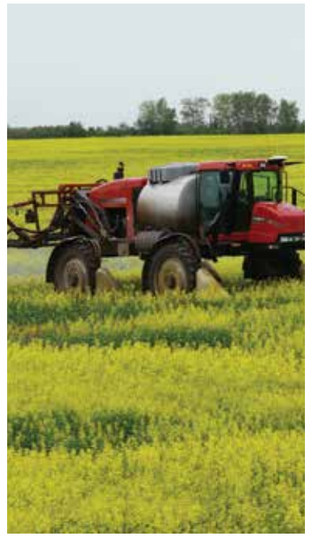
# HIGH-QUALITY OPTIONS for every acre

Loveland PRODUCTS

FROM SEEDING THROUGH HARVEST






## CONTENTS



# AN ALL-AROUND APPROACH TO SUCCESS

**Loveland Products manufactures adjuvants, seed treatments, crop protection and plant performance products. Owned by Nutrien Retail, Loveland and its products are integrated into retail and wholesale operations around the world.**

Our focus is bringing unique chemistries to market, providing innovative solutions to problems across the agricultural and professional non-crop industries. We help growers succeed with solutions from four different product categories, all of which meet the highest quality standards:

**SEED TREATMENTS • PLANT PERFORMANCE • ADJUVANTS • CROP PROTECTION**

In addition, following the trend of a precision approach to crop production, we bring the opportunity to tailor our inputs to growers' specific needs. This prescription farming ties into our increasing capabilities in precision agriculture, presenting a strong fit for our plant performance and crop protection product lines.

We are driven by the understanding that our relationship with growers does not end when a product is purchased. We also provide sales support and technical training, making Loveland Products a valuable resource for business.

**Loveland Products is proud to support growers with a broad range of proven products. By combining high performance with high quality, we fit the integrated approach to crop production solutions delivered by Nutrien Retail.**

# SEED TREATMENTS & INOCULANTS

## SEED TREATMENTS

Seed treatments are products which are applied to seeds prior to planting. They fall into two categories: seed protection (disease and insect protection) and seed enhancement (products which improve seed health and promote germination).

| | SEED PROTECTANT | | SEED ENHANCEMENT | |
|---|---|---|---|---|
| **Product name** | **VITAFLO®** | **DEFLECT™** | **AWAKEN ST** | **CONSENSUS® L** |
| **Active ingredients/ analysis** | Carbathin + Thiram | Tebuconazole + Metalaxyl | 6-0-1 plus micro's and zinc ammonium acetate | Stimulatory seed treatment containing: Chitosan, Indole-3-butyric acid (IBA) and Salicylic Acid (SA) |
| **Crops** | Wheat, barley, oats | Wheat, barley, oats | Wheat, barley, oats | Peas, lentils, soybeans |
| **Protects against/ promotes** | • Loose smut, bunt, seeds rots and seedling blights.<br>• Suppression of common root rot at the high rate | • Smuts and bunt, seedling blights, seed rots and damping off caused by seed and soil-borne *Fusarium spp.* and *Pythium spp.* seed-borne septoria and suppression of common root rot | • Promotes quicker seedling emergence<br>• Provides a larger, more extensive root system | • Faster germination<br>• Better early root development<br>• Plant stress protection |

## INOCULANTS

Inoculants are products which enhance the nitrogen fixing capabilities of pulses and soybeans.

| | ESTABLISH® GRANULAR | ESTABLISH LIQUID | SO-FAST® EZ STIK PEAT | SO-FAST LIQUID PEA & LENTIL | SO-FAST LIQUID SOYBEAN | SO-FAST PLUS |
|---|---|---|---|---|---|---|
| **Technology** | Inoculant + LCO promoter technology | Inoculant + LCO promoter technology | Inoculant | Inoculant | Inoculant | Inoculant + phosphate availability |
| **Crops** | Peas, lentils | Peas, lentils | Peas, lentils | Peas, lentils | Soybeans | Soybeans |
| **Formulation** | Peat granule | Liquid | Peat | Liquid | Liquid | Peat granule |





# AWAKEN ST

## NUTRITION THAT GROWS RESULTS

Put nutrients where a germinating crop needs them: on the seed. Powered by proprietary ACA® technology, **AWAKEN ST** is a nutrition-loaded, growth-enhancing seed treatment for today's progressive cereal grower in pursuit of maximum yield and return on investment.

### PRODUCT HIGHLIGHTS[1]

- Promotes quicker seedling emergence
- Provides a larger, more extensive root system
- Improves overall plant health and vigour
- Increases plant population
- Increases potential yields and ROI

### APPLICATION RATES

| CROP | RATE (ml/100 kg seed) | | |
|---|---|---|---|
| | LOW | MED | HIGH |
| Barley, corn, durum, oats, wheat | 260 | 309 | 390 |

Showcasing **DEFLECT** five days after seeding (left) vs. **DEFLECT** + **AWAKEN ST** (right). Kane, MB

[1] Due to circumstances beyond control (e.g. drought, excess moisture, etc.) all benefits may not be seen every year.

# CONSENSUS® L

## A UNIQUE SEED TREATMENT FOR PEAS, LENTILS AND SOYBEANS

Designed to promote early germination and quicker root development in soybeans and pulse crops, **CONSENSUS L** provides faster emergence, healthier stands, plant stress resistance and higher yield potential.

### PRODUCT HIGHLIGHTS

**CONSENSUS L** contains a unique, three-way combination of Chitosan, Indole-3-butyric acid (IBA) and Salicylic Acid (SA) leading to:

- Faster germination
- Better early root development
- Plant stress protection

For soybean and pulse crop growers, **CONSENSUS L** provides:

- Healthier, more vigourous seedlings
- Quicker emergence
- More robust root system
- High yield potential

### APPLICATION RATES

**CONSENSUS L** may be applied as a seed treatment by commercial seed treatment facilities or on-farm treating with conventional seed treating equipment which can accurately control application rates. Mix thoroughly and treat seed. Use application rates as specified on crops listed below. **CONSENSUS L** may be mixed with certain other commercial seed treatments. Consult manufacturer for details. Use of the resulting mix must be in accordance with the more restrictive label limitations and precautions. Allow treated seeds to dry as appropriate before further handling. Seed can be treated as much as 120 days ahead of planting.

| CROP | RATE (ml/100 kg seed) | | |
|---|---|---|---|
| | LOW | MED | HIGH |
| Peas, lentils, soybeans | 25 | 45 | 65 |

**CONSENSUS L** features a low use rate of 25–65 ml per 100 kg seed and is rhizobia-friendly, making it an excellent companion product for fungicide and insecticide seed treatment programs.

Soybeans five days after emergence. Untreated (left) vs. treated with **CONSENSUS L** (right). Hamiota, Manitoba, 2015.

Soybeans 15 days after emergence. Untreated (left) vs. treated with **CONSENSUS L** (right). Souris, Manitoba, 2015.



Always read and follow the label directions.

SEED TREATMENT

# DEFLECT™

## SYSTEMIC FUNGICIDE SEED PROTECTANT FOR WHEAT, BARLEY AND OATS

A combination of the systemic fungicides, tebuconazole and metalaxyl which control certain seed, seedling, and soil-borne diseases of wheat, barley and oats.

### PRODUCT HIGHLIGHTS

| CROP | DISEASES CONTROLLED | DISEASES SUPPRESSED |
|---|---|---|
| Wheat | • Loose smut<br>• Common bunt or stinking smut<br>• Seed rot and pre-emergent damping-off caused by seed- and soil-borne *Fusarium spp.*<br>• Seedling blight caused by seed-borne *Fusarium spp.*<br>• Damping-off caused by *Pythium spp.*<br>• Seed-borne *Septoria nodorum* | • Root and crown rot caused by seed- and soil-borne *Fusarium spp.*<br>• Common root rot caused by seed- and soil-borne *Cochliobolus sativus*<br>• Seed rot and pre-emergent damping-off caused by seed- and soil-borne *Cochliobolus sativus*<br>• Seedling blight caused by seed-borne *Cochliobolus sativus* |
| Barley | • True loose smut<br>• Covered smut<br>• False loose smut<br>• Seed rot and pre-emergent damping-off caused by seed- and soil-borne *Fusarium spp.*<br>• Seedling blight caused by seed-borne *Fusarium spp.*<br>• Damping-off caused by *Pythium spp.* | • Root and crown rot caused by seed- and soil-borne *Fusarium* species<br>• Common root rot caused by seed- and soil-borne *Cochliobolus sativus*<br>• Seed rot and pre-emergent damping-off caused by seed- and soil-borne *Cochliobolus sativus*<br>• Seedling blight caused by seed-borne *Cochliobolus sativus* |
| Oats | • Covered smut<br>• Loose smut<br>• Seed rot and pre-emergent damping-off caused by seed- and soil-borne *Fusarium spp.*<br>• Seedling blight caused by seed-borne *Fusarium spp.*<br>• Damping-off caused by *Pythium spp.* | • Root and crown rot caused by seed- and soil-borne *Fusarium* species<br>• Common root rot caused by seed- and soil-borne *Cochliobolus sativus*<br>• Seed rot and pre-emergent damping-off caused by seed- and soil-borne *Cochliobolus sativus*<br>• Seedling blight caused by seed-borne *Cochliobolus sativus* |

### APPLICATION RATE

Use 300 ml of **DEFLECT** per 100 kg of seed.

# VITAFLO®

## FUNGICIDE SEED PROTECTANT

An excellent combination of a systemic (carbathiin) and a contact (thiram) fungicide for cereals, flax, corn, pulses, and dry beans and soybeans. **VITAFLO** controls a range of seed-borne seed rots and seedling blights, increasing crop emergence and improving plant stands.

### APPLICATION RATES – UNDILUTED (ml/100 kg seed)

- Barley: 230–330
- Wheat: 230–330
- Rye: 230–330[1]
- Oats: 330
- Triticale: 200
- Flax (includes edible oil flax – solin): 525
- Peas: 260–330[2]
- Lentils: 330
- Soybeans: 260
- Corn (field and sweet): 280
- Common dry beans: 260
- Common snap beans: 260

[1] Use 230 ml for partial control of true loose smut in wheat and barley and stem smut in rye. Use 330 ml for the control of seed-borne *Septoria nodorum* on wheat and seed rot and seedling blight caused by *Fusarium spp., Cochliobolus sativus, Pythium spp., Penicillium spp., Aspergillus spp., Alternaria*; also suppression of root rot caused by *Cochliobolus sativus* on cereals (wheat, barley, oats and rye).

[2] Use 260 ml for control of *Rhizoctonia solani* and *Fusarium spp.* Use 330 ml for control of *Mycosphaerella pinodes (Ascochyta).*

# ESTABLISH®

## ENHANCED NODULATION TECHNOLOGY FOR PEA AND LENTIL

### ESTABLISH GRANULAR

Designed with LCO Promoter Technology for pea and lentil enables crops to achieve their full genetic potential by enhancing nutritional capabilities that drive natural growth processes, maximizing plant health and crop performance.

**Application rates**

| ROW WIDTH (in) | 30 | 22 | 15 | 12 | 9 | 7 |
|---|---|---|---|---|---|---|
| APPLICATION RATES (lbs/ac) | 1.5 | 2.1 | 3.0 | 3.8 | 5.1 | 6.5 |

Note: The bulk density for **ESTABLISH** granular averages 38 lbs/ft³ (0.6 g/cm³).

**What Is LCO Promoter Technology?**

LCO (lipo-chitooligosaccharide) Promoter Technology is a unique molecule that enhances a plant's nutritional capabilities, driving the natural growth processes such as root and shoot development. Root and shoot development is promoted immediately and independently of variety, soil and environmental conditions. The natural growth processes occur sooner for a healthier start for plants, translating into higher yields and better returns at the end of the season.

### ESTABLISH LIQUID

A pea and lentil product containing naturally occurring plant signal molecules called flavonoids in a rhizobia carrier. The addition of flavonoids in **ESTABLISH LIQUID** work to increase the speed of recognition between the plant and the rhizobia, leading to earlier nodulation and nitrogen fixation.

**Application rate**

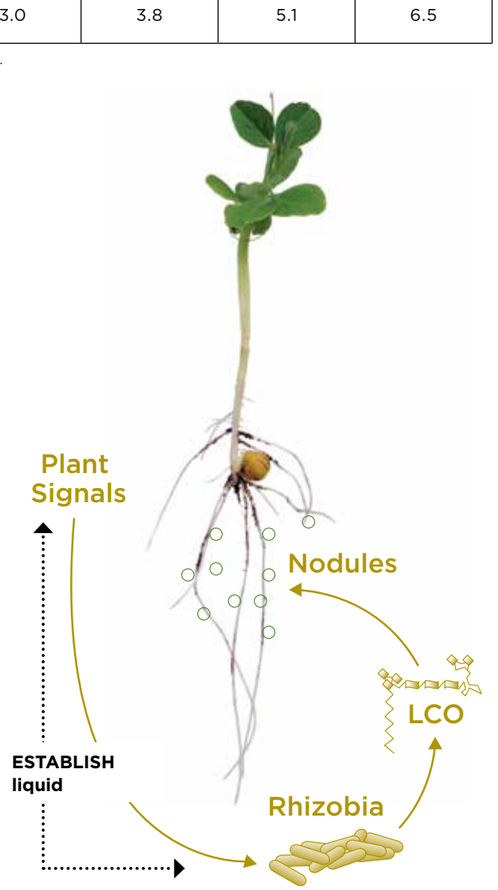
3 ml/kg seed (120 bu/9.46 L case)

**What are flavonoids?**

Flavonoids are plant signal molecules that stimulate the appropriate rhizobium species to produce LCO. LCO initiates the recognition process required for nodule formation, which leads to earlier nodulation (see diagram at right).

