

34704-926

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

JUL 10 2008

Ms. Kristie Raymond
Loveland Products, Inc
P. O. Box 1286
Greeley, CO 80632-1286

Dear Ms. Raymond:

Subject: Cadence Herbicide (Add Sweet Corn and Update Rotational Crops)
EPA Registration No. 34704-926
Application Dated April 16, 2008

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended is acceptable provided you make the following change before you release the product for shipment.

--On page 2, under Adding to Spray Tank, Used Alone, revise the first sentence to read similar to "If Cadence is alone, add the **specified** amount to the spray tank before the tank is half-filled. The Agency no longer allows use of the word "recommended" when referring to application rates. Keep this in mind for future submissions.--

Submit one (1) copy of your final printed labeling incorporating the above change before you release the product for shipment. Amended labeling supersedes all previously approved ones. A stamped copy of labeling is enclosed for your records.

Sincerely,

James A. Tompkins
James A. Tompkins
Product Manager 25
Herbicide Branch
Registration Division (7505P)

JUL 10 2008

Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under EPA Reg. No.

34704-926

Cadence® HERBICIDE

For use only on field corn, production seed corn, silage corn, sweet corn, and popcorn

ACTIVE INGREDIENTS:

acetochlor: 2-chloro-2'-methyl-6'-ethyl-N-ethoxymethylacetanilide 70.87%

OTHER INGREDIENTS: 29.13%

TOTAL 100.00%

Contains 6.4 lb. active ingredient per gallon

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

KEEP OUT OF REACH OF CHILDREN WARNING—AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Refer to label booklet for Directions for Use including Storage and Disposal.

Notice: Read the entire label. Use only according to label directions. Before using this product, read Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies at end of label booklet. If terms are not acceptable, return at once unopened.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

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EPA EST. NO. 34704-MS-1

NET CONTENTS 1 GAL. (3.78 L)

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FIRST AID

Immediately start the procedures below. If further treatment is required, contact a Poison Control Center, a physician or the nearest hospital.

If on skin or clothing:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If in eyes:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If swallowed:	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled:	<ul style="list-style-type: none"> • Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

WARNING

Causes Skin And Eye Irritation • Harmful If Swallowed, Inhaled, Or Absorbed Through Skin

Do not get on skin, in eyes, or on clothing. Avoid breathing spray mist.

Personal Protective Equipment (PPE)

Some of the materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL:
1-800-301-7976.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

This chemical demonstrates the properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the groundwater is shallow, may result in groundwater contamination.

Acetochlor has properties that may result in surface water contamination via dissolved runoff and runoff erosion. Practices should be followed to minimize the potential for dissolved runoff and/or runoff erosion.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

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AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: Coveralls over short-sleeved shirt and short pants, chemical-resistant gloves made of any waterproof material, chemical-resistant footwear plus socks, protective eyewear and chemical-resistant headgear for overhead exposure.

GENERAL INFORMATION

Cadence® herbicide is intended for preplant, preemergence, or early postemergence use in corn. Use of this product in corn is limited to field corn, production seed corn, silage corn, sweet corn, and popcorn. Do not apply this product to any crop other than corn.

Cadence is a unique combination of the herbicide acetochlor and the antidote or safener dichlormid. While the acetochlor provides weed control, the dichlormid safens corn against herbicide injury. Cadence may be applied to the surface or incorporated into the top 1 to 2 inch layer of soil. It is recommended for control alone, or in tank mix combinations as indicated, for the weeds listed in the "Target Weeds" section of these use directions. Cadence controls weeds by interfering with normal germination and seedling development. Cadence will not control established or germinated weeds present at application.

GENERAL USE PRECAUTIONS AND RESTRICTIONS

- Do not apply to the following soils if groundwater depth is 30 feet or less: sand with less than 3% organic matter; loamy sand with less than 2% organic matter; or sandy loam with less than 1% organic matter.
- Do not apply this product using aerial application equipment.
- **Chemigation:** Do not apply this product through any type of irrigation system.
- Do not use flood irrigation to apply or incorporate this product.
- **Maximum Application Rate:** The maximum application rate for Cadence on corn is 3.75 pints (3 lb of acetochlor active ingredient) per acre per year.
- This product may not be mixed or loaded within 50 feet of any wells including abandoned wells and drainage wells, sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs. This setback does not apply to properly capped or plugged abandoned wells and does not apply to impervious pad or properly diked mixing/loading areas.
- Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 feet of any well are prohibited unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment rinse or washwater, and rainwater that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self-contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site. States may have in effect additional requirements regarding wellhead setbacks and operational containment.
- Product must be used in a manner that will prevent back siphoning in wells, spills or improper disposal of excess pesticide, spray mixtures or rinsates.
- Do not apply under conditions that favor runoff or wind erosion of soil containing this product to non-target areas. To prevent off-site movement due to runoff or wind erosion:
 - Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface must first be settled by rain fall or irrigation.
 - Do not apply to impervious substrates such as paved or highly compacted surfaces or frozen or snow covered soils.
 - Do not use tailwater from the first flood or furrow irrigation of treated fields to treat non-target crops unless at least ½ inch of rainfall has occurred between application and the first irrigation.
- Do not apply when wind conditions favor drift to non-target sites. To minimize spray drift to non-target areas:

