | | | | |
| **DCT** | diazinon, captan and thiophanate-methyl | Seed maggot, seed decay and seedling blight | 125 g/25 kg seed | Label treated seed if not for immediate use. Insure seed is dry before storing.<br>Use treated seed within one month. Follow all label directions to minimize applicator exposure during treatment. |
| **Agrox B-2** | diazinon, captan | Seed maggot, seed decay | 85 g/25 kg seed | Label treated seed if not for immediate use. Insure seed is dry before storing.<br>Use treated seed within one month. Follow all label directions to minimize applicator exposure during treatment. |
| **Agrox CD** | diazinon, captan | Seed maggot, wireworm, seed decay | 50 g/25 kg seed | Label treated seed if not for immediate use. Insure seed is dry before storing.<br>Use treated seed within one month. Follow all label directions to minimize applicator exposure during treatment. |

**SECTION C: INSECT CONTROL**

*If a pest control product is to be used on sweet corn that may be exported to the US, consult an agricultural representative for any information on acceptable residue levels in the US. Some insect populations may contain individuals naturally resistant to some pest control products. Monitor treated pest populations for resistance development. Where possible, rotate the use of one group of insecticides with another group of insecticides that control the same pest in the field. Some products may be highly toxic to bees. Please refer to chart on "Relative toxicity of insecticides to Honey Bees". Consult a local Provincial representative for specific recommendations on timing and frequency of applications.*

| Pest | Active | Insecticide group | Trade name | Rate per hectare | Pre-harvest interval (days) | Comments (see labels for additional information and precautions) |
|---|---|---|---|---|---|---|
| **Seedcorn maggot** | tefluthrin | pyrethroid (group 3) | Force 3.0 G | 0.0375 Kg / 100 metres of row | - | Apply in-furrow for seedcorn maggot. Force 3.0 G is not a systemic and does not control insects which burrow into or feed on corn stalks, leaves, or ears. Apply FORCE 3.0G in the furrow with the seed 2-5 cm deep at 37.5 g product/100 m of row. FORCE 3.0G should be applied directly behind the seed tube into the open seed furrow. |
| **Cutworms** | cypermethrin | pyrethroid (group 3) | Ripcord 400 EC | 0.175 L | 21 | Use 200 - 500 L of water per hectare with a spray pressure of 175 - 300 kPa. Spray under warm moist conditions and do not disturb the soil surface for at least 5 days. Applications may be made to adjacent fence rows, but do not allow drift to contaminate adjacent crops. This product will only control climbing cutworms or cutworms which climb to the surface to feed. |
| | cyhalothrin - lambda | pyrethroid (group 3) | Matador 120 EC | 0.083 L | 1 | (up to the 5-leaf stage). Applications should be made under moist conditions in the evening or night when cutworm activity is highest. Do not disturb the soil surface for 5 days after treatment. Maximum of two applications of this product per field per year. Do not apply when weather conditions favor drift from the target area. Do not re-enter treated areas until 24 hours after treatment. Store above zero degrees Celsius. |
| | permethrin | pyrethroid (group 3) | Pounce 384 EC | 0.180 - 0.390 L | 1 | Applications should be made under warm, moist conditions in the evening or at night when cutworm activity is highest. DO NOT DISTURB THE SOIL SURFACE FOR 5 DAYS AFTER TREATMENT. Use on plants up to the five leaf stage. Use higher rate for larger (2.5 to 4 cm long) cutworms. Store above minus 12 degrees Celsius. Keep product from freezing. |
| | chlorpyrifos | organophosphate (group 1B) | Lorsban 4 E | 1.2 – 2.4 L | 70 | SEEDLING TREATMENT ONLY. Apply once in 200-400 L/ha spray solution at the 2 to 5 leaf stage of the crop. This product is decomposed by sunlight. Apply in evening for best results. Apply on warn evenings when caterpillar activity if highest. Twenty-four hour re-entry period. |
| | chlorpyrifos | organophosphate (group 1B) | Pyrinex 480 EC | 1.2 – 2.4 L | 70 | SEEDLING TREATMENT ONLY. Apply once in 200-400 L/ha spray solution at the 2 to 5 leaf stage of the crop. This product is decomposed by sunlight. Apply in evening for best results. Apply on warn evenings when caterpillar activity if highest. Maximum one application of this product per field per year. Twenty-four hour re-entry period. |
| **Armyworms** | cyhalothrin - lambda | pyrethroid (group 3) | Matador 120 EC | 0.083 L | 1 (or 14) | See notes under Matador 120 EC in cutworm section. Days to harvest is 1 day. If the product is mixed with Tilt 250 E fungicide the days to harvest is 14 days. Refer to both the MATADOR 120EC Insecticide and TILT 250E Fungicide labels for instructions. Maximum two applications of this product per field per year. |
| **European corn borer** | permethrin | pyrethroid (group 3) | Pounce 384 EC | 0.275 - 0.375 L | 1 | Ground Application: Apply specified dosage in 350-450 L of water/ha using a boom and nozzle arrangement that ensures thorough spray coverage. Use the higher rate when severe insect pressure is anticipated. Apply first spray no later than when first feeding is seen on the foliage. For the number and timing of repeat applications, follow the customary spray schedule in your region. Store above minus 12 degrees Celsius. Keep product from freezing. |
| | cypermethrin | pyrethroid (group 3) | Cymbush 250 EC | 0.280 L | 5 | Apply in 325 to 450 L of water per hectare using a boom and nozzle arrangement to ensure thorough spray coverage. Apply first spray no later than when the first feeding is seen on foliage. Repeat sprays according to provincial recommendations. Maximum three applications of this product per field per year. Do not apply by ground equipment within 15 metres of productive fisheries water or waterfowl habitats. This product is very toxic to fish and aquatic organisms. Do not apply when weather conditions favour drift from target area. |
| | cypermethrin | pyrethroid (group 3) | Ripcord 400 EC | 0.175 L | 5 | For control of European corn borer, apply first spray when egg masses begin to hatch but no later than when first feeding is seen on foliage. Use 300 - 500 L water per hectare. Consult provincial recommendations for timing and number of repeat applications. Maximum three ground applications of this product per field per year. |
| | carbaryl | carbamate (group 1A) | Sevin XLR Plus | 2.5 - 4.0 L | 1 | For larvae in whorls and for foliage feeders, treat the entire plant. Repeat sprays according to provincial recommendations. Three or more applications may be required depending on the severity of the infestation. Timing and good coverage are essential for effective control. Do not store in areas where temperatures frequently exceed 38 degrees Celsius. MAINTAIN CONTINUOUS AGITATION DURING MIXING AND APPLICATION TO ASSURE A UNIFORM SUSPENSION. DON'T STORE MIXTURES OVERNIGHT. Unstable under highly alkaline conditions. SEVIN XLR PLUS spray must be properly diluted and droplets must dry on the foliage before they become wash off resistant. |