Flavonoids also attract the rhizobia to the plant's root hairs improving rhizobial adhesion and colonization.

(Cooper, 2007; Early interactions between legumes and rhizobia: disclosing complexity in a molecular dialog)










# SO-FAST®

## ENABLES CROPS TO ACHIEVE THEIR FULL GENETIC POTENTIAL

### SO-FAST EZ STIK PEAT

A sterile peat inoculant for pea and lentil, **SO-FAST EZ STIK PEAT** is a superior single-action inoculant that contains rhizobia, a naturally occurring bacterium that fixes nitrogen from the air, making it available for the plant to use. **SO-FAST EZ STIK** has its own sticker in the formulation. A separate sticker is not needed.

**Application rate:** 25 bu/2.83 kg bag

### SO-FAST PLUS SOYBEAN GRANULAR

A dual-action soybean inoculant combining the phosphate-solubilizing microorganism *Penicillium bilaiae* with nitrogen-fixing rhizobia. Together they create more fixed nitrogen and better access to soil and fertilizer phosphate, providing the best yield opportunity. **SO-FAST PLUS SOYBEAN GRANULAR** offers improved nodule formation and enhanced nutrient capability to support root and shoot growth.

**Application rates**

| ROW SPACING (in) | 6 | 7 | 8 | 9 | 10 | 12 | 15 | 24 | 30 |
|---|---|---|---|---|---|---|---|---|---|
| APPLICATION RATES (lbs/ac) | 7.1 | 6.2 | 5.4 | 4.7 | 4.3 | 3.6 | 2.9 | 1.8 | 1.4 |
| AREA TREATED (ac/16.5 kg bag) | 5.0 | 5.9 | 6.8 | 7.6 | 8.5 | 10.1 | 12.7 | 20.3 | 25.5 |
| AREA TREATED (ac/264 kg bag) | 81.6 | 94.4 | 108.8 | 136.0 | 136.0 | 163.2 | 203.2 | 323.2 | 414.4 |

### SO-FAST LIQUID PEA & LENTIL

A single-action inoculant containing rhizobia, a naturally occurring bacteria that fixes nitrogen from the air, ensuring it is supplied to the legume crop in the quantities it needs, when it is needed. With improved nitrogen fixation, **SO-FAST LIQUID PEA & LENTIL** offers proven performance.

**Application rate:** 2.5 fl oz/bu (60 lbs) of seed

### SO-FAST LIQUID SOYBEAN

A convenient liquid inoculant for on-farm application. The advanced technology found in **SO-FAST LIQUID SOYBEAN** contains the most infective and effective rhizobia. This allows for improved nodulation even in cooler soils, thus increasing yield potential as planting conditions change. With flexible application, it can be applied as a seed treatment or in-furrow and is compatible with a wide range of seed treatments.

**Application rates – in-furrow**

15–30 ml/304 m of row (0.5–1 fl oz/1000 ft of row), recommended rates seen in table below.

| U.S. MEASUREMENTS | |
|---|---|
| ROW WIDTH (in) | RECOMMENDED PRODUCT RATE[1] (oz/ac) |
| 15 | 17.5–35.0 |
| 20 | 13.0–26.0 |
| 30 | 8.5–17.0 |
| 36 | 7.5–15.0 |

[1] Under adverse conditions or on first year land, use full rate of **SO-FAST LIQUID SOYBEAN** (30 ml/304 m of row or 1 fl oz/1000 ft of row).

**Application rate – seed-applied**

2.1 fl oz/50 lbs of seed (200 units: 167 bu/12.5 L)

# PLANT PERFORMANCE

Loveland's plant performance line of production solutions is designed to help crops achieve their potential. Our suite of solutions consists of targeted nutrients and plant growth stimulants powered by Acetate, Linear Humus Component and Biocatalyst Techonlogies. Loveland's plant performance tools deliver options for growers to address nutrient needs and enhance performance of many crops to maximize results.

| CROP | TIMING | | | |
|---|---|---|---|---|
| | IN-FURROW (Fertilizer Applied) | SEED TREATMENT | WITH HERBICIDE (Vegetative Stage) | WITH FUNGICIDE (Reproductive Stage) |
| Canola | **NITRAIN™** | | **RADIATE®** | **NUTRISYNC® D** |
| Cereals (barley, wheat, oats) | **NITRAIN™** | **AWAKEN™ ST** | **NUTRISYNC® M** | **AWAKEN™** |
| Corn (grain, silage) | **RISER®** | **AWAKEN™ ST** | **RADIATE®** | **BLACK LABEL®** |
| Flax | | | **AWAKEN™** | **NUTRISYNC® D** |
| Forages | **BLACK LABEL®** | | **BLACK LABEL®** | **RADIATE®** |
| Peas, lentils | | **CONSENSUS® L** | **AWAKEN™** | **BLACK LABEL®** |
| Soybeans | **RISER®** | **CONSENSUS® L** | **RADIATE®** | **BLACK LABEL®** |

**Unsure what Nutrient you need?**

**NUTRISCRIPTION®** is a complete nutritional prescription service which uses tissue analysis data and creates agronomically correct and field-specific fertilizer recommendations. **NUTRISCRIPTION** has been specifically designed to provide useful information to the grower as a way to help resolve nutrient-related production problems.



# ATLAS® XC

## RELEASE MORE NUTRITION. EXPECT MORE RESULTS.

Now you can make dry fertilizer more efficient – and increase crop yield potential – by adding new **ATLAS XC**. A unique fertilizer biocatalyst, **ATLAS XC** actually changes the way that fertilizer responds to soil. **ATLAS XC** "unlocks" applied nutrients making them available more quickly so more of them get absorbed by plant roots. With its higher concentration of active ingredients, **ATLAS XC** is also easier to apply. Make your fertilizer granules and dollars go farther, with **ATLAS XC** from your local dealer.

### PRODUCT BENEFITS

- Expedites nutrient availability and uptake
- Enhances nutrient use efficiency
- Improve first-year nutrient recovery
- Promotes better root growth and development
- Optimizes yield potential

### PRODUCT FEATURES

- Consistent performance across plant and soil types
- Compatible with a variety of dry fertilizer blends (P & K, MESZ, MES, pell lime, sulfate of potash, ammonium sulfate, gypsum)
- Extra concentrated formulation for superior impregnation on fertilizer prill

### APPLICATION RATES

| DRY FERTILIZER | PLACEMENT | APPLICATION RATE PER ACRE |
|---|---|---|
| Phosphate (MAP 11-52-0, DAP 18-46-0, MES, MESZ) blends, potassium blends, sulfate of potash (SOP), ammonium sulfate (AMS), pell lime, gypsum and blends with urea | Dry Impregnation | 1L - 2L per metric tonne |

# AWAKEN™

## ENHANCED FOLIAR NUTRITION

**AWAKEN** 16-0-2 + B, Cu, Fe, Mn, Mo, Zn is a complex of zinc ammonium acetate with potash and a balanced micronutrient package designed to deliver essential foliar nutrients to help the crop reach its full yield potential.

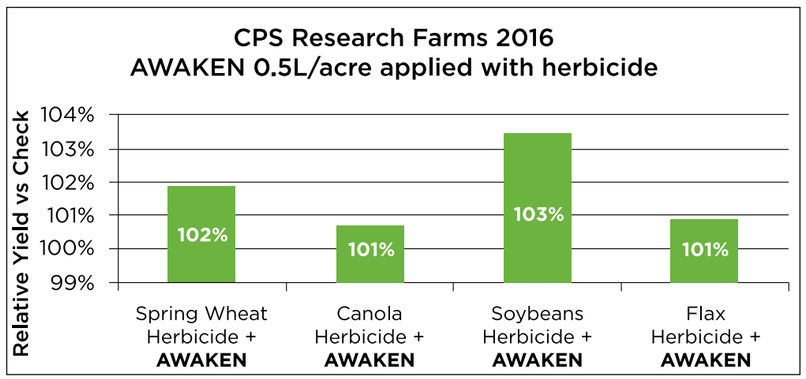
### PRODUCT HIGHLIGHTS

- Better overall increase in plant health and vigour
- Increases photosynthetic activity
- Creates larger, more robust root system
- Helps plants recover from psychological phytotoxicity caused by herbicides
- Excellent mixing with spray solutions or liquid fertilizers

### APPLICATION RATE

| CROP | RATE (L/ac) | STAGE |
|---|---|---|
| All crops | 0.5–1 | Emergence – reproductive |

Showcasing wheat with herbicide only (left) vs. herbicide plus 0.5 L/ac **AWAKEN** (right); 19 days after treatment. Strome, AB




ACETATE

# MAXIMUM N-PACT® K

## 12-0-12 WITH SLOW RELEASE NITROGEN AND POTASSIUM ACETATE

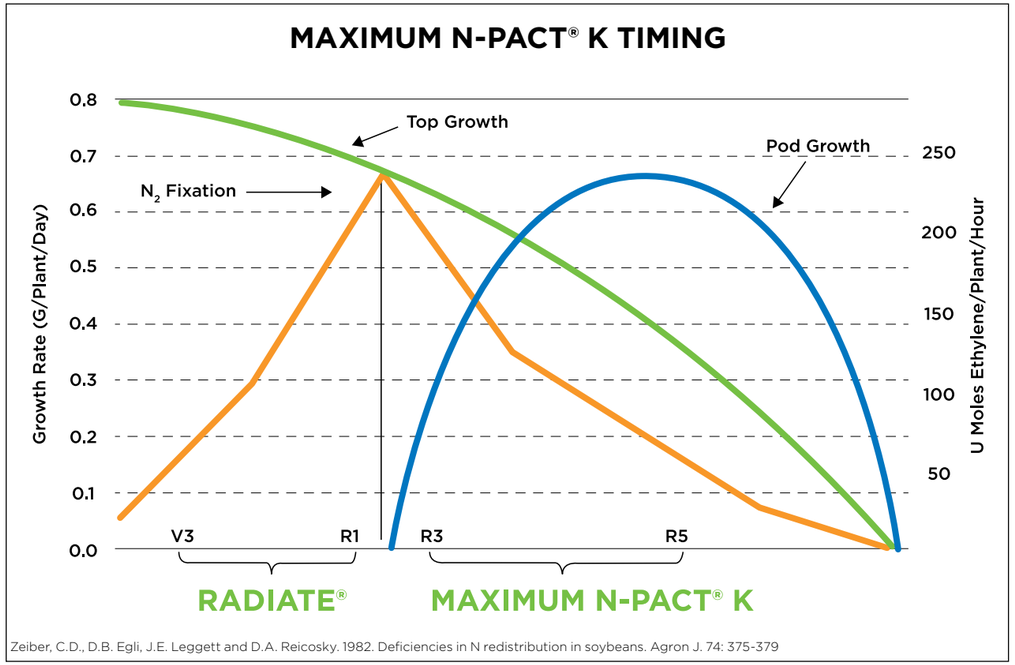
**MAXIMUM N-PACT® K** (12-0-12 with SRN) is an enhanced slow release nitrogen which provides a stable source of foliar nitrogen with the addition of potassium for increased uptake, translocation and utilization of nitrogen and potassium, with excellent crop safety and increased stress tolerance.

### PRODUCT HIGHLIGHTS

- Excellent source of foliar nitrogen with the addition of a safe foliar postassium source
- Increased drought and salinity tolerance
- Supports photosynthesis during critical periods
- Suitable for most specialty and field crops to enhance growth and quality, correct nitrogen deficiencies, and help plants recover from stressful conditions

### APPLICATION RATES

| CROP | TIMING | FOLIAR APPLICATION RATES (L/ACRE) BASED ON DEFICIENCY | | |
|---|---|---|---|---|
| | | MILD | MODERATE | SEVERE |
| All field crops | V3-V8 stage or early reproductive stages | 4L | 6L | 8L |




Zeiber, C.D., D.B. Egli, J.E. Leggett and D.A. Reicosky. 1982. Deficiencies in N redistribution in soybeans. Agron J. 74: 375-379

# NITRAIN™

## ENGINEERED TO REDUCE NITROGEN VOLATILIZATION

Reduces the activity of urease enzymes. When urea-based fertilizers are treated with **NITRAIN** nitrogen stabilizer, it helps to avoid the volatilization losses that can occur.