- Use low pressure application equipment capable of producing a large droplet spray.
- Do not use nozzles that produce a fine droplet spray.
- Minimize drift by using sufficient spray volume to ensure adequate coverage with large droplet size sprays.
- Keep ground-driven spray boom as low as possible above the target surface.
- Make application when the wind velocity favors on-target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity exceeds 15 mph. Avoid application when gusts approach 15 mph.
- Low humidity and high temperatures increase the likelihood of spray drift to sensitive areas. Avoid spraying during conditions of low humidity and/or high temperatures. Do not apply during inversion conditions.
- Do not apply more than 3% pints of Cadence per acre per season.

Rotational Crop Restrictions:

When tank mixing with other herbicides, follow the most restrictive crop rotation guidelines on the label of each product used. The following rotational crops may be planted as indicated:

Rotational Crop	Timing or Interval
corn (1)	Anytime - 0 months after application
alfalfa, barley, buckwheat, clover, dry beans (2), guar, kudzu, lentil, lespedeza, lupin (4), millet, pearl or proso, oats, pea (5), potatoes, rye, sorghum, soybeans, sugar beets, sunflower, trefoil, tobacco, triticale, vetch, wild rice	Spring following application (3)
wheat	4 months after application

Numbers within parentheses (-) in the table refer to Specific Rotational Crop Requirements below.

- 1) If crop treated with Cadence is lost, corn may be replanted immediately. Do not make a second application of Cadence.
- 2) Dry beans include: adzuki, kidney, lima, navy, pinto
- 3) Approved rotation crops list does not include any species of succulent beans and peas
- 4) Lupin includes: grain, white, white sweet
- 5) Pea includes: blackeyed, chick, cow, Crowder, field, pigeon, Southern

APPLICATION DIRECTIONS - CORN

Carriers and Spray Volume

Liquids: Either water or liquid fertilizers such as solutions, slurries, or suspensions may be used as liquid carriers. If fluid fertilizers are used, a physical compatibility with these must be done before combining in the spray tank. See Appendix I for details of the compatibility testing procedure. Even if Cadence is physically compatible with a fluid fertilizer, constant agitation is necessary to maintain a uniform mixture during application.

Apply in a minimum broadcast spray volume of 10 gallons per acre using boom equipment for ground applications. Use low-pressure nozzles designed for application of herbicides. Use sufficient operating pressure to produce the desired spray pattern for the nozzle (15 to 40 psi) and follow manufacturer's recommendations for nozzle spacing and operating height to ensure uniform spray distribution at the soil surface. Use 50-mesh or coarser screens, if needed.

Dry Bulk Fertilizer: Cadence may be impregnated on dry bulk fertilizer and applied as the fertilizer is spread. Use at least 200 lb. of dry bulk fertilizer per acre. See Appendix II for more details including which fertilizers are compatible.

ADDING TO SPRAY TANK

The spray tank must be clean, thoroughly rinsed, and decontaminated before adding either Cadence alone or in tank mix combinations. If water is used as the carrier, use clean water. All return lines to the spray tank must discharge below the liquid level.

Used Alone: If Cadence is used alone, add the recommended amount to the spray tank before the tank is half filled, then add the rest of the water or fluid fertilizer. Provide sufficient agitation to ensure thorough mixing and to maintain a uniform spray mixture during application.

Tank Mixed: If a tank mixture is used, it is recommended that a small-scale test of compatibility be done before actual tank mixing. See Appendix I for details on the procedure for such a test.

Water Carrier

- Allow time for complete dispersion/mixing before adding another product to the spray mixture. Add products to the tank mixture in the following order:
- To start, add one-half of the required amount of water to the spray tank. Begin agitation.
 - Products in water soluble packaging. Important: Allow time for complete dispersion.
 - Wettable powders or dry flowables (slurry if recommended by tank mix product label)
 - Liquid flowables
 - Cadence or other emulsifiable concentrates
 - Suspension concentrates
 - Urea ammonium nitrate (UAN) or ammonium sulphate (AMS), if required.
 - Compatibility agent if needed
 - Soluble liquids such as glyphosate, paraquat, 2,4-D amine
 - Crop oil concentrate (COC) or nonionic surfactant (NIS), if required
 - Finish filling spray tank to required spray volume