| Pest | Active | Insecticide group | Trade name | Rate per hectare | Pre-harvest interval (days) | Comments (see labels for additional information and precautions) |
|---|---|---|---|---|---|---|
| | methomyl | carbamate (group 1A) | Lannate L | 2.6 L | 3 | Apply first spray when egg masses begin to hatch, but no later than when the first feeding damage is seen on leaves. Sprays for the European corn borer should be directed into the whorl of the plant. After tassels appear, direct the spray for the European corn borer at the ear zone. Do not store at temperatures below zero degrees Celsius. |
| | methomyl | carbamate (group 1A) | Lannate (SP) Toss-N-Go | 0.625 Kg | 3 | See additional notes for Lannate L in European corn borer section. |
| | acephate | organophosphate (group 1B) | Orthene SP | 0.750 – 1.1 Kg | 21 | Apply in 220 to 1000 litres of spray mix using conventional ground application equipment. Maximum of four applications of this product per field per season. This product is toxic to aquatic invertebrates and marine/estuarine organisms. Do not apply directly to water. Do not apply where runoff is likely to occur. Do not apply when weather conditions favour drift from treatment areas. This product has the potential to leach through soils to ground water. It is recommended that this product not be used on coarse textured soils or in areas where the water table may be high. This product should not be applied if rainfall is expected within 48 hours after application and treatment areas should not be irrigated for at least 48 hours after application to minimize the potential for leaching and surface runoff. |
| | deltamethrin | pyrethroid (group 3) | Decis 5 EC | 0.25 – 0.3 L | 5 | Apply in at least 240 litres of water per hectare. Maximum of two applications of this product per field per year. Apply first spray when egg masses begin to hatch, but no later than when the first pinhole feeding is seen on the leaves. Sprays for the European corn borer should be directed into the whorl of the plant. After tassels appear, direct the spray for the European corn borer at the ear zone. AVOID APPLICATION DURING PERIODS OF EXCESS HEAT (ie. daytime temperatures greater than 25 degrees Celsius) as a reduction in control will result. Do not store below zero degrees Celsius. |
| | deltamethrin | pyrethroid (group 3) | Decis FL | 0.25 – 0.3 L | 5 | Apply in at least 240 litres of water per hectare. Maximum of two applications of this product per field per year. See additional notes for this insecticide in European corn borer section for Decis 5 EC. |
| | cyhalothrin - lambda | pyrethroid (group 3) | Matador 120 EC | 0.083 L | 1 (or 14) | See notes for this insecticide under cutworm section. Follow provincial recommendations for applying sprays. Days to harvest is 1 day. If the product is mixed with Tilt 250 E fungicide the days to harvest is 14 days. Refer to both the MATADOR 120EC Insecticide and TILT 250E Fungicide labels for instructions. Maximum of two applications of this product per field per year. |
| | *Bacillus thuringiensis kurstaki* | biological (group 11C) | DiPel 2X DF | 0.56 - 1.12 Kg | 0 | DiPel is only effective against small larvae and must be applied before larvae begin stalk-boring. Repeat applications at an interval sufficient to maintain control, usually 3 to 14 days, depending on plant growth rate, moth activity, rainfall after treatment and other factors. Thorough spray coverage is needed to provide a uniform deposit of DiPel 2X DF Biological Insecticide at the site of larval feeding. Use overhead and drop nozzles to obtain good spray coverage on both sides of foliage. Use sufficient spray volume to ensure uniform deposition on all plant surfaces. Store at temperatures between 0 and 25 degrees Celsius. Use this product within 24 months of the date of manufacture. |
| | *Bacillus thuringiensis kurstaki* | aqueous biological (group 11) | Bioprotec CAF | 2.8 – 4 L | 0 | Ground application only, by boom sprayer. Wet foliage thoroughly but not to the point of excessive run-off. Maximum of three applications of this product per field per year in New Brunswick. (There is only one generation of the European corn borer in NB). Bioprotec CAF is more effective when no rain occurs within 24-48 hours after application, to allow time for larvae to ingest a lethal quantity of spray deposits. Use within six months of date of manufacture. Consult agricultural representatives for Bioprotec / water mix ratio. Use diluted sprays within a twelve hour period. |
| | *Bacillus thuringiensis kurstaki* | dry flowable biological (group 11) | Bioprotec 3P | 1.45 - 2 Kg | 0 | Ground application only. Apply before larvae begin entering stalk. Thorough coverage of target foliage and stalk where larvae are feeding is essential. Avoid application when significant rainfall is imminent. Foliage should not be wet to the point of runoff. Store between 4 and 25 degrees Celsius, preferably at the lower temperature range. Use within twelve months of date of manufacture. Use diluted sprays within a twelve hour period. |
| | spinosad | naturalyte (group 5) | Success 480 EC | 0.083 L | 7 | Apply in 1000 litres of water per hectare. Maximum of two applications of this product per field per year. Apply first spray at peak egg hatch. For sweet corn, do not enter, or allow worker entry, into treated areas within 7 days after application to carry out detasselling or hand harvesting activities. Product should not be applied under conditions where run-off is likely to occur. Do not apply immediately after a rainfall or if there is a forecast for rain during or within 48 hours after application. Avoid freezing for storage. |
| | carbofuran | carbamate (group 1A) | Furadan 480 F | 1.1 L | 7 | Maximum of two applications of this product per field per year. Control spray drift by avoiding small droplet size (under 150 to 200 microns). Nozzles with higher rated flows produce larger droplets. Use the lowest spray pressures for the selected nozzle. Select the nozzle for the intended application. If prolonged direct contact with corn foliage will occur, do not reenter treated fields within 14 days of application without wearing appropriate protective clothing (i.e. long-sleeved shirt and long pants). Do not store below minus two degrees Celsius. Do not use in areas where resistance to FURADAN 480 Flowable Systemic has been identified. |