### PRODUCT HIGHLIGHTS

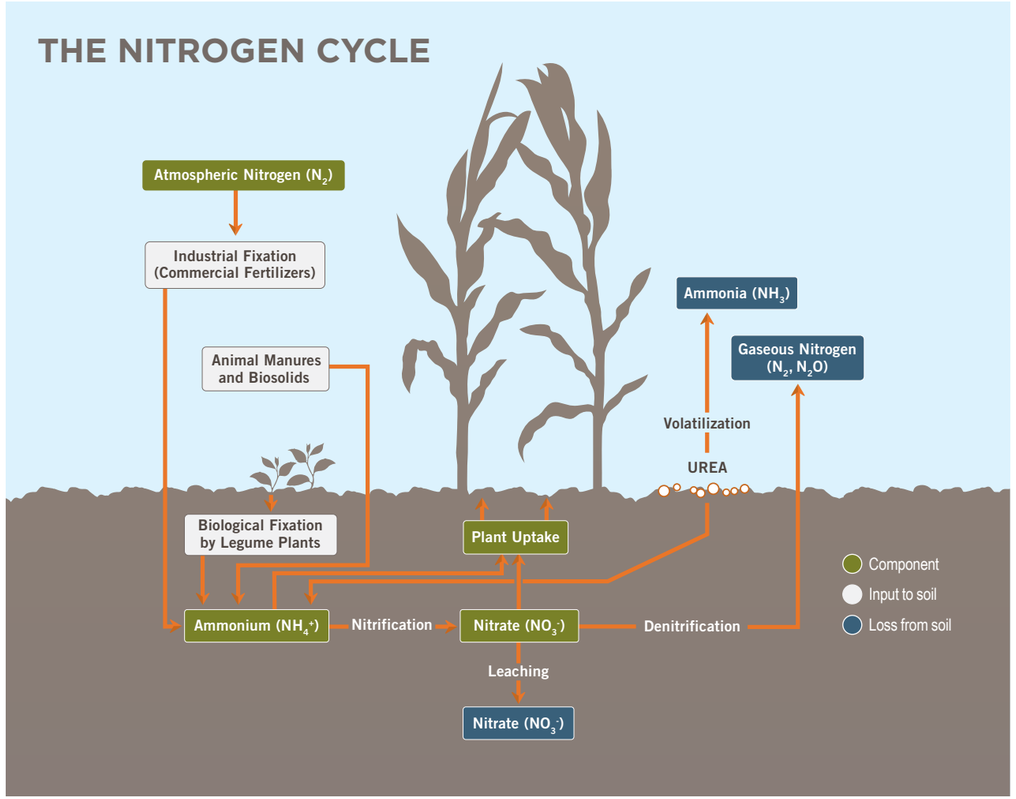
Reduces volatility by inhibiting the activity of the urease enzyme. Urease is a naturally occurring enzyme in the soil responsible for breaking down urea when moisture and organic matter are present.

### PRODUCT BENEFITS

- Prevents the volatilization of both urea and UAN fertilizer applications
- Increases the efficiency and utilization of nitrogen
- Contributes to yield optimization

### APPLICATION RATES

| NITROGEN FERTILIZER | RECOMMENDED RATE OF NITRAIN® (L/MT) | MT TREATED/ 9.46 L JUG | MT TREATED/ 1000 L TOTE |
|---|---|---|---|
| Urea (46-0-0) | 3.1 | 3.0 | 322 |
| UAN (liquid nitrogen sources containing 28–32% urea ammonium nitrate) | 1.5 | 6.3 | 666 |






# NUTRISYNC®

## IMPROVING PLANT NUTRIENT UPTAKE, TRANSPORT AND UTILIZATION

**NUTRISYNC** prompts crops to move existing and applied nutrients from the roots and older leaves to new growth areas where they are needed most for plant growth and productivity. By remobilizing nutrients within the plant, **NUTRISYNC** Nutrient Transport Technology helps to supply your crop with key nutrients to the areas of highest demand, which can result in healthier plants, faster growth, higher yield potential, and more consistent quality.

### PRODUCT HIGHLIGHTS

- Increase nutrient efficiency within plants
- Ultra low use rate
- Readily available forms of chelated nutrients to assist and complement the inositol component
- No glyphosate tie up
- Excellent crop tolerance
- Easy handling and mixing
- Wide window of application on variety of crops
- **NUTRISYNC** products lend themselves to being used in mixes with pesticides and other foliar nutrient applications across all crops

### APPLICATION RATES

| | NUTRISYNC D | NUTRISYNC M |
|---|---|---|
| **Analysis** | 0-2-1 + 0.7% B + 0.9% Mo | 0-0-2 + 0.7% B + 0.3% Mn + 0.7% Zn |
| **Crops** | Formulated specifically for dicot crops such as canola, flax, lentils, peas and soybeans | Formulated specifically for monocot crops such as wheat, oats, barley and corn |
| **Rate** | 300 mL/acre | 300 mL/acre |
| **Application Timing** | **NUTRISYNC D** should be applied before the onset of first flowering with additional applications before each additional flowering stage | **NUTRISYNC M** should be applied before the onset of first flowering with additional applications before each additional flowering stage. |

# RADIATE®

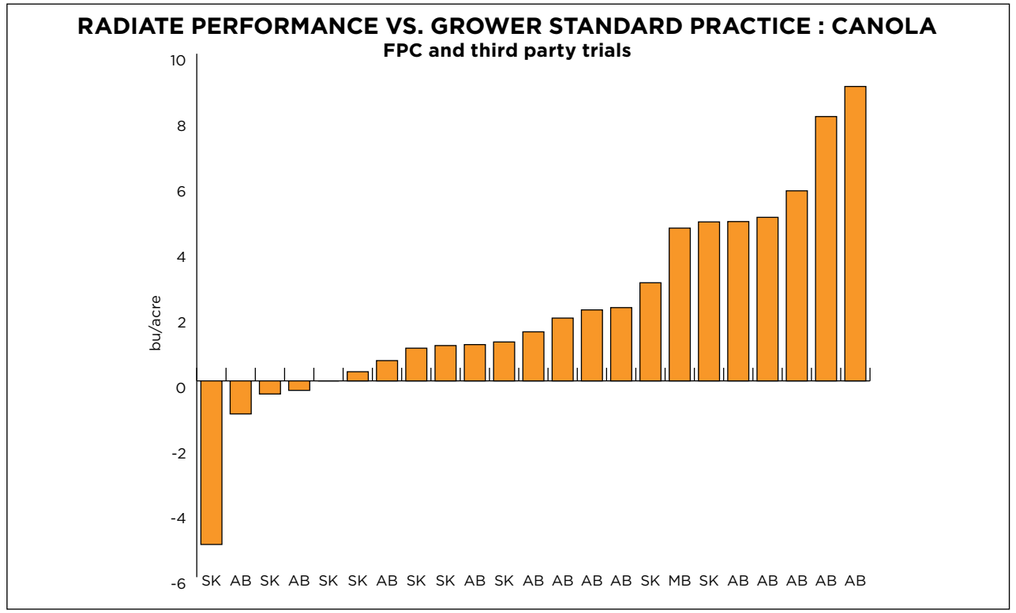
## GIVE BACK TO YOUR ROOTS

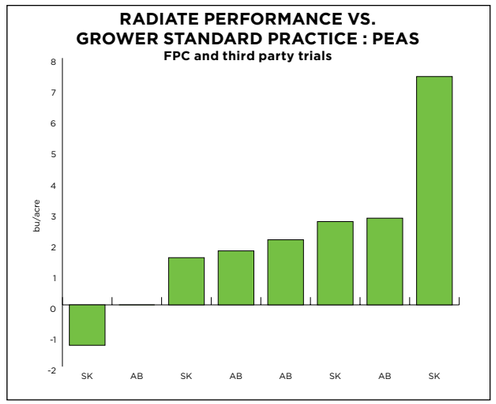
**RADIATE** is a patented formulation of two plant growth hormones that help crops develop longer, healthier, stronger roots to improve nutrient uptake, stress resistance and plant health. In many soil types or application systems, **RADIATE** is designed to ultimately enhance yields and crop quality.

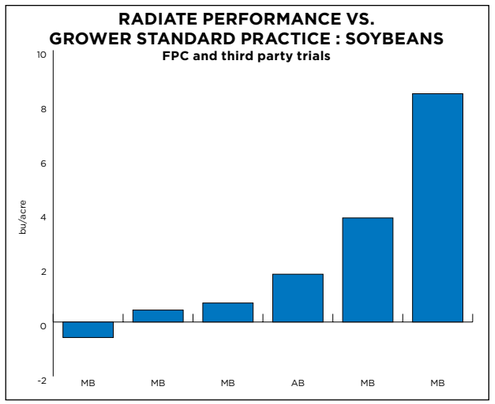
### PRODUCT HIGHLIGHTS

- Improves early season vigor
- Promotes root and shoot growth
- Reduces early season stress

**APPLICATION RATES:** 60 ml/ac






# NUTRIENT SELECTION

Nutrient availability can be effected by various factors including soil conditions, crop residue, soil texture and previous fertility. Addressing specific nutrient requirements determined by a soil or tissue sample can be done with an application of Loveland Products nutritionals. Satisfying crop nutritional needs results in optimized yield and productivity.

Use this selection chart to determine which products can help address your nutrient deficiencies.

| NUTRIENT | PRODUCT | FULL ANALYSIS | FEATURES & BENEFITS | FOLIAR APPLICATION RATES (L/ac) based on deficiency | | |
|---|---|---|---|---|---|---|
| | | | | MILD | MODERATE | SEVERE |
| N | **MAXIMUM N-PACT®** | 24-0-0 | • Provides excellent uptake and translocation<br>• Reduced volatilization<br>• Outstanding foliar safety<br>• Stable source of post-emergent nitrogen | 2 | 4 | 6 |
| N & K | **MAXIMUM N-PACT® K** | 12-0-12 | • Excellent source of foliar nitrogen with the addition of a safe foliar potassium source<br>• Supports photosynthesis during critical periods<br>• Suitable for most specialty and field crops to enhance growth and quality, correct nitrogen deficiencies, and help plants recover from stressful conditions | 4 | 6 | 8 |
| P | **RISER** | 7-17-3 + 0.07% Cu, 0.20% Fe, 0.06% Mn, 0.95% Zn | • Maximizes nutrient availability<br>• Increases nutrient uptake<br>• Improves photosynthesis | 2 | 4 | 6 |
| | **BLACK LABEL ZN** | 6-20-0 + 0.77% Zn | • Maximize nutrient availability<br>• Moderate toxicity of salts<br>• Improve plant and microbial activity | 4 | 6 | 8 |
| K | **LOKOMOTIVE®** | 2-0-25 | • Superior uptake and translocation<br>• Excellent crop safety<br>• High analysis and absorption for lower use rates | 2 | 3 | 4 |
| S | **RE-NFORCE® K** | 5-0-20-13 | • Increase nitrogen absorption<br>• Facilitates absorption and translocation of K and S | 2 | 4 | 6 |
| B | **BOROSOL® 10%** | 10% B | • Plants take up BOROSOL 10 more rapidly and completely vs. boric acid | 0.5 | 0.75 | 1 |
| Ca | **SST 8% CALCIUM** | 8% Ca + 2% Si | • SST silica provides 2% silica for enhanced physical toughness and resistance to environmental stress | 1 | 1.5 | 2 |
| Mg | **SUREMAG® 6% MG** | 6% Mg | • Agronomically superior form of magnesium that has superior foliar uptake and translocation within the plant | 0.5 | 1.5 | 3 |
| Zn<br>Mn<br>Cu | **AWAKEN™** | **16-0-2 + 0.02% B, 0.15% Cu, 0.15% Fe, 0.15% Mn, 0.0006% Mo, 2.7% Zn** | • Better overall plant health and vigor<br>• Balanced foliar micro nutrition promotes consistent quality and higher yield potential | **0.5** | **1** | **2** |

# ADJUVANTS

Adjuvants are mixed with crop protection or crop nutrition products in the sprayer tank to enhance their performance. Adjuvants help these products get to plants, be better absorbed into plants and be retained by plants. They are a critical part of optimizing product performance in order to optimize crop performance.

### WHAT IS LECI-TECH®?

LECI-TECH® INSIDE

TO ON IN

Lecithin is a natural-based product derived from soybean seeds and is the workhorse of the **LECI-TECH** product line. **LECI-TECH** is a unique technology that assists overall spray performance by providing an adjuvant system that delivers: To The Plant (drift reduction), On The Plant (droplet retention) and In The Plant (penetration). **LECI-TECH** increases crop safety, is biodegradable and is the best adjuvant technology.

### LECI-TECH FAMILY OF PRODUCTS

| PRODUCT | ACIDIFIER | ANTIFOAM/ DEFOAM | DEPOSITION AID/STICKER | DRIFT CONTROL | PENETRANT | SPREADER | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| **LI 700®** | ● | | ● | ● | ● | ● | **LECI-TECH** non-ionic penetrating surfactant with pH reduction |
| **LIBERATE®** | | ● | ● | ● | ● | ● | **LECI-TECH** 100% active surfactant, neutral pH |
| **MSO CONCENTRATE WITH LECI-TECH®** | | | ● | ● | ● | | **LECI-TECH** blend of methylated seed oil and surfactant |
| **VALID®** | | ● | ● | ● | | | **LECI-TECH** deposition aid, drift reduction and defoamer |



## ALL CLEAR®

LECI-TECH® INSIDE

### REDUCE THE RISK OF SPRAY TANK CONTAMINATION

Highly effective all-purpose tank cleaner specifically formulated to remove pesticide deposits and other debris, including sticky and oily substances from tanks, hoses, booms and nozzles.

