



Gemini®

HERBICIDE



TRADEMARK

DISPERSIBLE GRANULES

BEST AVAILABLE COPY



GEMINI®

HERBICIDE

DISPERSIBLE GRANULES

REGISTRATION CODE 1090-000

PACKAGE SIZE
2 - 10 POUND JUGS/CARTON

	BY WEIGHT
ACTIVE INGREDIENTS	60%
Linuron: [3-(3,4-dichlorophenyl)-1-methoxy-1-methylurea].....	55.4%
Chlorimuron Ethyl: Ethyl 2-[[[(4-chloro-6-methoxypyrimidin-2-yl)amino]-carbonyl]amino]sulfonate.....	4.6%
INERT INGREDIENTS	40%
	TOTAL 100%

EPA Reg. No. 352-544

U.S. Pat. 4,394,506 & 4,547,215

KEEP OUT OF REACH OF CHILDREN

CAUTION

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION ! HARMFUL IF SWALLOWED OR ABSORBED THROUGH SKIN. CAUSES MODERATE EYE INJURY.
AVOID CONTACT WITH SKIN, EYES AND CLOTHING. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.**

In case of eye contact, flush with plenty of water and get medical attention if irritation persists.

In case of skin contact, wash with soap and water and get medical attention if irritation persists. Wash thoroughly with soap and water after handling. Remove and wash contaminated clothing before reuse.

If swallowed, call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

For medical emergencies involving this product, call toll free 1-800-441-3637.

ENVIRONMENTAL HAZARDS

Do not apply directly to water or wetlands (swamps, bogs, marshes and potholes). Do not contaminate water by cleaning of equipment or disposal of wastes.

IMPORTANT

When mixing/loading and spraying, wear a wide-brimmed hat, mid-forearm to elbow length chemical resistant gloves, and one-piece overalls which have long sleeves and long pants. Overalls should be constructed of finely woven fabric as specified in the USDA/EPA Guide for Commercial Applicators.

Any article of clothing worn while applying product must be cleaned before reusing. Clothing which has been drenched or has otherwise absorbed concentrated pesticide must be disposed of in a sanitary landfill, or incinerated, or, if allowed by state and local authorities, by burning.

Instead of clothing and equipment specified above, the applicator can use an enclosed tractor cab which provides a filtered air supply (as specified by Taschenberg and Bourke: 1975).

Injury to or loss of desirable trees or vegetation may result from failure to observe the following: Do not apply or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Do not use on lawns, walks, driveways, tennis courts, or similar areas. Prevent drift of spray to desirable plants. Do not contaminate any body of water. Keep from contact with fertilizers, insecticides, fungicides, and seeds during storage.

PRIOR TO USING "GEMINI", CONSIDERATION SHOULD BE GIVEN TO CROP ROTATION PLANS. Crops other than soybeans can be extremely sensitive to low concentrations of "Gemini" remaining in the soil the next planting season. Choice of rotational crop is restricted following application of "Gemini". (See "ROTATIONAL CROP GUIDELINES".)

Thoroughly clean all traces of "Gemini" from application equipment immediately after use and prior to spraying crops other than soybeans. Failure to remove even small amounts of "Gemini" from application equipment may result in injury to subsequently sprayed crops.

DIRECTIONS FOR USE

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

Do not apply this product through any type of irrigation system.

FOR USE ON SOYBEANS ONLY.

General Information

Du Pont "Gemini" Herbicide is a dispersible granule formulation to be mixed with water and sprayed for selective preemergence weed control in soybeans. When applied according to the instructions on this label, it will control many broadleaf weeds and provide partial control of nutsedge and annual grasses.

Preemergence and preplant incorporated applications of "Gemini" require rainfall or sprinkler irrigation to activate the herbicide. Degree of control and duration of effect depend on: rate used, weed spectrum, growing conditions at and following time of treatment, soil pH, texture, organic matter, moisture, and precipitation.

Because most crops are highly sensitive to "Gemini", all direct or indirect contact (such as spray drift) to crops or to land scheduled to be planted to crops other than soybeans should be avoided.

Biological Activity

"Gemini" rapidly inhibits the growth of susceptible weeds. Following activation of preplant incorporated or preemergence treatment, susceptible weeds may germinate and emerge, but growth then ceases and leaves become yellow 3-5 days after emergence. Death of leaf tissue and growing point will follow in some species while others remain green but stunted and noncompetitive. "Gemini" provides partial control of some annual grasses when used preplant or preemergence but other products may be needed to ensure adequate grass control.