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Liquid Fertilizer Carrier

Allow time for complete dispersion/mixing before adding another product to the spray mixture. Add products to the tank mixture in the following order:

- To start, add one-half of the required amount of liquid fertilizer to the spray tank. Begin agitation.
- Compatibility agent if needed
- Products in water soluble packaging. Important: Products in water soluble packaging must be premixed with water (slurried) prior to addition to the spray tank.
- Wettable powders or dry flowables (slurry if recommended by tank mix product label)
- Liquid flowables
- Cadence or other emulsifiable concentrates
- Suspension concentrates
- Ammonium sulphate (AMS), if tank mixing with glyphosate.
- Soluble liquids such as glyphosate, paraquat, 2,4-D amine
- Crop oil concentrate (COC) or nonionic surfactant (NIS), if required
- Finish filling spray tank to required spray volume.

Note: For all tank mixtures, maintain agitation during mixing and throughout application to ensure spray mixture remains uniformly suspended.

Application Timing and Methods

For the optimum period of effective weed control during the time most critical to corn production, preplant application of Cadence should occur as close as possible to planting. Preemergence applications should occur as close as possible to planting, but prior to weed emergence. Postemergence applications should occur prior to weed emergence or in tank mix combination with a product that controls emerged weeds.

Note: Do not apply Cadence to sweet corn as an early postemergence application.

Early Preplant: On medium and fine textured soils (see Table 1). Cadence and certain tank mixtures may be applied up to 30 days before planting.

Preplant Incorporation: Cadence and certain tank mixes may be mechanically incorporated into the top 2 inches of the soil with field cultivators, discs, or spring tooth harrows any time up to 14 days before planting. Improper incorporation, excessive crop residues, or poor soil tilth may result in erratic, streaked, or otherwise unsatisfactory weed control. Do not mix Cadence deeper than 2 inches into the soil and avoid moving or shaping soil after incorporation.

Preemergence Surface: Cadence and certain tank mixes may be applied to the soil surface as a broadcast or banded application. Precipitation or sprinkler irrigation of at least 0.25 inch is required to bring Cadence into contact with germinating seeds. If rain or sprinkler irrigation does not occur within 7 days after application, weed control may be improved by using a rotary hoe, or similar equipment, to incorporate the herbicide. Incorporation equipment should be run at a shallow depth to avoid disturbance of germinating corn seed. Erratic weed control resulting from exposure of untreated soil may occur if surface soil is moved or reshaped after incorporation.

Postplant-Preemergence: Cadence may be applied after planting but prior to corn emergence. If rain or sprinkler irrigation does not occur within 7 days after application, weed control may be improved by using a rotary hoe, or similar equipment, to shallowly incorporate the herbicide. Incorporation equipment should be run at a shallow depth to prevent disturbance of the germinating corn. Erratic weed control resulting from exposure of untreated soil may occur if surface soil is moved or reshaped during incorporation.

Banding-Preemergence: Cadence may be applied in a 10 to 14 inch band after corn planting but prior to emergence. If rain or sprinkler irrigation does not occur within 7 days after application, weed control may be improved by shallow incorporation using a rotary hoe or similar equipment. Do not disturb the germinating corn seed. Erratic weed control resulting from exposure of untreated soil may occur if surface soil is moved or reshaped during incorporation.

Early Postemergence: Cadence may be applied early postemergence to corn up to 11 inches tall. Application must be made prior to weed seedling emergence or in a tank mixture that controls the emerged weeds. Read and follow restrictions and directions on tank mix product labels.

Sprinkler Irrigation: Do not apply Cadence by sprinkler irrigation. Use a sprinkler system only to incorporate Cadence after application. After Cadence has been applied, a sprinkler irrigation system set to deliver 0.25 to 0.75 inch of water per acre may be used to incorporate the product. Using more than 0.75 inch of water could result in reduced performance. On sandy soil low in organic matter, use no more than 0.5 inch of water. Do not use flood irrigation to apply or incorporate Cadence.

Fall Application - For use in IA; IL (North of Route 136); NE (North of Route 20); MN; ND; SD; WI: Following soybean harvest, apply to soybean stubble after October 15, when the sustained soil temperature at 4-inch depth is less than 50°F, but before ground freezes. Use on medium and fine textured soils with greater than 2.5% organic matter. Only corn may be planted the following spring.

Ground may be tilled before or after application. Do not exceed 2-inch incorporation depth if tilled after application.

If a spring application is made, the total rate of the fall plus spring application must not exceed the maximum labeled rate for corn grown on that soil.

Cultivation

Cultivation should be delayed as long as possible. If weeds develop, a shallow cultiva-

tion or rotary hoeing will generally result in improved weed control. If Cadence was incorporated, cultivate to a depth of less than half the depth of incorporation.