#### PRODUCT HIGHLIGHTS

Dual modes of action:

- Surfactant to physically remove residues
- Degradant to chemically break down residues

#### APPLICATION RATES

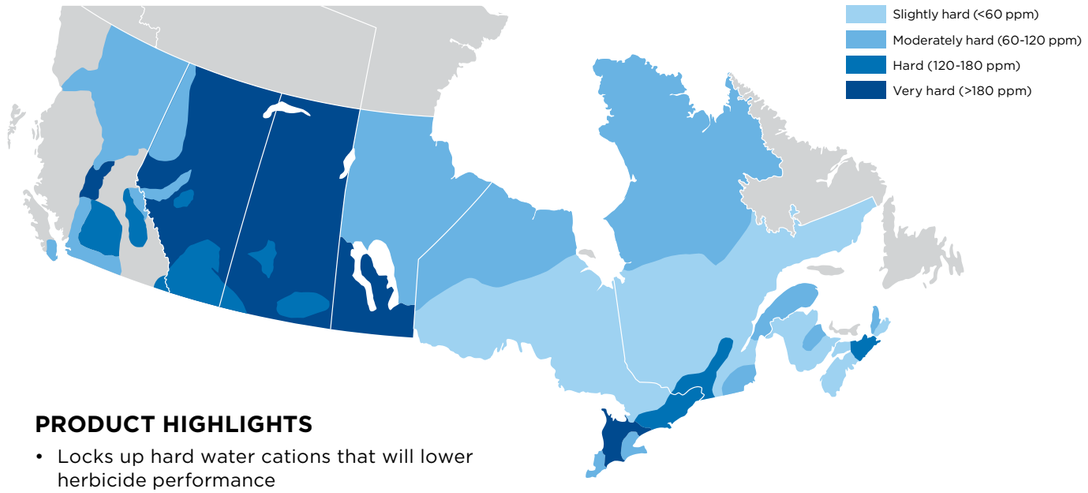
- General purpose cleansing (0.25% v/v)
- Decontamination (0.50% v/v)

## CHOICE WEATHER MASTER®

LECI-TECH® INSIDE

### UNIQUE CONDITIONER AGENT FOR HARD WATER

Water conditioning agent for use with agricultural chemicals. Designed for hard water conditions, this liquid formulation locks up hard water cations allowing maximum herbicide performance. Compatible with all formulations of glyphosate.




#### PRODUCT HIGHLIGHTS

- Locks up hard water cations that will lower herbicide performance
- Features a low use rate, relative to ammonium sulphate (AMS)
- Handles and mixes easily, because it's a liquid
- Handle and use less, because it's concentrated
- Compatible with all formulations of glyphosate
- Use where hard water exists to optimize the performance of all weak-acid herbicides (glufosinate ammonium, clopyralid, etc.)
- Uses multiple sequestering and chelating agents

#### APPLICATION RATES

| HARDNESS | CHOICE WEATHER MASTER (ml/100 L) | CHOICE WEATHER MASTER (L/1000 L) |
|---|---|---|
| Up to 300 ppm | 300 | 3 |
| 400 ppm | 400 | 4 |
| 500 ppm | 500 | 5 |

Always read and follow the label directions.

# LI 700®

## PENETRANT, ACIDIFIER DEPOSITION AID AND DRIFT CONTROL AGENT

Non-ionic penetrating surfactant that reduces off-target spray drift and lowers spray water pH. Unique formulation technology and quality ingredients differentiate **LI 700** in the market.

### PRODUCT HIGHLIGHTS

Reduced drift by reducing production of small droplets

- Lowers water pH ensuring pesticide efficacy
- Spreading and adhesion properties ensure the pesticides stays on leaf
- Penetrates through waxy leaf cuticles
- Increases leaf spray droplet retention through
- Reduced droplet bounce, shatter and roll-off

**Performance made easy**

The unique benefits of **LI 700** are simple:



**LI 700** improves spray performance and the key is **LECI-TECH**® technology:

- TO THE PLANT — drift reduction with right-sized droplets
- ON THE PLANT — droplet retention through adhesion and spreading
- IN THE PLANT — increased penetration without cuticle disruption

### APPLICATION RATES

Add to spray tanks at a rate of 0.25% v/v (2.5 L/1000 L of spray solution).

| TANK MIX PARTNER | RATE PER 1000 L SPRAY SOLUTION |
|---|---|
| Admire* 240 | 300 ml[2] |
| Assail* | 900 ml[2] |
| Assure* II | 5 L |
| Cygon* 480/**LAGON 480** | 500 ml[2] |
| Everest* 2.0/Sierra* 2.0 | 2.5 L |
| Glyphosate | 2–5 L[1] |
| **MALATHION** | 600 ml[2] |
| **NUTRISYNC M & NUTRISYNC D** | 2.5 L |
| Pounce* | 600 ml[2] |
| **RADIATE** | 2.5 L |
| Reglone*/**STAGE** | 2.5 L |
| Ripcord* | 300 ml[2] |
| Sevin* XLR | 600 ml[2] |

[1] Rate varies upon spray conditions, refer to product label.
[2] Used as a utility modifier to reduce pH of spray solution.

The acidification technology lowers the pH of spray solutions and its low foaming formulation is spray-tank friendly. 355 ml of **LI 700** per 100 gallon tank will lower the pH two points.

### OTHER

Do not use with sulfonylurea (SU) chemistries (Express*, Refine*, etc.) and foliar copper fungicides.



# LIBERATE®

## 100% NON-IONIC SURFACTANT, DRIFT CONTROL AGENT

An uptake enhancing surfactant blend designed for use with pesticides that recommend a non-ionic surfactant. Works especially well with systemic chemistries, reducing driftable fines.

### PRODUCT HIGHLIGHTS

- TO THE PLANT – drift reduction with right-sized droplets
- ON THE PLANT – droplet retention through adhesion and spreading
- IN THE PLANT – increased penetration without cuticle disruption
- Neutral pH – ideally used with SU herbicides and other pesticides that require a pH 7 (neutral) or higher
- Contains antifoam/defoam component and will not cause foaming problems in the spray tank
  - 100% active spreader/penetrant contains soy oil derivative
  - Odorless, low-foaming, neutral pH formulation
  - Provides drift reduction, increased droplet adhesion
  - Excellent penetration and deposition and is user-friendly

### APPLICATION RATES

Apply at a rate of 0.1–0.25 v/v (1.0–2.5 L per 1000 L of spray solution).

| TANK MIX PARTNER | RATE PER 1000 L SPRAY SOLUTION |
|---|---|
| Accent* | 2 L |
| Accurate* | 2.5 L |
| Adrenalin* | 2.5 L |
| Ally* | 2 L |
| Assure* II | 5 L |
| Barricade* II | 2 L |
| Curtail* M | 2.5 L |
| Deploy*/Nufarm Boost* | 2 L |
| Distinct* | 2.5 L |
| Dual Magnum* | 1 L |
| Everest* | 2.5 L |
| Dupont Precision Pac* | 2 L |
| Express* SG/Pro/FX | 2 L |
| Folicur*/**PALLISER**/Fuse* | 1.25 L |
| Glyphosate | 2.5 L |
| Lontrel* | 2.5 L |
| Nimble* | 2 L |
| Nuance* | 2.5 L |
| Odyssey* | 2.5 L |
| Pardner* | 2.5 L |
| Pursuit* | 2.5 L |
| Refine* SG/Refine* Extra | 2 L |
| Reflex* | 1 L |
| **RETAIN SG** | 2 L |
| Triton* C | 2.5 L |

# MSO CONCENTRATE WITH LECI-TECH®

## LECI-TECH BLEND OF MODIFIED VEGETABLE OIL AND SURFACTANT

Methylated seed oil containing the highest quality components available.

### PRODUCT HIGHLIGHTS

- Enhanced penetration and droplet
- Adhesion for increased plant uptake and optimum weed control. Its premium emulsifiers and the addition of **LECI-TECH** provide uniform mixing and drift reduction.
- Increased plant uptake vs. standard methylated seed oil formulations
- Improved crop safety vs. standard methylated seed oil formulations

### APPLICATION RATES

Apply 1% v/v or 10 L per 1000 L of spray mixture as follows:

| CROP | TANK-MIX HERBICIDES |
|---|---|
| Soybeans<br>Follow the tank-mix herbicide labels for complete use instructions. | **Duet™** |
| | Pursuit* |
| | Pursuit* + Basagran* |
| | Pursuit* + Reflex* |
| | Pinnacle* |
| | Viper* + Reflex* |
| Canola<br>Follow the tank-mix herbicide labels for complete use instructions. | **Duet™** |
| | **Mizuna™** |
| | Pursuit* |
| | Pursuit + Poast Ultra* |
| | Odyssey* |
| | Poast Ultra* |

| CROP | TANK-MIX HERBICIDES |
|---|---|
| Lentils<br>Follow the tank-mix herbicide labels for complete use instructions. | **Duet™** |
| | **Mizuna™** |
| Peas<br>Follow the tank-mix herbicide labels for complete use instructions. | **Duet™** |
| | Pursuit* |
| | Pursuit* + Poast Ultra* |
| | Odyssey* |
| | Poast Ultra* |
| Lentils, soybeans, barley, canary seed, chickpea, kabuli, corn (field and sweet), oats, peas (dried field), wheat (spring, durum and winter)<br>Pre-seed or pre-emergent use at 200 ml/ac (500 ml/ha). | Heat* WG |

# VALID®

## ANTIFOAMING DRIFT CONTROL AGENT

Non-ionic, non-foaming and shear-tolerant drift control agent containing suspended antifoam-defoamer. May be used as a drift control adjuvant to enhance deposition, retention and control spray droplet size.

### PRODUCT HIGHLIGHTS

- TO THE PLANT — drift reduction with right-sized droplets
- ON THE PLANT — droplet retention through adhesion and spreading
- Contains antifoam/defoam system
- Low use rates

### APPLICATION RATE

Use in tanks where a penetrating surfactant is not required, but drift control and antifoaming is desired (0.125% v/v).



Always read and follow the label directions.

# CROP PROTECTION

Depending on the challenge, crop protection products take on a variety of roles. Herbicides, insecticides and fungicides are available from Loveland Products to control virtually every insect and plant pest, in addition to crop diseases. By protecting and improving plant health, growers make the most of valuable seed technology, providing crops the greatest opportunity for higher yield and quality.

### CROP PROTECTION SELECTOR CHART

| CROP | PRE-SEED | HERBICIDE | | FUNGICIDE | PRE-HARVEST DESICCATION | POST-HARVEST |
|---|---|---|---|---|---|---|
| | | BROADLEAF | GRASS | | | |
| Cereals | **STARTUP®**<br>**BLITZ™**<br>**BONANZA®[3]**<br>**MAD DOG® PLUS** | **CALIBER® 625**<br>**BROADSIDE®**<br>**BROMAX®**<br>**CHECKMATE™**<br>**MCPA AMINE 500**<br>**MCPA SODIUM 300**<br>**MOMENTUM™**<br>**RETAIN™ SG**<br>**SALVO® 2,4-D 700**<br>**SWORD®** | **FOOTHILLS® NG**<br>**MARENGO®**<br>**WILDCAT® ENHANCED** | **PALLISER™**<br>**PROPEL®** | **STARTUP** | **STARTUP**<br>**BLITZ**<br>**BONANZA[2]**<br>**MAD DOG PLUS** |
| Canola | **STARTUP**<br>**BONANZA**<br>**MAD DOG PLUS** | **STARTUP**<br>**MAD DOG PLUS** | **SHADOW® RTU** | **PROPEL** | **STARTUP**<br>**STAGE™**<br>**MAD DOG PLUS** | **STARTUP**<br>**BONANZA**<br>**MAD DOG PLUS** |
| Flax | **STARTUP**<br>**MAD DOG PLUS** | **CHECKMATE**<br>**MCPA AMINE 500**<br>**MCPA SODIUM 300** | **SHADOW RTU** | | **STAGE**<br>**STARTUP** | **BONANZA** |
| Forages | **STARTUP**<br>**MAD DOG PLUS** | **CALIBER 625**<br>**MCPA AMINE 500**<br>**MCPA SODIUM 300**<br>**SALVO 2,4-D 700**<br>**SWORD** | **SHADOW RTU** | | **STAGE**<br>**STARTUP**<br>**MAD DOG PLUS** | **BONANZA** |
| Pulses | **STARTUP**<br>**MAD DOG PLUS** | **MCPA SODIUM 300[1]**<br>**DUET**<br>**MIZUNA** | **SHADOW RTU** | | **STAGE**<br>**STARTUP** | **STARTUP**<br>**BONANZA** |

[1] Peas only
[2] Barley is fall treatment only
[3] Spring wheat and durum only

# BLITZ™

Tackle weeds early with **BLITZ**. Added to glyphosate, **BLITZ** provides outstanding preseed burn down, summer fallow or post-harvest control of emerged, actively growing grass and broadleaf weeds.

## ACTIVE INGREDIENT
Florasulam 50 g/L, Group 2

## CROPS
Barley, oats, wheat, durum or summer fallow

## FOR CONTROL OF
A wide range of grass and broadleaf weeds. **BLITZ** alone controls or suppresses the weeds listed below, if not resistant to Group 2 herbicides. Applied in a tank mix with glyphosate for enhanced control of weeds.

**Controlled:** Buckwheat, wild, volunteer canola[1], common chickweed, cleavers, cow cockle, wild mustard, shepherd's-purse, smartweed and stinkweed

[1]Including herbicide-tolerant canola varieties except Clearfield*.