Weeds Controlled

When used as directed "Gemini" will provide control of the following weeds:

Carpetweed	Mustards	Prickly sida (leafy)
Cocklebur	Pigweed species	Purslane
Florida beggarweed	Palmer	Ragweed, common
Jimsonweed	Redroot	*Ragweed, giant
Lambsquarters	Smooth	Smartweed
*Morningglory, annual	Spiny amaranth	Sunflower
Ivyleaf	Tall waterhemp	Velvetleaf
Entireleaf		
Pitted		
Smallflower		
Tall		

When used as directed "Gemini" will provide partial control of the following weeds:

Annual grasses	Purple nutsedge	Yellow nutsedge
Burcucumber	Sicklepod*	
Hemp sesbania	Wild poinsettia	

* Large seeded weeds germinating deep in the soil such as morningglory and giant ragweed may require a cultivation or an application of Du Pont "Classic" Herbicide postemergence for season long control. Consult "Classic" label for application directions, recropping intervals and use restrictions.

NOTE: Consult "Lasso", "Dual", "Prowl", "Sonalan", "Surflan", or "Treflan" labels for additional weeds controlled when "Gemini" is used in conjunction with these herbicides.

APPLICATION INFORMATION

Spray Tank Preparation

It is important that spray equipment is clean and free of existing pesticide deposits before using "Gemini". Follow the spray tank cleanout procedures specified on the label of product previously sprayed. If no cleanout procedure is provided, follow the cleanout procedure below for all application equipment.

1. Thoroughly rinse sprayer, tanks, boom, and hoses with clean water.
2. Partially fill the tank with water and add one of the cleaning agents listed in the SPRAYER CLEANUP section of this label. Complete filling the tank and flush the cleaning solution through the boom and hoses. Let stand for 15 minutes with agitation or recirculation and then drain the tank after flushing the hoses, boom, and nozzles.
3. Thoroughly rinse sprayer, tanks, boom, and hoses with clean water.
4. Follow label directions of the product previously sprayed for rinsate disposal.

NOTE: During an extended period where spraying or mixing equipment will be used to apply multiple loads of "Gemini", at the end of each day of spraying partially fill the tank with fresh water, flush the boom and hoses and allow to sit overnight.

Equipment / Spray Volumes

Apply uniformly by ground equipment with a properly calibrated low pressure (20 to 40 psi) fixed-boom sprayer equipped with fan-type nozzles and screens no finer than 50 mesh. Use 10 to 40 gals. of water per acre.

Continuous agitation in the spray tank is required to keep the material in suspension. Avoid overlap, and shut off spray booms while starting, turning, slowing or stopping, or injury to the crop may result.

Mixing Instructions

Fill tank 1/4 full with water. Start agitation system, add "Gemini" and continue adding water. Add separately each additional component of any tank mix while adding water. Continue agitation throughout. If poor mixing should occur with any component, premix the component with two parts water before adding to the spray tank.

A fertilizer solution may be used in the spray mixture. Small quantities should be tested for compatibility by the following procedures before full scale mixing.

1. Put 1 pint of fertilizer solution in a quart jar.
2. Mix 2 teaspoons "Gemini" with 2 tablespoons of water; mix thoroughly and add to fertilizer solution.
3. Close jar and shake well.
4. If other herbicides are to be used in the mixture, premix 2 1/2 teaspoons of wettable powder or 1 teaspoon of liquid with 2 tablespoons of water; add to "Gemini"/fertilizer solution mixture.

5. Close jar and shake well.
6. Watch mixture for several seconds; check again in 30 minutes.
7. If mixture does not separate, foam, gel, or become lumpy, it may be used.
8. Mixing ability may be improved by adding compatibility agents such as Kalo Laboratories' "Compex"[5] or Wilco Chemicals' "Sponto"[6] 168D. Follow directions on container.

Provided the above procedure shows the mixture to be compatible, prepare the tank mixture as follows: Add the fertilizer solution to the spray tank first, with the agitator running, add the required amount of "Gemini" and thoroughly mix. For tank mixtures with other herbicides, follow directions above.

When tank mixing with other herbicides, all applicable direct restrictions and precautions for the additional herbicides are also to be followed. Use "Gemini" spray preparations the same day as mixed or product degradation may occur. Thoroughly reagituate before using if allowed to settle.

APPLICATION METHODS

If initial seeding fails to produce a stand, treated fields may be replanted to soybeans. Do not rework soil; do not retreat field with a second application as injury to the crop may result. Do not replant treated areas to any crop other than soybeans within four months after treatment as injury to subsequent crops may result.