If cultivation is necessary due to soil crusting or compaction, adjust equipment to run shallow and minimize soil movement. This will decrease the possibility of diluting or moving the herbicide from the weed control zone.

Soil Texture and Organic Matter

The use rate of Cadence is determined by a combination of two factors, soil texture and organic matter, which must be determined prior to application. Different soil textures are grouped into three textural classes (coarse, medium, and fine) as outlined in Table 1. Soil texture and organic matter content of the soil may be determined from soil survey information and/or by laboratory analysis and must be known in order to select the proper rate from Table 2.

Table 1: Soil Texture Groupings for Cadence Use Rate Selection.

Coarse	Medium	Fine
Sand	Loam	Silty Clay Loam
Loamy Sand	Silt	Silty Clay
Sandy Loam	Silt Loam	Sandy Clay
	Sandy Clay Loam	Sandy Clay Loam
		Clay Loam
		Clay

Use Rates in Conventional Tillage Systems

Table 2: Use Rates for Cadence by Soil Texture and Organic Matter Content in Conventional Tillage Systems.

The following use rates are for preplant incorporated, preemergence, and early postemergence applications (see Application Timing and Methods). Consult Table 3 if no-till applications are made or application is made more than 14 days prior to planting under conventional tillage.

Soil Texture	Soil Organic Matter Content		
	Less than 3%	3% or Greater	Greater than 7%
Coarse	1.5 - 2.25 pt/acre	1.5 - 2 1/2 pt/acre	2 - 3 pt/acre
Medium	1.5 - 2.5 pt/acre	1.5 - 2 1/2 pt/acre	2.5 - 3.75 pt/acre
Fine	1.5 - 2.75 pt/acre	2 - 3 pt/acre	3 - 3.75 pt/acre

Rate Ranges: If the weed infestation is light and/or organic matter is in the lower end of the range, use a rate at the lower end of the rate range for the soil texture and organic matter content. If the weed infestation is heavier and/or organic matter is in the upper end of the range, use the higher rates in the rate range for the soil texture and organic matter.

USE RATES FOR REDUCED TILLAGE SYSTEMS

Cadence may be used in reduced and no-till systems. Application may occur up to 30 days prior to planting or after planting but before corn emergence. Optimal weed control will be obtained when applications are made as close as possible to planting but before the weeds emerge. In reduced or no-till systems, it is recommended that a burn-down herbicide such as paraquat (Gramoxone) or glyphosate (Glyphomax, Roundup or Touchdown) or 2,4-D be tank mixed with Cadence if emerged weeds are present at application.

Table 3: Use rates for Cadence by Soil Texture and Organic Matter Content in Reduced and No-Till Systems.¹

Soil Texture	Soil Organic Matter Content		
	Less than 3%	3% or Greater	Greater than 7%
Coarse	2 pt/acre	2 pt/acre	2 - 3 pt/acre
Medium	2 - 2.5 pt/acre	2.5 pt/acre	2.5 - 3.75 pt/acre
Fine	3 pt/acre	3 pt/acre	3 - 3.75 pt/acre

¹Rates are for single applications. Split applications of Cadence may be used; apply at least 60% of the recommended rate up to 30 days before planting and the remaining balance, up to 40%, at planting.

BAND APPLICATIONS

This product may be applied as a band treatment. Use the following formulas below to determine the appropriate rate and volume per treated acre.

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast rate per acre} = \text{Band rate per treated acre}$$

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast volume per acre} = \text{Band volume per treated acre}$$

WEEDS CONTROLLED

Cadence, applied as directed in this label, will provide control or partial control of the weeds listed in Table 4. Partially controlled weeds will be severely stunted, or experience reduced height, vigor, or population compared to untreated areas. Depending on the infestation level or density, a follow-up treatment with another herbicide registered for use on corn may be needed to provide complete control.

Additional weeds may be controlled with tank mixes. See the "Tank Mix Combinations" section for recommended tank mix combinations and the additional weeds controlled.

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Table 4: Weeds Controlled or Partially Controlled by Cadence at Recommended Use Rates.

Grasses and Sedges	C = Control PC = Partial Control		Broadleaves	C = Control PC = Partial Control	
barnyardgrass	C		beggarweed, Florida	C	
crabgrass spp.	C		carpetweed	C	
crowfootgrass	C		galinsoga	C	
cupgrass, prairie	C		kochia	PC	
cupgrass, southwestern	C		lambsquarters, common (2)	C	
cupgrass, woolly	PC		nightshade, black	C	
foxtail, bristly	C		nightshade, hairy	C	
foxtail, giant	C		pigweed	C	
foxtail, green	C		purslane, common	C	
foxtail, robust (purple, white)	C		pusley, Florida	C	
foxtail, yellow	C		ragweed, common	C	
goosegrass	C		sida, prickly	C	
johnsongrass, seedling	PC		smartweed spp.	C	
millet, foxtail	C		waterhemp, tall	C	
millet, wild proso	PC		waterhemp, common	C	
nutsedge, yellow (1)	C				
panicum, browntop	C				
panicum, fall	C				
panicum, Texas (3)	C				
rice, red	C				
sandbur, field	PC				
shattercane	PC				
signalgrass, broadleaf (3)	C				
sprangletop, red	C				
witchgrass	C				