**Suppressed:** Hemp-nettle, narrow-leaved hawks-beard, redroot pigweed and sow thistle (annual and perennial)

## APPLICATION TIMING
- In spring, tank mix with glyphosate and apply prior to seeding.
- In summer, tank mix with glyphosate and apply to summer fallow fields and seeded the following spring.
- In fall, tank mix with glyphosate and apply to stubble or summer fallow fields after August 1st and prior to freeze-up.

## TANK MIXES
Glyphosate

## APPLICATION RATES
Apply at 40 ml/ac (100 ml/ha) and glyphosate at 182.2 g a.e./ac (450 g a.e./ha) with 10 U.S. gallons of water per acre (100 L/ha).

## USE RESTRICTIONS
**Spring: BLITZ** herbicide + glyphosate may be applied in the spring prior to seeding and no longer than 48 hours after seeding prior to any crop emergence. Fields treated with **BLITZ** herbicide in the spring may be planted to barley, oats, wheat, durum or summer fallowed.

**Summer (prior to August 1)**: **BLITZ** herbicide + glyphosate may be applied to summer fallow fields and seeded in the following Spring to barley, canola, oats, peas or wheat (including durum) or summer followed.

**Summer (after August 1)**: **BLITZ** herbicide + glyphosate may be applied to summer follow fields and seeded in the following Spring to barley, oats or wheat (including durum) or summer fallowed.

**Fall: BLITZ** herbicide + glyphosate may be applied to stubble or summer fallow fields after August 1 and prior to freeze-up and may be seeded to barley, oats or wheat (including durum) or summer fallowed.

**Do not use in successive years on the same field.**

## MIXING INSTRUCTIONS
1. Fill sprayer tank 1/2 full of water.
2. Start sprayer tank agitation.
3. Add the required amount of **BLITZ** herbicide.
4. Add tank mix partner and continue to agitate.
5. Fill the sprayer tank with sufficient water to spray 50–100 L of spray mixture per hectare.
6. Avoid application conditions that can create drift when applying next to sensitive crops (e.g. canola and legumes).
7. Follow sprayer clean-up directions using a recommended tank cleaner.

## LIMITATIONS
In rare occasions when the mixing instructions are not followed precisely when using a K-Salt product flocculation may occur in the tank. This can easily be corrected; if one of the following products is added to the tank (after flocculating occurs) to rectify the situation:
- **CHOICE WEATHER MASTER**
- EZ Mix
- AMS





# BONANZA® 10G

Provides excellent control of a broad spectrum of annual grass and broadleaf weeds. Use this soil-incorporated formulation in a range of management systems.

## ACTIVE INGREDIENT
Trifluralin 10%, Group 3

## CROPS
Canola, flax, faba bean, lentil, pea, mustard, sunflower, soybean, dry bean, barley, alfalfa and summer fallow

## FOR CONTROL OF
**Annual grasses:** bluegrass, barnyard grass, bromegrass, cheat, crabgrass, goosegrass, green and yellow foxtail, Persian darnel, stinkgrass and wild oats

**Annual broadleaf weeds:** carpetweed, chickweed, cow cockle, knotweed, lamb's-quarters, pigweed, purslane and wild buckwheat

## TANK MIXES
Sencor*, Lexone*, Avadex BW* or Basagran*

## APPLICATION TIMING & RATES
Read and follow all label directions. Application timing and rates are dependent on crop, soil organic matter, environment conditions and re-cropping restrictions.

## USE RESTRICTIONS
- Do not apply to soils which contain more than 15% organic matter such as peat or muck soils (maximum 10% organic matter on barley).
- Do not apply to wet soils that are subject to flooding.
- Do not apply to soils that are extremely lumpy, cloddy or in poor working condition.
- For maximum weed control and crop tolerance, follow label directions at all times. Read all directions before applying **BONANZA 10G** granular herbicide.

# BONANZA® 480

A liquid herbicide with excellent control of a broad spectrum of annual grass and broadleaf weeds. Use this soil-incorporated formulation in a range of management systems.

## ACTIVE INGREDIENT
Trifluralin 480 g/L, Group 3

## CROPS
Canola, barley, flax, sunflowers, mustard, lentils, peas, faba beans, soybeans, dry beans and alfalfa establishment (flax and canola cover crops only)

## FOR CONTROL OF
**Annual grasses:** bluegrass, barnyard grass, bromegrass, cheat, crabgrass, goosegrass, green and yellow foxtail, Persian darnel, stinkgrass and wild oats

**Annual broadleaf weeds:** carpetweed, chickweed, cow cockle, knotweed, lamb's-quarters, pigweed, purslane and wild buckwheat

## APPLICATION TIMING & RATES
Application timing and rates are sensitive to crop, soil organic matter and environmental conditions. Refer to the label for complete instructions.

## TANK MIXES
Sencor*, Lexone*, Avadex BW* or Basagran*

## USE RESTRICTIONS
**Spring application**

Apply in the spring and before the crop or weed emergence. It must be incorporated thoroughly into the soil to control susceptible germinating weeds. The first incorporation must be done no later than 24 hours after application. The second incorporation may be done at the time of seedbed preparation provided it is done at the recommended depth.

Read and follow all incorporation instructions. Spring application is not recommended for flax and lentils.

**Fall application**

Check application rates and incorporation instructions on label. Ensure timely incorporation. Apply between September 1 and before soil freeze-up for weed control the following year. Two incorporations in the fall are recommended to be followed by shallow tillage (5–8 cm) in the spring before planting. If this is not an option, the first incorporation within 24 hours of spraying can be followed by a second in the spring when the seed bed is being prepared.

# BROADSIDE®

A powerful relief at a great price, **BROADSIDE** combines exceptional weed control with the superior crop safety of Refine* SG and MCPA Ester. In addition, it contains Solumax* technology to improve absorption and allow quick, efficient tank cleaning.

### ACTIVE INGREDIENTS
Thifensulfuron-methyl 33.35% Group 2; Tribenuron-methyl 16.65% Group 2; MCPA present as 2-ethylhexyl ester 66 g a.e./L Group 4

### CROPS
Spring and winter wheat, durum, barley and oats

### FOR CONTROL OF
Annual smartweed (green smartweed, lady's-thumb), ball mustard, chickweed, common groundsel, corn spurry, cow cockle, dandelion, flixweed, hemp-nettle, kochia, lamb's quarters, narrow-leaf hawk's-beard, redroot pigweed, Russian thistle, shepherd's purse, stinkweed, tartary buckwheat, volunteer canola (2- to 4-leaf; including Clearfield* varieties), volunteer sunflowers, wild buckwheat and wild mustard

### TANK MIXES
Readily tank mixable with a number of wild oat herbicides.

### APPLICATION TIMING
3-leaf to flag-leaf stages

### APPLICATION RATES
Each split jug treats 40 acres. The jug contains 4 x 10 acre water soluble packs of Refine SG – 33.75% thifensulfuron methyl plus 16.65% tribenuron methyl plus 7.6 L of MCPA Ester 600. For ground application, add a minimum of 5 gal/ac of water. For aerial application add 2.5 gallons to a maximum 4.5 gal/ac.

### USE RESTRICTIONS
Spray equipment must be calibrated accurately prior to use. All spray equipment must be thoroughly washed out after use and must not be used for spraying horticultural crops. Do not apply under weather conditions or from spraying equipment that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures. Do not contaminate streams, rivers or waterways with the chemical or used containers.

# CALIBER® 625

A fast acting herbicide used to control over 90 broadleaf weeds in legumes and grasses. This easy to use post-emergent features a low use rate, wide window of application and improved tank mix compatibility.

### ACTIVE INGREDIENTS
2,4-DB, 625 g/L Group 4

### CROPS
Seedling legume and grass forages, cereals, corn and pastures

### FOR CONTROL OF
Stinkweed, ragweed, redroot pigweed, shepherd's-purse, lamb's-quarters, wormseed mustard, ball mustard and wild mustard

### APPLICATION TIMING
From the first to the fourth trifoliate leaf stage.

### APPLICATION RATE
0.7 L–1.1 L/ac

### TANK MIXES
May be used as a tank mix. Consult the label of the tank mix partner product and follow the most stringent set of precautions, restrictions and directions for use.

### USE RESTRICTIONS
Avoid contamination of ponds, streams, rivers and other water sources. Contains a petroleum distillate which his moderately to highly toxic to aquatic organisms. Avoid contamination of aquatic systems during application. Do not contaminate these systems through direct application, disposal of waste or cleaning of equipment.





# CHECK MATE®

Offers cost-effective control for a wide range of broadleaf weeds, including many herbicide-resistant weeds and volunteer broadleaf crops. **CHECK MATE** also offers outstanding crop safety.

### ACTIVE INGREDIENTS
MCPA (present as 2-ethylhexyl ester) 600 g a.e./L, Group 4

### CROPS
Wheat, barley, rye, oats, flax (not low linolenic acid varieties), pastures and non-crop land

### FOR CONTROL OF
Burdock, cocklebur, common plantain, flixweed, lamb's quarters, mustards, prickly lettuce, ragweeds, Russian pigweed, shepherd's purse, stinkweed, vetch, wild radish, wild sunflowers and 31 more harder to control weeds

### APPLICATION TIMING
Varies with weed, crop and crop stage. Please see label for details.

### APPLICATION RATES
Ranges from 283 ml/ac for flax to 1.5 L/ac for non-grazing woody growth. Please see the label for details.

### TANK MIXES
Excellent tank mix partner. Please refer to the label for a complete list.

### USE RESTRICTIONS
Avoid contamination of ponds, streams, rivers and other water sources. This product contains a petroleum distillate which is moderately to highly toxic to aquatic organisms. Avoid contamination of aquatic systems during application. Do not contaminate these systems through direct application, disposal of waste or cleaning of equipment. Toxic to aquatic organisms and non-targeted terrestrial plants.

Avoid applying this product when heavy rain is forecast. Contamination of aquatic areas as a result of runoff may be reduced by including a buffer zone between the treated area and the edge of the water body. The use of this chemical can result in contamination of groundwater.

# DUET™

Single pass grassy and broadleaf weed control for CLEARFIELD® branded crops, soybeans, field peas and faba beans.

### ACTIVE INGREDIENTS
Imazamox and Imazethapyr - Group 2

### CROPS
Clearfield canola, Clearfield lentils, Clearfield sunflowers, Faba beans, Fenugreek, Field Peas, Seedling clover (seed production), Soybeans

### FOR CONTROL OF
Chickweed, cleavers, cow cockle, flixweed, hemp-nettle, Lamb's quarters, redroot pigweed, round-leaved mallow, Russian thistle, Shepherd's purse, stinkweed, volunteer canola, wild buckwheat, wild mustard, barnyard grass, green foxtail, Persian darnel, volunteer barley, volunteer spring wheat, volunteer tame oats, wild oats

### APPLICATION TIMING
Varies with weed, crop and crop stage. Please see label for details.

### APPLICATION RATES
DUET Herbicide: 17 g/ac (43 g/ha)
MSO Concentrate with Leci-Tech® 1.0% v/v
Please see the label for details.

### USE RESTRICTIONS
Rainfastness – 3 hours.

Avoid application immediately before or after frost or during unseasonably cold weather.

Treat when weeds are actively growing.

Use higher water volume on dense weeds and thicker canopies.

# FOOTHILLS® NG

Provides reliable control of tough grassy weeds in spring wheat and durum. **FOOTHILLS NG** tank mixes with a wide range of broadleaf herbicides for customized weed control. Exceptionally crop-safe, **FOOTHILLS NG** comes pre-mixed with surfactant for added convenience.

## ACTIVE INGREDIENT
Clodinafop-propargyl 60 g/L, Group 1

## CROPS
Spring wheat and durum wheat

## FOR CONTROL OF
Wild oats, green foxtail, yellow foxtail, barnyard grass, Persian darnel, volunteer oats and volunteer canary seed

## APPLICATION TIMING

| CROP | GROWTH STAGE | TIMING |
|---|---|---|
| Wild oats | 1- to 6-leaf stage on main stem | Prior to emergence of fourth tiller. |
| Volunteer tame oats | 3- to 6-leaf stage on main stem | Prior to emergence of fourth tiller. |
| Green and yellow foxtail (wild millet, pigeon grass) | 1- to 5-leaf stage on main stem | For optimum control apply prior to emergence of the third tiller and while foxtail is actively growing. |
| Barnyard grass | 1- to 5-leaf stage on main stem | For optimum control apply before tillering and while barnyard grass is actively growing. |
| Persian darnel | 1- to 5-leaf stage on main stem | For optimum control apply before tillering and while Persian darnel is actively growing. |
| Volunteer canary seed | 1- to 6-leaf stage on main stem | Prior to emergence of fourth tiller. |
| Spring and durum wheat | | Prior to emergence of fourth tiller. |

When tank mixing with a broadleaf herbicide, insecticide or a fungicide, always refer to the label of the broadleaf partner, insecticide partner or fungicide partner prior to use.

## APPLICATION RATES
Apply at a rate of 376 ml/ac (20 ac/jug). To control Persian darnel in addition to the other grassy weeds listed above, apply at a rate of 474 ml/ac (16 ac/jug).

## TANK MIXES*
Tank mixes with broadleaf weed herbicides, insecticides and fungicides in wheat and barley, including: Target*, Dyvel*, Buctril*, Estaprop, Turboprop, Dichlorprop-D, Lontrel* 360, Curtail*, 2,4-D Amine, MCPA Ester, MCPA Amine, Ally*, Attain*, Prestige*, Thumper*, Decis* Flowable, TILT* 250E and Refine* SG

[1]Refer to the manufacturer labels for both products for registered crops, rates and mixing instructions.