| Pest | Active | Insecticide group | Trade name | Rate per hectare | Pre-harvest interval (days) | Comments (see labels for additional information and precautions) |
|---|---|---|---|---|---|---|
| **Corn earworm** | permethrin | pyrethroid (group 3) | Pounce 384 EC | 0.275 - 0.375 L | 1 | For control of corn earworm, direct the spray to ensure coverage of ears and silks. See notes for this insecticide under the European corn borer section. |
| | cypermethrin | pyrethroid (group 3) | Ripcord 400 EC | 0.175 L | 5 | For control of corn earworm, spray directly to ensure good coverage of ears and silks. Use 300 - 500 L water per hectare. Maximum of three ground applications of this product per field per year. See notes for this insecticide under the European corn borer section. |
| | carbaryl | carbamate (group 1A) | Sevin XLR Plus | 2.5 - 4.0 L | 1 | See notes for this insecticide under the European corn borer section. |
| | methomyl | carbamate (group 1A) | Lannate L | 1.8 - 2.6 L | 3 | Apply sprays at intervals suggested by local recommendations, beginning when ears start to show silk. Direct spray on the silks. - Do not subject to temperatures below zero degrees Celsius. |
| | methomyl | carbamate (group 1A) | Lannate (SP) Toss-N-Go | 0.430 - 0.625 Kg | 3 | See additional notes in Lannate L for this insect. |
| | deltamethrin | pyrethroid (group 3) | Decis 5 EC | 0.25 – 0.3 L | 5 | Apply in 11 to 22 litres of water per hectare. Maximum of two applications of this product per field per year. See additional notes for this insect under Decis 5 EC in European corn borer section. |
| | deltamethrin | pyrethroid (group 3) | Decis FL | 0.25 – 0.3 L | 5 | Apply in at least 240 litres of water per hectare. Maximum of two applications of this product per field per year. See notes for this insect under Decis FL in European corn borer section. |
| | cyhalothrin - lambda | pyrethroid (group 3) | Matador 120 EC | 0.083 L | 1 (or 14) | See notes for this insecticide under the cutworm section. Days to harvest is 1 day. If the product is mixed with Tilt 250 E fungicide the days to harvest is 14 days. Refer to both the MATADOR 120EC Insecticide and TILT 250E Fungicide labels for instructions. Maximum of two applications of this product per field per year. |
| **Fall armyworm** | permethrin | pyrethroid (group 3) | Pounce 384 EC | 0.180 L | 1 | See notes for this insecticide under the European corn borer section. This treatment will not prevent internal cob damage if insect has penetrated ear. |
| | carbaryl | carbamate (group 1A) | Sevin XLR Plus | 2.5 - 4.0 L | 1 | See notes for this insecticide under Sevin XLR Plus in European corn borer section. |
| | cyhalothrin - lambda | pyrethroid (group 3) | Matador 120 EC | 0.083 L | 1 (or 14) | See notes for this insecticide under Matador 120 EC in cutworm section. Follow provincial recommendations for applying sprays. Days to harvest is 1 day. If the product is mixed with Tilt 250 E fungicide the days to harvest is 14 days. Refer to both the MATADOR 120EC Insecticide and TILT 250E Fungicide labels for instructions. Maximum of two applications of this product per field per year. |
| **Aphids** | methomyl | carbamate (group 1A) | Lannate L | 1.8 - 2.6 L | 3 | Apply up to 3 applications (usually during hot weather) at 5 day intervals in sufficient water to obtain good coverage. Do not subject to temperatures below zero degrees Celsius. |
| | methomyl | carbamate (group 1A) | Lannate (SP) Toss-N-Go | 0.430 - 0.620 Kg | 3 | See additional notes for this insect under Lannate L in aphid section. |
| | pirimicarb | carbamate (group 1A) | Pirimor 50 DF | 0.550 Kg | 3 | Ground application: Use in 450 litres of water per hectare. Maximum of one application of this product per field per year. |