- (1) Yellow nutsedge requires a minimum of 2.5 pints. Incorporation will improve control.
- (2) Light to moderate infestations will be controlled. Heavy infestations may require a tank mixture or sequential herbicide.
- (3) Best control is achieved when Cadence is applied within 5 days of planting and rainfall occurs shortly after application or mechanical incorporation is used to activate the herbicide. If it does not rain within 7 days, shallow cultivation will enhance activity. Excessive rainfall after application may reduce control. Under adverse weather conditions and/or heavy infestations, a cultivation or follow-up herbicide may be needed.

TANK MIX COMBINATIONS

Additional weeds may be controlled with tank mixes of Cadence and other products labeled for use on field corn production seed corn, silage corn, sweet corn and popcorn. Tank mix combinations may be used in either conventional, reduced, or no-till systems and may be applied by the same methods and at the same application timing as Cadence unless otherwise specified in the tank mix product label.

Cadence may be tank mixed with any other herbicide labeled for use on corn provided the compatibility of the tank mix is verified by a jar test and tank mixing with Cadence is not prohibited by the label of the tank mix product. The compatibility of a tank mixture can be determined by mixing the ingredients of the herbicide mixture in their relative proportions in a glass jar as described for fluid fertilizer mixtures in Appendix I by substituting water for fluid fertilizer. Refer to the label of the tank mix product for applicable use directions, precautions and limitations, including additional weeds controlled. Do not exceed application rates on the respective product labels. Do not tank mix with another pesticide product that contains the same active ingredient as this product unless the label of either tank mix partner specifies the maximum dosages that may be used.

When tank mixing Cadence with atrazine, do not exceed the maximum allowable rate of atrazine in your county or state. In some atrazine management areas, atrazine is more restricted. Consult your county extension office or state university for further information.

USE OF SPRAY ADJUVANTS

Cadence is a preemergence herbicide for which spray adjuvants have little or no influence on performance. However, several herbicides used in tank mixtures with Cadence require use of adjuvants to aid in the burndown of emerged weeds. Use only those adjuvants recommended on the label of the tank mix product and approved for use in growing crops. Surfactants and/or low rate liquid fertilizers (28%, 30% or 32% UAN) or ammonium sulfate (AMS) adjuvants may be used with tank mixes applied preplant or preemergence to the crop.

PREEMERGENCE TANK MIX COMBINATIONS

Conventional Tillage (Cadence Plus):

Tank Mix Herbicide †	Comments
Atrazine 4L	<ul style="list-style-type: none"> May be applied preplant surface, preplant incorporated, pre-emergence. If emerged weeds are greater than 1.5 inches tall at the time of application, add an appropriate postemergence herbicide Provides control or partial control of cocklebur, giant ragweed, ground cherry (spp), jimsonweed, kochia, morningglory (spp), mustards, sicklepod and velvetleaf Use when there is heavy broadleaf weed pressure
Balance Pro	<ul style="list-style-type: none"> Not labeled in all states; please refer to the label for Balance Pro for applicable directions for use, geographic and other restrictions For use in field corn only Refer to the use rates section for minimum use rates for Cadence
Hornet WDG	<ul style="list-style-type: none"> Tank mix with 4 - 5 oz/acre of Hornet® WDG herbicide to provide consistent control of velvetleaf, lambsquarters, pigweed species, waterhemp and triazine resistant varieties of these species. Also provides improved control of cocklebur, common ragweed, giant ragweed, common sunflower and jimsonweed.
Princep 4L	<ul style="list-style-type: none"> Provides improved crabgrass or fall panicum control.
Python WDG	<ul style="list-style-type: none"> Tank mix with 0.8 - 1.33 oz/acre of Python® WDG herbicide to provide consistent control of velvetleaf, lambsquarters, pigweed species, waterhemp and triazine resistant varieties of these species.

† Formulations that are not listed may be used: Perform a compatibility test and check the label of the tank mix product label for application rates, applicable use directions, precautions and limitations.