Early Preplant or Preplant Incorporated (See rate chart)

"Gemini" may be applied at planting or up to 30 days prior to planting either preemergence or preplant incorporated. If incorporated, "Gemini" should be uniformly incorporated no deeper than the top 1-2" of soil prior to planting soybeans. Use equipment suited for proper incorporation into the top 1-2 inches of soil e.g.: Do-all, field cultivator, Roterra. If tank-mixed with a grass herbicide, such as a DNA like "Trellan"[4], "Sonalan"[4], or acetanilide such as "Dual"[2], or "Lasso"[1], follow label instructions for proper incorporation of the grass herbicide into the top 1 to 2" of soil. Improper soil incorporation can result in erratic weed control or crop injury. Rainfall (~1") is required to activate preplant incorporated herbicides such as "Gemini" before weed emergence.

Use of a disk for incorporation is not recommended.

"Gemini" + "Trellan", "Prowl", "Dual" or "Sonalan" - Apply within 2 weeks of planting. "Gemini" + "Lasso" - Apply within 7 days of planting.

Preemergence (See rate chart)

Preemergence application: Apply before soybeans emerge. Do not spray over top of emergent soybeans as severe injury or death of crop will occur.

Preemergence activity of "Gemini" requires rainfall" to activate. Best results are obtained if treatment is made to moist soil and followed by rainfall or irrigation (~1") before weeds germinate. On dry soil more moisture is required for activation (1 to 2") before weed emergence. If moisture is insufficient to activate the herbicide, a rotary hoeing or shallow cultivation should be made after emergence of crop while weeds are small enough to be controlled by mechanical means. "Gemini" can be applied preemergence in combination with "Lasso", "Dual", "Prowl"[3], "Surflan"[4], or following the rise of a preplant grass material such as "Trellan" or "Sonalan." Consult labels for rates and use instructions.

*Rainfall required to activate ppi or pre treatments depends on soil moisture when activating moisture is received. Several small rainfalls of less than 1/4" are not as beneficial as one large rain of 1/2 inch or more for activation.

Minimum Tillage or No-Till (See rate chart)

"Gemini" applied preemergence to soybeans but postemergence to broadleaf weeds and small annual grasses will provide some burndown of existing weeds as well as normal preemergence broadleaf control. When used for burndown add 0.25% (1 qt./100 gal) surfactant such as "Surfactant WK" or crop oil concentrate at 1% v/v (1 gal/100 gal). For added postemergence control especially on grasses, "Gemini" can be applied with "Roundup"[1], paraquat, or "Bronco"[1]. For added preemergence grass control "Gemini" can be mixed with "Dual", "Surflan" or "Lasso." Consult labels for rates and use instructions. Maintain constant agitation of spray mixture.

RATE CHART

Apply as follows:

Soil Texture (1/2 - 3% Organic Matter)	Rate (Ounces Per Acre)
Coarse: Loamy sand	12-16
Medium: Loam, Silty loam, Silt	16-20
Fine: Silty Clay loam, Clay loam, Clay	20-24
Do not use on sand or loamy sand nor on any soil with less than 1/2 percent organic matter.	
Do not apply "Gemini" on soils with pH greater than 7.0 except in those states as directed in the "ROTATIONAL CROP GUIDELINES" where application can be made to soils with a pH up to 7.5.	

REDUCED RATE FOLLOWED BY "CLASSIC" HERBICIDE

"Gemini" Herbicide is recommended preplant incorporated or preemergence at reduced rates followed by "Classic" Herbicide postemergence for broadleaf weed control in soybeans. This treatment will control those broadleaf weeds listed on the "Gemini" and "Classic" Herbicide product labels.

Apply "Gemini" preplant incorporated or preemergence at 8-10 ounces product per acre to any soil texture with 1/2 to 3% organic matter as directed on the product label. Follow the "Gemini" preplant incorporated or preemergence reduced rate with a postemergence application of "Classic" Herbicide at its labeled rate when weeds are small and actively growing. (Usually 14-28 days after preplant incorporated or preemergence application of "Gemini" reduced rate.)

For grass weed control "Gemini" can be tank mixed with Dual, Lasso, Sonalan, Trellan or Surflan. Consult labels for rates and use instructions of these products.

Dosage rates listed are for broadcast rates. For band applications use proportionately less.

Plant seed 1 1/2 to 2" deep on a flat or raised seedbed only, or crop injury may occur.