## Relative Toxicity of Insecticides to Honey Bees

*NOTE: Bees often visit corn fields to collect water and pollen. Spraying may cause bee poisoning. Do not spray fields when wind is blowing. Avoid spray drift to roadsides and adjacent fields where plants may be in bloom. Spraying when bees are not foraging, late evening to early morning, will reduce damage to bees. Follow all instructions on the pesticide label.*

| Insecticides **highly toxic** to bees: | Insecticides **moderately toxic** to bees: | Insecticides **relatively non- toxic** to bees: |
|---|---|---|
| **Note: Severe losses** may be expected if the following insecticides are used when bees are present at treatment time or **within a few days** following pesticide application. | **Note:** These products may be used around bees if dosage, timing, and method of treatment are according to label instructions. **Do not apply the products directly on bees, either in the field or in colonies.** | |
| Cymbush 250 EC | Lannate L | Bioprotec CAF |
| Decis 5 EC | Lannate (SP) Toss-N-Go | Bioprotec 3P |
| Decis FL | Pirimor 50 DF | DiPel 2X DF |
| Force 3.0 G | | |
| Furadan 480 F | | |
| Lorsban 4 E | | |
| Matador 120 EC | | |
| Orthene SP | | |
| Pounce 384 EC | | |
| Pyrinex 480 EC | | |
| Ripcord 400 EC | | |
| Sevin XLR Plus | | |
| Success 480 EC | | |