Reduced or No-Tillage Corn (Cadence Plus):

Tank Mix Herbicide †	Comments
Atrazine 4L	<ul style="list-style-type: none"> Provides control or partial control of cocklebur, giant ragweed, ground cherry (spp), jimsonweed, kochia, morningglory (spp), mustards, sicklepod and velvetleaf If emerged weeds are greater than 1.5 inches tall at the time of application, add an appropriate postemergence herbicide Use in areas with heavy broadleaf weed pressure
Balance Pro	<ul style="list-style-type: none"> Not labeled in all states; refer to the label for Balance Pro label for precautionary statements, directions for use, geographic and other use restrictions For use in field corn only Refer to use rate section for minimum use rates for Cadence
Banvel/Clarity Marksman	<ul style="list-style-type: none"> Apply preplant or preemergence in reduced/no-till systems for burndown of existing weeds
Glyphomax Plus, Durango, Roundup WeatherMax, Touchdown	<ul style="list-style-type: none"> Apply preplant for burndown of existing weeds Weeds less than 6 inches tall are easiest to control with burndown herbicides applied in combination with Cadence. Always add ammonium sulphate (AMS) to tank mixes prior to addition of glyphosate (8.5 to 17 lb per 100 gal of spray).
Gramoxone Max	<ul style="list-style-type: none"> Control annuals, suppress perennials
Pendimax® Herbicide/ Prowl	<ul style="list-style-type: none"> Preemergence to early postemergence to corn up to 3 inches tall, but before weeds are more than 1 inch tall.
Princep 4L 2,4-D	<ul style="list-style-type: none"> Provides improved control of crabgrass and fall panicum Burndown existing weeds

† Formulations that are not listed may be used: Perform a compatibility test and check the product label for application rates, applicable use directions, precautions and limitations.

POSTEMERGENCE TANK MIX COMBINATIONS

Cadence may be applied before, with, or following the use of one or more of the following herbicides: Accent, Accent Gold, Aim, atrazine, Banvel, Basis, Basis Gold, Beacon, Bladex, Buctril, Buctril/atrazine, Clarity, Distinct, Exceed, Hornet WDG, Liberty, Lightning, Marksman, Peak, Permit, Princep, Prowl, Pendimax, Pursuit, Shotgun, Spirit and Steadfast. Refer to the label of the tank mix product for applicable directions for use, precautions and restrictions, and a list of weeds controlled. Cadence may be tank mixed with any product approved for use on corn unless it is prohibited by the tank mix product label. **Note:** Do not use liquid fertilizer as the carrier when Cadence is applied post-emergence to corn as severe injury may result. The addition of liquid fertilizers used as adjuvants with Cadence tank mixes applied postemergence to corn under environmental stress conditions may result in significant crop injury and should be avoided if the risk of crop injury is unacceptable.

When tank mixing, refer to the label of the tank mix product and follow additional use directions in the following table: **Cadence can be applied to corn up to 11 inches tall.**

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Postemergence Tank Mixes (Cadence Plus):

Tank Mix Herbicide	Rate	Comments
Hornet WDG	2-5 oz/acre	• Always add NIS at 0.25% v/v or COC at 1% v/v.
Aim EW	0.5 oz/acre	• Always add a NIS at 0.25% v/v.
Barvel	0.5 - 1 pt/acre	• Early postemergence up to 8 inches tall corn on all soils. If grasses are more than 2- leaf stage, combine with another herbicide to control these weeds.
Clarity	0.5 - 1 pt/acre	
Marksman	2 - 3.5 pt/acre	
Buctril	1.5 pt/acre	• Refer to tank mix product labels for applicable use directions, precautions and restrictions.
Buctril/atrazine	2 pt/acre	
Shotgun herbicide	2 - 3 pt/acre	
Atrazine	0.5 - 2 lb a/acre	• May be applied preplant surface, preplant incorporated, preemergence or early post-emergence to corn up to 8 inches tall. If emerged weeds are greater than 1.5 inches tall at the time of application, add an appropriate postemergence herbicide. Note: The maximum atrazine application rate per year for corn is 2 lb active if applied only postemergence or 2.5 lb active if pre- and postemergence applications are made.
Distinct	4 - 6 oz/acre	• Always add a NIS at 0.25% v/v and 1.25% UAN. • Can be applied up to corn up to 10 inches tall.
Exceed	1 oz/acre	• Always add crop oil concentrate at 1% v/v. • See label for Exceed for geographic restrictions.
Liberty	16 - 28 oz/acre	• For use on liberty tolerant corn only. Apply to grass and broadleaf weeds up to 6 inches tall. Do not add additional surfactant.
Lightning	1.28 oz/acre	• For use on Clearfield corn only. Use an NIS at 25%v/v and a liquid nitrogen fertilizer at 1 to 2 qt per acre or ammonium sulfate at 2.5 lb per acre.
Pendimax / Prowl	1.8 - 3.6 pt/acre	• Apply preemergence or apply early post-emergence to corn up to 3 inches tall, but before weeds are more than 1 inch tall.
Princep	1 - 3 lb ai/acre	• May be applied preplant surface, preplant incorporated, preemergence to corn.
Pursuit 2.5L	4 fl oz/acre	• Use only on Clearfield varieties. • Apply preplant incorporated, preplant surface, preemergence or early postemergence to weeds up to 3 inches tall.
Pursuit 70DG	1.4 fl oz/acre	
Resource	4 - 6 oz/acre	• Apply to weeds less than 5 inches tall. Add a crop oil concentrate at 1 to 2 pt/acre and either 28% nitrogen at 2% v/v or ammonium sulfate at 2.5 lb/acre. May cause some burn or spotting to corn leaves.
Spirit	1 oz/acre	• Always add crop oil concentrate at 1% v/v. • See label for Spirit for geographic restrictions.
2,4-D Ester	See Label	• Apply preplant surface or preemergence to control emerged broadleaf weeds in corn.
Accent 75WDG	1/4 - 2/3 oz/acre	• Minimum Cadence use rates (pt/acre): Soil <3%OM 3-7%OM >7%OM Coarse 1.5 1.5 2 Medium 1.5 1.5-2 2 Fine 1.5 1.5-2 2 • Always add NIS at 0.25% (v/v) and in addition, if applied under dry conditions, add 4% (v/v) clear liquid fertilizer. • Barvel, Clarity, Marksman, Buctril, Buctril/atrazine may be added to this mixture to provide burndown and residual control of broadleaf weeds.
Beacon 75WDG	0.76 oz/acre	
Basis	1/4 - 2/3 oz/acre	
Steadfast	0.75 oz/acre	
Basis Gold	14 oz/acre	