## USE RESTRICTIONS
**Surfactant**: Contains a built-in surfactant technology. Do not add SCORE[1] Adjuvant, or any other adjuvant to the **FOOTHILLS NG** herbicide mixture.

**Pre-harvest interval**: Observe minimum interval to harvest of 60 days after treatment. Do not treat wheat underseeded to forages.

**Re-entry interval**: Observe a minimum of three days before grazing livestock on treated crops.





# MAD DOG® PLUS

A fit for both your field and budget.

## ACTIVE INGREDIENTS
Glyphosate (360 g a.e/L) - Group 9

## CROPS
In cropping systems before planting of all crops, post emergent in glyphosate tolerant canola, soybean and corn i.e., varieties with the Roundup Ready® gene, Pre-harvest applications in wheat, barley, oats, canola, flax (including low linolenic acid varieties), peas, lentils, dry beans, soybeans and forages

## TANK MIXES
2,4-D, Aim, Assure II, Atrazine, Authority, Bromoxynil, Dicamba, Express SG, Express Pro, Express FX, Florasulam (Blitz and Prepass Flex), Heat, Inferno Duo, MCPA, Pursuit

## ADJUVANTS
- **LI 700®** (pH reducer) at 0.25% v/v
- **Liberate®** (pH neutral) at 0.25% v/v

## APPLICATION RATES

| RATE (L/ha) | WEED GROWTH STAGE |
|---|---|
| 0.75 | 8 cm in height |
| 1.0 | 8 cm to 15 cm in height |
| 1.25 - 1.9 | 15 cm in height |
| 3.5 | 15 cm in height |

Please refer to label for specific crop and weed stage recommendations

# MARENGO®

Provides post-emergent control of annual grasses in all varieties of spring wheat, hard red wheat, all 2 and 6 row varieties of barley (malting, feed) and all varieties of triticale, spring rye and winter rye.

## ACTIVE INGREDIENT
Tralkoxydim 400 g/L, Group 1

## CROPS
Spring wheat, winter wheat, durum, barley, rye (spring and fall) and triticale

## FOR CONTROL OF
Wild oats, volunteer tame oats, green and yellow foxtail, barnyard grass and Persian darnel

## APPLICATION TIMING
Wild oats, volunteer tame oats: 1- to 6-leaf stage

Green and yellow foxtail: 1- to 5-leaf stage

Barnyard grass, Persian darnel: 1- to 4-leaf

## APPLICATION RATES
Apply at a rate of 0.2 L/ac (40 ac/case)

**Surfactant note: MARENGO** case contains enough adjuvant for 5 g/ac water volume. Additional surfactant must be purchased to accommodate higher water volumes. Always add **MARENGO** adjuvant, Intake* adjuvant or Turbocharge* B adjuvant to the spray solution at a rate of 0.5 L/100 L of spray mixture (0.5% v/v).

## TANK MIXES*
For broad spectrum control of both annual grasses and broadleaf weeds, **MARENGO** herbicide can be tank mixed with a variety of broadleaf weed herbicides including: Buctril* M, Attain* XC, Partner,* Thumper,* Dichlorprop/2,4-D Ester, 2,4-D Ester, MCPA Ester, Lontrel* + MCPA Ester, Curtail* M, Prestige* XC, Trophy,* Starane* or OcTTain* XL.

Can be tank-mixed with the following insecticides: Decis* Flowable or Matador* 120EC.

*Refer to the manufacturer labels for both products for registered crops, rates and mixing instructions.

## USE RESTRICTIONS
- Rainfall within one hour will reduce control.
- Do not re-enter treated field for 12 hours.
- Grazing and pre-harvest intervals: review all labels used in your tank mixture and use the most limiting.
- Do not harvest treated crop within 60 days after application.

# MCPA AMINE 600

A cost-effective herbicide that controls a wide range of broadleaf weeds, including herbicide resistant varieties. It is useful for controlling weeds when establishing legumes that are under sown to small grains.

### ACTIVE INGREDIENT
MCPA (present as dimethylamine salt) 600 g a.e./L, Group 4

### CROPS
Wheat, barley, rye, oats and corn, flax (not low linolenic acid varieties), peas and forage legumes (alfalfa, bird's-foot trefoil, red clover, ladino clover, alsike clover), turf (fairways and lawns), asparagus, pasture, rangeland, grasses, spruce seedling and non-crop/industrial sites

### FOR CONTROL OF
Black medick, buttercups, common chickweed, mouse-ear chickweed, clovers, creeping charlie (ground ivy), curled dock, dandelions, field and hedge bindweed, heal-all, horsetail, knot weed, lamb's-quarters, mustard, pigweed, plantains, purslane, ragweed, shepherd's purse, stickwort, smartweeds, wild carrot and more

### APPLICATION TIMING
Varies with weed, weed stage, crop and crop stage. Please see label for details.

### APPLICATION RATES
Please refer to the label. Rates vary by crop and susceptibility of the weeds.

### TANK MIXES
An excellent partner for many herbicides, insecticides, fungicides and fertilizers. Please refer to the label for complete list.

### USE RESTRICTIONS
- Do not permit lactating dairy animals to graze fields within seven days after application. Do not harvest forage or cut hay within seven days after application.
- Withdraw meat animals from treated fields at least three days before slaughter.
- Re-entry is not permitted until 12 hours after application for all agricultural scenarios unless otherwise indicated.
- Toxic to aquatic organisms and non-target terrestrial plants. Observe buffer zones. The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable (e.g. sand, loamy sand and sand loam soils) and/or the depth to the water table is shallow.





# MCPA SODIUM 300

A highly selective herbicide that is far easier on sensitive crops than 2,4-D. It is as effective as 2,4-D on tough problems like wild mustard, Russian pigweed, Canada thistle and more.

### ACTIVE INGREDIENTS
MCPA (present as sodium potassium salts of MCPA) 300 g a.e./L, Group 4

### CROPS
Wheat, barley, rye, fall sown cereals, oats, flax, corn, pea (field and canning), under seeded red clover, alsike and alfalfa, fairways and lawns, pastures and wasteland

### FOR CONTROL OF
38 broadleaf weeds including mustards, ragweed, stinkweed and lamb's-quarters.

### APPLICATION TIMING
Varies with weed, weed stage, crop and crop stage. Please see label for details.

### APPLICATION RATES
Please refer to the label. Rates vary by crop and susceptibility of the weeds.

### TANK MIXES
- Banvel* II, Bromoxynil, glyphosate, Horizon* (herbicides)
- Decis* (insecticide)

### USE RESTRICTIONS
- Do not apply by air. For field sprayer application, do not apply during periods of dead calm. Avoid application of this product when winds are gusty.
- Do not permit lactating dairy animals to graze fields within seven days after application. Do not harvest forage or cut hay within seven days after application. Withdraw meat animals from treated fields at least three days before slaughter. Toxic to aquatic organisms and non-target terrestrial plants. Consult the label for instructions on use of buffer zones. The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable

# MIZUNA™

Strong grass and broadleaf weed control in CLEARFIELD branded crops with worry-free rotation flexibility for next year.

### ACTIVE INGREDIENT
Imazamox - Group 2

### CROPS
Clearfield Canola, Clearfield lentils, Clearfield sunflowers

### FOR CONTROL OF
Cleavers, cow cockle, green smartweed, Lamb's quarters, redroot pigweed, round-leaved mallow, Russian thistle, Shepherd's purse, stinkweed, volunteer canola, wild buckwheat, wild mustard, barnyard grass, green foxtail, Japanese brome grass, Persian darnel, volunteer barley, volunteer wheat (durum and spring wheat), volunteer tame oats, wild oats, yellow foxtail

### APPLICATION TIMING
Various with weed, weed stage, crop and crop stage. Please see label for details.

### APPLICATION RATES
MIZUNA™ Herbicide 11.7 g/ac (29 g/ha)
MSO Concentrate with Leci-Tech® 1.0% v/v

### USE RESTRICTIONS
Rainfastness – 3 hours.

Avoid application immediately before or after frost or during unseasonably cold weather.

Treat when weeds are actively growing.

Use higher water volume on dense weeds and thicker canopies.

# MOMENTUM®

Raises the bar in broadleaf weed control for wheat and barley growers. With its tank-mix flexibility, **MOMENTUM** provides unparalleled, tailor-made performance — especially on those tough-to-control broadleaf weeds like Canada thistle, cleavers, wild buckwheat and kochia.

### ACTIVE INGREDIENTS
Clopyralid 90 g a.e./L, Group 4; Fluroxypyr 90 g a.e./L, Group 4

### FOR CONTROL OF
Canada thistle, cleavers, kochia, volunteer flax and wild buckwheat

### CROPS
Wheat (spring and durum) and barley

### APPLICATION TIMING
Apply to crop from 3-leaf to just before flag-leaf.

### APPLICATION RATES
Each 8.99 L jug of **MOMENTUM** treats 20 acres (0.45 L/ac). 2 x 8.99 L jugs per case

| | MOMENTUM (jugs) | BROADLEAF PARTNER (jugs) | ACRES PER PACKAGE | GROWTH STAGE |
|---|---|---|---|---|
| **MCPA Ester 600 High** | 4 | 3 | 80 | 3-leaf to just before flag-leaf |
| **MCPA Ester 600 Low** | 2 | 1 | 40 | 3-leaf to just before flag-leaf |
| **2,4-D Ester 600** | 2 | 1 | 40 | 4-leaf to early flag-leaf |
| **Refine SG** | 2 | 1 | 40 | 3-leaf to just before flag-leaf |

### TANK MIXES*
To broaden the spectrum of broadleaf weed control, **MOMENTUM** should always be tank mixed with MCPA, 2,4-D or Refine* SG. Refer to table above for rates

Avert/Assert,* Axial,* Everest 2.0,* **FOOTHILLS NG**/Horizon NG,* **MARENGO**, Liquid Achieve,* Simplicity,* Traxos,* **WILDCAT ENHANCED**/Puma Advance* or Varro*

### USE RESTRICTIONS
- Grazing and pre-harvest intervals: review all labels used in your tank mixture and use the most limiting.
- DO NOT use alone.
- Do not harvest treated crop within 60 days after application.

# PAR III®

The most trusted name in weed management for golf courses and turf. This broad spectrum herbicide is formulated to control hard-to-kill annual and perennial weeds in turfgrass. **PAR III** is ideal for golf courses, parks, lawns, sports fields and other turf applications.

### ACTIVE INGREDIENTS
Mecoprop-P 100 g a.e./L, Group 4; 2,4-D (present as dimethylamine salt) 190 g a.e./L, Group 4; Dicamba 18 g a.e./L, Group 4

### CROPS
Turf

### FOR CONTROL OF
Bedstraw, black medick (yellow clover), buttercup, chickweed, clover, dandelion, English daisy, creeping Charlie, heal-all, knotweed, orange hawkweed, plantain, poison ivy, ragweed and shepherd's purse

### APPLICATION TIMING & RATE
Twice yearly maintenance program. For turfgrass (not containing bent grass), use 5.5 L in 300 L water/ha (55 ml in 3 L water/100 $m^2$).

### USE RESTRICTIONS
- Do not allow people (other than the applicator), or pets on treated area during application. Do not re-enter until thoroughly dried.
- Do not apply more than two applications per year, not including spot treatments.
- Do not apply by air. Avoid spray drift to any desirable vegetation not listed on label. Avoid contamination of ponds, streams and other water sources. Do not spray in high winds.





# RETAIN® SG

Featuring the latest Solumax* technology, combines the benefits of Group 2 and Group 4 herbicides to provide post-emergent broadleaf weed control in spring wheat, durum wheat and barley.

### ACTIVE INGREDIENTS
Thifensulfuron + 33.35% Tribenuron; Thifensulfuron + 16.65% Tribenuron, Group 2; Fluroxypyr (180 g/L), Group 4; 2,4-D Ester (660 g/L), Group 4

### CROPS
Spring wheat, durum wheat and barley

### FOR CONTROL OF
Ball mustard, Canada thistle, chickweed (emerged only 1- to 6-leaf), cleavers (1–4 whorls), corn spurry, cow cockle, common groundsel, flixweed, hemp-nettle, kochia, lady's-thumb, lamb's-quarters, narrow-leaved hawk's-beard, redroot pigweed, Russian thistle, shepherd's-purse, smartweed, stinkweed, sow thistle, volunteer canola, volunteer flax, volunteer sunflower, wild buckwheat and wild mustard

### APPLICATION TIMING
**Wheat and barley:** apply at the 4-leaf to flag-leaf stage of the crop. Do not apply later than the flag-leaf stage.

### APPLICATION RATE
One case treats 40 acres.

### TANK MIXES
Can be tank mixed with the following products: wheat (spring and durum) only, **FOOTHILLS NG**, Horizon* NG, Everest* 2.0 herbicide, barley and wheat (spring and durum), **WILDCAT ENHANCED**, Puma* Super, Puma* Advance or Assert*.

### USE RESTRICTIONS
See component products for more information on restrictions. Use the most limiting restrictions across all components for the list.

# SALVO® 2,4-D 700

A cost-effective Group 4 herbicide that controls a wide range of broadleaf weeds in most cereal grains, corn, seedling and established grasses, forage grasses and rangeland. **SALVO** also provides effective control of volunteer herbicide-tolerant canola and Group 2 and Group 3 herbicide-resistant weeds.