APPENDIX I

Procedure for Testing the Compatibility of Cadence and Tank Mixes with Fluid Fertilizers

Since fluid fertilizers vary, the following procedure is suggested for determining whether Cadence® herbicide may be combined with a specific fluid fertilizer for spray tank application.

Materials Needed:

- Cadence and any tank mix products
- Fluid fertilizer to be used
- Adjuvant for fertilizer tank mix: Use any adjuvant cleared for use on growing crops under 40 CFR 180.1001 to improve the compatibility of Cadence with fluid fertilizers. The adjuvant that provides the best emulsification depends upon the specific fertilizer under consideration.
- Two 1 quart, wide mouth glass jars with lid or stopper
- Measuring spoons (a 25 ml pipette or graduated cylinder provides more accurate measurement)
- Measuring cup, 8 oz. (257 ml)

Procedure:

1. Pour a pint (about 473 ml) of the fluid fertilizer into each of the quart jars.
2. Add Cadence and any tank mix combination to the jars. The order of addition is wettable powders first with mixing and the EC's last. The rate of wettable powders and dry flowables is 1½ teaspoon per pound of product per acre to be applied. EC's should be added at the rate of ½ teaspoon for each pint per acre to be applied. Premixing the wettable powders in 1 oz. of water before adding to the pint of fluid fertilizer will improve the compatibility of the final mixture.
3. Add ½ teaspoon (2 ml) adjuvant to one of the jars, label it as "with", and mix. The rate of ½ teaspoon per pint is equal to 3 pints of adjuvant per 100 gallons of fluid fertilizer.
4. Close both jars with lids or stoppers and mix the contents by turning the jars upside down ten times.
5. Inspect the surface and body of the mixtures-
 - (a) Immediately after completing the jar inversions
 - (b) After allowing the jars to stand undisturbed for 30 minutes
 - (c) And then again after turning the jars upside down 10 times after the 30 minute inspection

Evaluation:

If either mixture remains uniform for 30 minutes, the combination may be used. Should either mixture separate after 30 minutes, but readily remix uniformly with 10 jar inversions, the mixture can be used if adequate agitation is maintained in the tank. If the mixture with adjuvant is satisfactory but the one without adjuvant is not, be sure to use the adjuvant in the spray tank. Add the adjuvant first at a rate of 3 pints per 100 gallons of fluid fertilizer. Foaming may be minimized by using moderate agitation. If non-dispersible oil, sludge, or clumps of solids form in the mixtures, the combination should not be used.

APPENDIX II

Dry Bulk Fertilizer Impregnation

All individual state regulations relating to dry bulk fertilizer blending, registration, labeling, and application are the responsibility of the individual and/or company selling Cadence, Surpass fertilizer mixtures.

When applying Cadence alone or in tank mixes with dry bulk fertilizers, follow all directions for use and precautions on the respective tank mix product labels regarding use rates, soil texture, application methods, and rotational restrictions. Use a minimum of 200 lb. of dry bulk fertilizer per acre.

Approved Dry Fertilizer Ingredients for Use with Cadence¹

Fertilizer	N	P	K
Ammonium Phosphate-Sulfate	16	20	0
Ammonium Sulfate	21	0	0
Diammonium Phosphate	18	46	0
Monoammonium Phosphate	11	56	0
Potassium Chloride	0	0	60
Potassium Sulfate	0	0	52
Urea ²	45	0	0

¹ Do not impregnate on fertilizers containing ammonium nitrate, potassium nitrate, or sodium nitrate.

² Some ureas may be phytotoxic when high rates are applied to corn. Use only urea rates known to be safe for corn application.

For impregnating pesticides on dry fertilizers, use suitable mixers equipped with suitable spraying equipment. The spray nozzles should be positioned inside the mixer to provide uniform spray coverage of the tumbling fertilizer. Cadence should be sprayed uniformly onto the fertilizer using a fine spray pattern. Tank mix components may be applied as separate ingredients with powders and dry flowables added first or they may be mixed in a slurry in the proper ratio and added jointly. Cadence may also be impregnated on dry bulk fertilizer in the field while the fertilizer is being spread using a pneumatic applicator equipped to impregnate herbicides.

The following table provides a reference to determine the amount of Cadence to be mixed per ton of dry bulk fertilizer for a range of herbicide rates.

Fertilizer Rate (lb/acre)	Acres Covered (per ton)	Cadence (pints/acre)		
		2 pt/acre	2.5 pt/acre	3 pt/acre
200	10	20	25	30
300	6.7	13.4	16.8	20.1
400	5	10	12.5	15
500	4	8	10	12
600	3.3	6.6	8.3	9.9
700	2.9	5.8	7.3	8.7

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To determine the amount of Cadence needed for other rates of fertilizer, use this formula:

Cadence (pints/acre) X 2000 = Pints of Cadence per ton of
Pounds of fertilizer/acre fertilizer

If the herbicide/fertilizer mixture is too wet, use of a drying agent is required to provide a dry, free-flowing mixture. For mixtures to be used in spinning-disc applicators, Micro-Cel E calcium silicate powder (Marville, Filtration & Minerals) is recommended for use as a drying agent. Mixtures to be used in pneumatic applicators should use Micro-Cel E or Agsorb 16/30 RVM-MS granular clay (Oil-Dri Corporation). The drying agents should be added separately and uniformly to the prepared pesticide/fertilizer mixture, in a quantity that is sufficient to provide a suitable free-flowing mixture. Generally, less than 2% Micro-Cel E or 5% Agsorb 16/30 RVM-MS by weight is required.

Precaution: To avoid potential for explosion, do not impregnate Cadence on ammonium sorbate nitrate, potassium nitrate, or sodium nitrate fertilizer or fertilizer blends. Do not impregnate on a single (0-20-0) or triple (0-46-0) super phosphate. Do not attempt to impregnate Cadence on agricultural limestone as the herbicide will not be adequately absorbed.

STORAGE AND DISPOSAL

Prohibitions: Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container.

Pesticide Storage: Store in original container only. Keep container closed when not in use. Do not store near food or feed. In case of spill or leak on floor or paved surfaces, soak up with vermiculite, earth, or synthetic absorbent.

Pesticide Disposal: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

Container Disposal: Nonrefillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrcycle.org.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

For packages up to 5 gallons: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

For packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

For packages greater than 56 gallons: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

For refillable containers: Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. For help with any spill, leak, fire or exposure involving this material, call day or night CHEMTREC - 1-800-424-9300.

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Follow the Directions for Use of this product carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop or other plant injury, ineffectiveness, or other unintended consequences may result from such risks as weather or crop conditions, mixture with other chemicals not specifically identified in this product's label, or use of this product contrary to the label instructions, all of which are beyond the control of LOVELAND PRODUCTS, INC. and the seller. The buyer or user of this product assumes all such inherent risks.

Subject to the foregoing inherent risks, LOVELAND PRODUCTS, INC. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use when the product is used in strict accordance with such Directions for Use under normal conditions of use. EXCEPT AS WARRANTED IN THIS LABEL, THIS PRODUCT IS SOLD AS IS TO THE EXTENT ALLOWED BY APPLICABLE LAW. LOVELAND PRODUCTS, INC. MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ELIGIBILITY OF THIS PRODUCT FOR ANY PARTICULAR TRADE USAGE.

IN THE UNLIKELY EVENT THAT BUYER OR USER BELIEVES THAT LOVELAND PRODUCTS, INC. HAS BREACHED A WARRANTY CONTAINED IN THIS LABEL, BUYER OR USER MUST SEND, TO THE EXTENT REQUIRED BY APPLICABLE LAW, WRITTEN NOTICE OF SUCH CLAIM TO THE FOLLOWING ADDRESS: LOVELAND PRODUCTS, INC., ATTENTION: LAW DEPARTMENT, 7251 WEST 4TH STREET, GREELEY, CO 80634.

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