### ACTIVE INGREDIENT
2,4-D (present as 2-ethyl hexyl ester) 660 g a.e./L, Group 4

### CROPS
Wheat, barley, spring rye, fall rye, winter wheat, corn, established grasses for seed production and forage, established pastures and rangeland (without legumes), turf, stubble and uncropped land, woody growth in non-grazed areas, basal bark and stump treatment

### FOR CONTROL OF
50+ weeds including sow thistle, kochia and Canada thistle

### TANK MIXES
Can be recommended as a tank mix. Consult the label of the tank mix partner product, and follow the most stringent set of precautions, restrictions and directions for use.

### APPLICATION TIMING & RATES
Varies with weed, crop stage and method of application. Please refer to the label.

### USE RESTRICTIONS
- Avoid contamination of ponds, streams, rivers and other water sources. This product contains a petroleum distillate, which is moderately to highly toxic to aquatic organisms. DO NOT apply this product directly to freshwater habitats such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands, estuaries or marine habitats. DO NOT contaminate irrigation/drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.
- Toxic to small mammals, birds, aquatic organisms and non-target terrestrial plants. Observe buffer zones.
- Use may result in contamination of groundwater particularly in areas where soils are permeable.

# SHADOW® RTM

Strong grass control where you need it in field peas, flax, canola, lentils, desi and kabuli chickpeas, dry beans, sunflowers, mustard (oriental, brown and yellow), soybeans and seedling alfalfa.

## ACTIVE INGREDIENT
Clethodim 240 g/L, Group 1

## CROPS
Chickpeas, dry beans, alfalfa, canola, field peas, potatoes, flax and mustard

## FOR CONTROL OF
Barnyard grass, foxtail (green and yellow), proso millet, wild oats, Persian darnel, quackgrass, volunteer barley, volunteer canary seed, volunteer corn, volunteer oat, volunteer wheat, soybeans, lentils and sunflowers

## APPLICATION RATES
Maximum rate of 40 ac/case for chickpeas and dry beans and maximum rate of 20 ac/case for alfalfa, canola, field peas, potatoes, flax, mustard, soybean, lentils and sunflower.

## APPLICATION TIMING
Apply when the annual grasses and volunteer cereals are in the 2- to 6-leaf stage.

## TANK MIXES
Flax: Buctril* M, Curtail* M, MCPA Ester, Lontrel* 360

Field Peas: Pursuit*

Canola: Muster,* Liberty* 150SN (LibertyLink* varieties only – Prairie Provinces and Peace River Region of BC only) or Pursuit* (Imazethapyr-tolerant canola only)

## USE RESTRICTIONS
- Rainfall within one hour may reduce control.
- Do not enter treated fields for 12 hours.
- Do not graze or cut treated crops or forage until 60 days after application to annual crops and 30 days after application to seedling alfalfa.
- Pre-harvest intervals vary by crop. Please refer to the label.





# STAGE®

Allows the option of straight cutting and minimizes the loss of grade and yield that can occur in swathed crops. Desiccation with **STAGE** plus **LI 700** promotes faster and more uniform dry down, helping to retain good color.

## ACTIVE INGREDIENT
Diquat 240 g/L (present as dibromide), Group 22

## CROPS
Alfalfa seed, lentils, flax, peas, dry beans, soybeans, faba beans, mustard, sunflowers and chickpeas

## USE RESTRICTIONS
- Rainfall within 15 minutes may reduce effectiveness.
- Allow 24 hours before entering treated field.
- Pre-harvest intervals vary by crop. Please refer to the label.

## APPLICATION TIMING & RATES

| CROP | APPLICATION METHOD | RATE (L/ac)[1] | WATER VOLUME (L/ac) | APPLICATION TIMING |
|---|---|---|---|---|
| **Alfalfa** | Ground | 1.0 | 91–222 | When majority of pods are buckskin color and seeds are firm. |
| | Aerial | 1.1 | Minimum 18 | |
| **Lentils** | Ground | 0.7 | 91–222 | When lowermost pods are yellow-brown and rattle. |
| | Aerial | 0.7–0.9 | Minimum 18 | |
| **Flax** | Ground | 0.7 | 91–222 | When crop is at 75% boll turn stage. |
| | Aerial | 0.7–0.9 | Minimum 18 | |
| **Peas** | Ground | 0.7 | 91–222 | When bottom pods of the majority of the plants are ripe and dry when the seeds detach from the pods. |
| | Aerial | 0.7–0.9 | Minimum 18 | |

[1] Add **LI 700** at 0.25% v/v to every tank.

# START UP®

A water soluble herbicide for non-selective weed control in pre-seed, in-crop (glyphosate-tolerant crops), pre-harvest and post-harvest applications **STARTUP** is a glyphosate, 540 grams acid equivalent per litre, present as potassium salt.

## ACTIVE INGREDIENT

Glyphosate at 540 g, Group 9

## APPLICATION RATES

Wide range of application rates and uses. Please refer to the product label for the full listing of rates and tank mixes. For applications only using **STARTUP** refer to the following rate chart:

| RATE | GROWTH STAGE | KEY WEEDS CONTROLLED |
|---|---|---|
| 336–514 ml/ac (0.83–1.27 L/ha) | Weeds up to 6 in (15 cm) in height | Wild oats, green foxtail, volunteer barley and wheat, downy brome, giant foxtail and Persian darnel<br>Non Roundup* Ready volunteer canola, wild mustard, lady's thumb, stinkweed, kochia[1], cleavers, lamb's-quarters, redroot pigweed, hemp-nettle, flixweed, Russian thistle, vol. flax, common ragweed[2], Canada fleabane[2], wild buckwheat[3] and narrow-leaved hawksbeard[4] |
| 607 ml/ac (1.5 L/ha) | Weeds up to 6 in (15 cm) in height | All annual grasses listed above plus crabgrass and annual bluegrass<br>All annual broadleaf weeds listed above plus kochia, prickly lettuce, shepherd's purse, annual sow thistle and narrow-leaved vetch |
| 943 ml/ac (2.33 L/ha) | Weeds over 6 in (15 cm) in height | All annual and broadleaf weeds listed above |

[1] Suppression only
[2] DO NOT use these rates on plants greater than 3 in (8 cm) in height
[3] For 3- to 4-leaf stage use 514 ml/ac (1.27 L/ha) rate
[4] For weeds 3–6 in (8–15 cm) in height, use 514 ml/ac (1.27 L/ha) rate

## TANK MIX COMPATIBILITY

### Herbicides

2,4-D, Aim,* Amitrol* 240, Assure II,* Atrazine,* Authority,* Authority Charge,* Blackhawk,* Bromoxynil (**BROMAX**,* Brotex* 240), Bromoxynil + MCPA (Logic M*), Conquer,* Dicamba (Oracle,* Banvel II*), Dyvel* DS, Express* SG, Express* Pro, Express* FX, Florasulam (**BLITZ**, PrePass Flex*), Heat* WG, Inferno* Duo, KoAct,* MCPA or Pursuit* (RR Soybean)

### Adjuvants

- **LI 700** (pH reducer) @ 0.25% v/v
- **LIBERATE** (pH neutral) @ 0.25% v/v *(for use with sulfonylurea herbicide tank mixes – Express SG)*
- **CHOICE WEATHER MASTER** *(for hard water applications; 1 jug = 10 jugs AMS)*





# SWORD®

A premium methyl phenoxy ester (MCPA) herbicide that maximizes crop safety, controls a wide range of broadleaf weeds and is an ideal tank mix partner. The user-friendly, concentrated formulation requires less product per acre and reduces handling, mixing, freight costs and storage requirements.

## ACTIVE INGREDIENTS

MCPA (dimethylamine salts) 275 g a.e./L, Group 4; Mecoprop-P 62.5 g a.e./L, Group 4; Dicamba 62.5 g a.e./L, Group 4

## CROPS

Wheat (spring, durum and winter), barley, oats, stubble fields, summer fallow, canary seed (Phalaris canariensis) and seedling and established grasses grown for forage

## FOR CONTROL OF

Annual sow thistle, green smartweed, night flowering catchfly, hemp-nettle, chickweed, kochia, Russian thistle, cleavers, knotweed, shepherd's purse, common ragweed, lamb's quarters, stinkweed, corn spurry, lady's thumb, volunteer sunflower, flixweed, cow cockle, pigweeds, mustards, buckwheat, volunteer rapeseed (including herbicide tolerant varieties), Canada thistle, field bindweed, hedge bindweed and perennial sow thistle

## APPLICATION RATE

Apply 0.40–0.60 L/ac.

## APPLICATION TIMING

Treat spring and durum wheat, oats, and canary seed between the 2- to 5-leaf stage. Treat winter wheat early in the spring before the crop reaches 12 in (30 cm) high (top leaf extended). Treat barley at the 2- to 4-leaf stage.

## TANK MIXES

Horizon* – wheat only. Everest* – wheat only. Most plant nutrients (complete a jar test for compatibility). For tank-mixing instructions, consult the label of the tank-mix partner.

## USE RESTRICTIONS

- Toxic to aquatic organisms and non-target terrestrial plants. Observe buffer zones.
- DO NOT use in residential areas, Do not graze or harvest for livestock feed within seven days of application. The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable.

# WILDCAT® ENHANCED

The value choice for effective grassy weed control in cereals. Convenient and with a wide window of application, **WILDCAT ENHANCED** offers a wide choice of tank-mix partners. Get great control of green foxtail in wheat at an economical low rate too.

## ACTIVE INGREDIENT

Fenoxaprop-p-ethyl 36 g/ac (90 g/ha), Group 1

## CROPS

Spring wheat, durum wheat, spring barley and seedling perennial ryegrass*

*Perennial ryegrass grown for seed only. Those who apply **WILDCAT ENHANCED** for this use do so at their own risk.

## APPLICATION TIMING

Apply to emerged, actively growing weeds according to the weed stages listed on the label. Under stressed conditions and/or heavy crop canopy, early application will result in improved grassy weed control. If another pesticide has already been applied, wait seven days before applying, or following application. A four-day interval is required before applying another pesticide, except for those recommended on this label. Weeds that emerge after application will not be controlled.

## APPLICATION RATES

- For control of wild oats, green and yellow foxtail, and barnyard grass, apply at 413 ml/ac (20 ac/jug).
- For green foxtail control only, apply at 206 ml/ac (40 ac/jug).
- Under low wild oat infestations, and when applying alone in spring and durum wheat, apply at 360 ml/ac (22 ac/jug).

## USE RESTRICTIONS

- Do not graze the treated wheat or barley or cut for hay within 25 days of application, or harvest for grain within 65 days of application.
- Rainfall within one hour of application may reduce control.
- Do not enter treated field for 12 hours.

## TANK MIXES

In spring wheat and durum wheat only:

| HERBICIDE | RATE OF TM PARTNER | RATE OF WILDCAT ENHANCED |
|---|---|---|
| Attain* XC + 2,4-D Ester | 93 ml/ac + 170 g a.e. | 413 ml/ac |
| Dyvel* DSP Liquid | 445 ml/ac | 206 ml/ac green foxtail only |
| Lontrel* 360 | 170 ml/ac | 412 ml/ac |
| Lontrel* 360 + MCPA Ester[2] | See product label | 412 ml/ac |
| Mecoprop | 2.27–2.83 L/ac | 412 ml/ac |

In spring wheat, durum wheat and barley:

| HERBICIDE | RATE OF TM PARTNER | RATE OF WILDCAT ENHANCED |
|---|---|---|
| 2,4-D Ester 600 | 283 ml/ac | 412 ml/ac |
| **SALVO** | 243 ml/ac | 412 ml/ac |
| Ally* | 2.27–3 g/ac | 412 ml/ac |
| Buctril* M | 405 ml/ac | 412 ml/ac |
| Buctril* M + Refine* SG | 405 ml/ac + 4 g/ac | 412 ml/ac |
| Curtail* M | 608–810 ml/ac | 412 ml/ac |
| Dichlorprop-D | 709 ml/ac | 412 ml/ac |
| Dyvel*[3] | 506 ml/ac | 206 ml/ac green foxtail only |
| Estaprop | 709 ml/ac | 412 ml/ac |
| Frontline*[3] | See product label | 206 ml/ac green foxtail only |
| Infinity* | 336 ml/ac | 412 ml/ac |
| MCPA Amine or Ester | 340 ml/ac | 412 ml/ac |
| Prestige* XC | See product label | 412 ml/ac |
| **RETAIN SG** (Refine* SG) | 12 g/ac | 412 ml/ac |
| **RETAIN SG** (Refine* SG) + MCPA Ester | 12 g/ac + 340 ml/ac | 412 ml/ac |
| Spectrum*[3] | See product label | 206 ml/ac green foxtail only |
| Thumper* | 405 ml/ac | 412 ml/ac |
| Triton* C[†2] | 39 g/ac | 412 ml/ac |
| Trophy*[2] | See product label | 412 ml/ac |
| Turboprop | 709 ml/ac | 412 ml/ac |

† Not for use on malt barley.

2 Use only the high rate of **WILDCAT ENHANCED**.

3 Use the green foxtail rate of **WILDCAT ENHANCED**. For control of green foxtail only.





# MALATHION 85E

An economical, effective insecticide used to control a wide range of insect pests in a wide range of field, fruit and horticultural crops. Because **MALATHION** offers formulation options, growers also have the flexibility to control insect pests in grain storage, orchards and fields.

## ACTIVE INGREDIENTS

Malathion 85%, Group 1B

## CROPS

Alfalfa, clover, canola, mustard, wheat, barley, oats, rye, canary seed (for seed), sweet clover, flax, lentils, corn (grain, forage), peas, sugar beets, empty bin spray (grain elevators, grain bins, grain box cars), numerous fruit and vegetable crops (check label for complete list)

## FOR CONTROL OF

Insects and mites including alfalfa weevil larvae, aphids, grasshoppers, leafhoppers, lygus bugs, spider mites, spittle bugs, flea beetles, diamondback moth larvae, earworms, European corn borer, army worms, winter grain mites, cereal leaf beetle and sweet clover weevils (refer to label for complete list)

## APPLICATION TIMING

May be applied by air or ground equipment. Timing varies depending on type of crop and type of insect to be controlled. Refer to product label.

## APPLICATION RATES

Rates vary, according to crop and application method. Please refer to the product label for details.

| CROPS | PEST | RATE (ml/ac) | MAXIMUM APPLICATIONS PER YEAR | APPLICATION INSTRUCTIONS |
|---|---|---|---|---|
| **Alfalfa** | Alfalfa weevil larvae, alfalfa blotch leafminer, aphids, grasshoppers, leafhoppers, lygus bugs, spider mites, spittle bugs (adult) | 445–544 | 2 per cut max 4 per year | Do not apply to alfalfa in bloom. Apply when 75% of foliage shows feeding damage. 544 ml for leafminer. May be applied by air. |
| **Canola, mustard, rapeseed** | Diamondback moth larvae | 109–168 | 1 | Treat when bees are absent from field and temperature is above 18° C. May be applied by air. |
| | Flea beetles, grasshopper | 216–346 | | |
| **Corn (grain or forage)** | Earworms, European corn borer | 445–544 | 1 | Apply when 10% of ears show silk. Repeat at three to five day intervals until a max of four applications are made. Check with local agricultural authorities for correct timing. |
| **Flax** | Grasshoppers | 216–346 | 1 | Treat when bees are absent from field and temperature is above 18° C. May be applied by air. |
| **Grain crops (barley, oats, rye wheat)** | Armyworms, English grain aphids, grasshoppers, greenbugs, Winter grain mites, cereal leaf beetle | 435–544 | 1 | Apply when cereal leaf beetle larvae reach two to three per stem. May be applied by air. |
| **Lentils** | Grasshoppers | 336 | 2 | Two applications, at seven day intervals. May be applied by air. |
| **Peas (field)** | Aphids, leafhoppers, maggots, pea | 445 | 2 | Treat when bees are absent from field and temperature is above 18° C. |

## USE RESTRICTIONS

- For best results, apply when daytime temperatures are above 20°C.
- When spraying forages and pastures cattle should be removed and returned after spraying.
- Do not apply to any plant in bloom.
- Apply to crops only when bees are absent from fields.
- Refer to label for maximum number of applications per season (dependent on crop).

INSECTICIDE

# LAGON® 480 E

One of Canada's leading insecticides. It features reliable performance on a broad spectrum of insects, under a wide range of environmental conditions, and in a wide variety of crops. **LAGON** combines contact, residual and plant systemic activity for reliable pest control without crop injury.

### ACTIVE INGREDIENT
Dimethoate 480 g/L, Group 1B

### CROPS
Alfalfa, barley, canary seeds, canola, Christmas trees, cole crops, flax, leafy vegetables, oats, outdoor ornamentals, peas, peppers, potatoes, safflower, soybeans, tomatoes, tree fruit and small fruit crops, wheat, forage crops, pasture and restricted aerial use in forest. See label for specific crops.

### FOR CONTROL OF
Aphids, apple maggot, bean beetles, blueberry maggot, flies, grasshoppers, leafhoppers, leafminers, lygus beetles, plant bugs, tarnish plant bugs, thrips, two spotted spider mites and wheat midge. See label for specific insects.

### APPLICATION TIMING
When insects are present or first sign of visible damage. See provincial spray guides for economic insect threshold pressure levels. Works well in warm growing conditions.

### APPLICATION RATES
Alfalfa, beans, soybeans and potatoes, leafy vegetables, cole crops (110–920 ml/ac), tree fruit and small fruit (500 ml–1.5 L per 1000 L water), outdoor ornamentals and Christmas trees (500 ml–20.8 L per 1000 L water). For best results, use **LI 700** at pH reduction rates. Refer to the label for specific rates.

### USE RESTRICTIONS
- Avoid spraying when bees are present. If spraying honey producing crops, allow at least 10 days before placing hives in crop. Do not use on greenhouse crops.
- Do not graze or harvest for forage for 2–7 days after treatment. Other crops, 2–45 days. See label for specific times. Restricted entry interval, 48 hours.

# WARHAWK® 480 EC

Extremely effective control for over 140 insects in more than 50 crops, including cereals, canola, flax and specialty crops.

### ACTIVE INGREDIENT
Chlorpyrifos 480 g/L, Group 1B

### CROPS
Field crops including; canola, corn (field and sweet), flax, lentil, cereal grains (barley, wheat, oats) sugarbeet, sunflower, potato and horticulture crops

### FOR CONTROL OF
Various insect pests by contact and ingestion

### APPLICATION TIMING & RATES
Rates vary according to crop, pest(s) and application method. Please refer to the label.

### TANK MIXES
Avenge* 200-C, Buctril* M, MCPA Ester, Tordon* 202 C, Banvel,* Glean,* MCPA Amine 2,4-D Ester and 2,4-D Amine

### USE RESTRICTIONS
- Contains a petroleum distillate and is extremely toxic to fish and aquatic organisms, toxic to birds and wild mammals. Do not apply directly to aquatic habitats. Buffer zones are required between the point of direct application and the closest downwind edge of sensitive freshwater habitats.
- Toxic to bees exposed to direct treatment, drift, or residues on blooming plants. Do not use on flowering crops or weeds. Do not apply or allow to drift to flowering crops or weeds if bees are visiting the treatment area.
- Do not contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes. Application by aircraft is permitted only where specified in the directions for use. A plantback interval of 30 days must be observed between application and planting of rotational crops, with the exception of radish, Chinese cabbage, pak choi and cole crops for which no plantback restriction is required.



FUNGICIDE

# FITNESS®

Proven early control of a wide range of crop diseases.

### ACTIVE INGREDIENT
Propiconazole 418 g/L - Froup 3

### CROPS
Wheat, barley, oats, corn, canola, dry bean, lentils, field peas, chickpeas, faba beans, soybeans canaryseed, timothy

### TANK MIXES
Logic M, Brotex 240, Pardner, 2,4-D Amine, 2,4-D Ester, MCPA Amine, MCPA Ester, Foothills NG (wheat only), Horizon NG (wheat only), Axial or Buctril M.

*Do not tank mix herbicides for application on oats.*

### FOR CONTROL OF

| CROP | DISEASES | RATE (ml/ac) | TIMING |
|---|---|---|---|
| Wheat (spring, winter, durum) | For suppression of:<br>• Septoria leaf blotch (*Septoria tritici*)<br>• Tan Spot *(Pyrenophora tricitici-repentis)* | 60-120 | **Early application:** the first sign of disease, usually at the beginning of stem elongation.<br>**Later application:** before head is half emerged. |
| | For control of:<br>• Septoria leaf blotch*(Septoria tritici*) | 120 | |
| Barley | Net blotch *(Drechslera teres*) | 120 | |
| Oats | Septoria leaf blotch (*Septoria tritici*) | 120 | |
| Canola | Blackleg (*Leptosphaeria maculans*) | 120 | Apply during the rosette stage. Between second true leaf and bolting. |

# PALLISER®

Delivers not only proven broad spectrum leaf disease control on wheat, barley and oats but also has the flexibility to provide suppression on fusarium head blight.

## ACTIVE INGREDIENT
Tebuconazole 432 g/L, Group 3

## CROPS
Wheat, barley and oats

## FOR CONTROL OF
Wide range of leaf diseases including tan spot, rusts, scald and blotches depending on crop. Suppression of *Fusarium spp.* head blight in wheat.

## APPLICATION TIMING
**Leaf diseases:** apply at the first sign or very early stage of disease, up to the end of the flowering stage.

***Fusarium spp.* head blight suppression:** timing is critical — apply when at least 75% of the wheat heads on the main stem are fully emerged to when 50% of the heads on the main stem are in flower.

## APPLICATION RATES

| CROP | DISEASES | RATE[1] (ml/ac) |
|---|---|---|
| Wheat (spring, winter, durum) | For suppression of:<br>• *Fusarium* head blight (scab) (*Gibberella zeae/Fusarium graminearum*)<br>For control of:<br>• Septoria glume blotch (*Stagonospora nodorum*)<br>• Powdery mildew (*Erysiphe graminis*) | 118 |
| | • Rusts (leaf, stem, stripe) (*Puccinia triticina, P. graminis, P. striiformis*)<br>• Septoria (leaf blotch) (*Septoria tritici*)<br>• Tan spot (*Pyrenophora tritici-repentis*) | 89–118 |
| Barley | • Net blotch (*Pyrenophora teres*)<br>• Spot blotch (*Cochliobolus sativus*)<br>• Scald (*Rhynchosporium secalis*)<br>• Rusts (leaf, stem, stripe) (*Puccinia hordei, P. graminis, P. striiformis*)<br>• Septoria leaf blotch (*Septoria passerinii*)<br>• Powdery mildew (*Erysiphe graminis*) | 89–118 |
| Oats | • Crown rust (*Puccinia coronata*)<br>• Stem rust (*Puccinia graminis*) | 89 |

[1] **PALLISER** is recommended to be used with a registered non-ionic surfactant, such as **LIBERATE**, at 0.125% v/v.

## TANK MIXES
**Herbicides:** Spring wheat and barley – Refine* Extra; Spring wheat only – Buctril M

**Insecticides:** in wheat for control of orange wheat blossom midge – Lorsban 4E

## USE RESTRICTIONS
- Do not exceed one application per season.
- Do not allow livestock to graze or feed green forage to livestock until six days after treatment.
- Pre-harvest interval: 36 days
- Do not enter treated areas within 12 hours of application.





# PROPEL®

Provides broad-spectrum disease control in wheat, barley, oats, and canola and suppresses leaf mottle on canary seed. Defend your investment from diseases that can inhibit yield and quality.

## ACTIVE INGREDIENT
Propiconazole (250 g/L), Group 3

## CROPS
Canola, wheat (spring, winter and durum), barley, oats and canary seed

## TANK MIXES
Wheat and barley: Logic* M, Brotex* 240, Pardner,* 2,4-D Amine, 2,4-D Ester, MCPA Amine, MCPA Ester, **FOOTHILLS NG** (wheat only), Horizon* (wheat only), Axial* or Buctril* M.

Do not tank mix with herbicides for application on oats.

## APPLICATION TIMING & RATES

| CROP | DISEASES | RATE (ml/ac) | TIMING |
|---|---|---|---|
| Wheat barley | Septoria leaf spot, Tan spot, Net blotch | 100-202 | **Early application:** For early season disease suppression, use the lower rate for suppression under normal field conditions. Use the higher rate if there is a history of high disease pressures in the field and/or field conditions favour disease development.<br>**Later application:** at the first sign of disease or before head is half emerged. |
| Wheat | Septoria leaf spot and glume blotch, Powdery mildew, Leaf and stem rust, Tan spot, Stripe rust | 202 | **Early application:** the first sign of disease, usually at the beginning of stem elongation.<br>**Later application:** before head is half emerged. |
| Barley | Net blotch, Spot blotch, Scald, Powdery mildew, Septoria leaf spot, Leaf and stem rust | | |
| Oats | Septoria leaf blotch, Crown rust | | |
| Canola | Blackleg | 202 | Apply during the rosette stage. Between second true leaf and bolting. |

# RAMPART®

The low pH of **RAMPART** allows easy absorption and greater fungicidal activity plants. As it contains no sodium, **RAMPART** has better uptake.

## ACTIVE INGREDIENTS
Mono and di-potassium salts of phosphorous acid

## CROPS
Brassica leafy vegetables, grapes and stored potatoes

## FOR CONTROL OF
Late blight, pink rot and downy mildew

## APPLICATION TIMING
Rates vary by crop and disease(s) controlled. Please read the label for details.

## APPLICATION RATES
Rates vary by crop and disease controlled. Please read the label for details.

## USE RESTRICTIONS
- Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of four hours.
- Do not use to control aquatic pests as this product is not registered for the control of pests in aquatic systems. Do not contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes. Do not apply by air.

# ALWAYS WITH YOU, ALWAYS ON

There are many ways Nutrien Retail supports the work growers put into every season. Our commitment to research, development and innovation delivers a healthy pipeline of integrated crop production solutions. Our unmatched selection of top quality seed genetics provides a solid base for your success. And our skilled people pull it all together with trusted guidance and advice.

These are just some of the many ways growers can profit from our experience. Whatever your needs, we're always with you. We're always on.

For a list of Nutrien Retail locations, visit **cpsagu.ca**

For a complete list of Loveland Products solutions, visit **lovelandproducts.ca**

Loveland PRODUCTS



7578_03/18