Soybean stunting may occur if excessive rainfall occurs after application. Injury is more prevalent under poor drainage or compacted conditions or when soil is saturated for long periods of time. Soybeans rapidly outgrow stunting once favorable growing conditions return.

Injury to soybeans may occur if "Gemini" is used on soils having a calcareous surface layer or a pH of 7.0 or higher, or if used in conjunction with soil-applied insecticides. Seedling disease, cold or hot weather, deep planting (more than 2"), excessive moisture, high salt concentration, or drought may weaken soybean seedlings and increase possibility of crop injury. Do not apply to Black Belt Soils of Alabama and Mississippi with a soil pH greater than 7.0 or a history of nutrient deficiency such as iron chlorosis, as injury may occur.

ROTATIONAL CROP GUIDELINES

Crops that can be planted after using "Gemini" are listed below. Choice of rotational crop is determined by geographical location (state), soil pH, rate and time interval elapsed since last application.

GROUP I

States of: AL, AR, FL, GA, LA, MS, TX
- Soil pH 7.0 or less

GROUP II

States of: DE, KY, MD, MO Bootheel, NJ, NC, PA, SC, TN, VA, WV
- Soil pH 6.8 or less
AND
Use rate 16-22 oz/A

GROUP III

All other states not listed in Group I or II
- Soil pH 7.0 or less
OR

States of: AL, AR, FL, GA, LA, MS, TX
- Soil pH 7.1-7.5
OR

States of: DE, KY, MD, MO Bootheel, NJ, NC, PA, SC, TN, VA, WV
- Soil pH 6.9-7.5
OR
Fields not meeting rate requirement in Group II

Time Interval in Months Before Replanting Rotational Crop

Crops	Group I	Group II	Group III
Soybeans	Anytime	Anytime	Anytime
Cereal grains	4	4	4
Ryegrass	4	4	4
Field Corn*	9	10	18
Alfalfa	10	10	18
Clover	10	12	18
Cotton	10	10	18
Peanuts	10	10	18
Sorghum	10	10	18
Tobacco (transplant)	10	10	18
Tomato (transplant)	10	10	18

All other crops require a minimum 18 month rotational interval and a successful field bioassay^a.

* The term "FIELD CORN" is defined to include only that corn grown for grain or silage, popcorn, and seed corn relative to the "Rotational Crop Guidelines" section of the label, but because seed corn inbred lines may vary in their sensitivity to trace amounts of herbicide carryover Du Pont cannot warrant that seed corn can be recropped without damage or yield loss. Users are advised to seek the advice of their seed corn company agronomist regarding inbred sensitivity to herbicides prior to planting any inbred lines.

Suggested interval (months) before initiating bioassay is 10 months for Group I, 12 months for Group II and 15 months for Group III bioassay interval.

^a Field Bioassay - The field bioassay will detect small quantities of "Gemini" which can remain in the soil and injure rotational crops. A successful field bioassay must be completed the season before planting any crop not listed above. A successful field bioassay means growing to maturity a test strip of the crop(s) intended for production the following year. The test strip should cross the whole field, including knolls and low areas.

SPRAYER CLEANUP

To avoid subsequent injury to desirable crops, thoroughly clean all mixing and spray equipment immediately following applications of "Gemini" as follows:

1. Drain tank; thoroughly hose down the interior surfaces of the tank; then flush tank, boom, and hoses with clean water for a minimum of 5 minutes.
2. Partially fill the tank with water and add one of the cleaning agents listed below. Complete filling the tank with water, then flush the cleaning solution through the boom, hoses, and nozzles. Add water to completely fill the tank and allow to agitate or recirculate for at least 15 minutes. Again, flush the boom, hoses and nozzles, and drain the tank.
3. Repeat Step 2.
4. Remove the nozzles and screens and clean separately in a bucket containing water and the cleaning agent.
5. Thoroughly rinse the tank with clean water for a minimum of 5 minutes, flushing water through the boom and hoses.

NOTE: Use any of the following cleaning agents. Carefully read and follow the individual cleaning agent instructions.

1. One gallon of household ammonia (contains 3% active) per 100 gallons of water.

2. Nutra-Sol[7]

3. Loveland Tank and Equipment Cleaner[8]

4. Protank Cleaner[9]

5. Chem-Tank Cleaner and Neutralized[10]

6. Incode-Out[11]

7. Tank-Aid[12]

PRECAUTIONS

Do not apply "Gemini" to soils with a pH greater than 7.0, except for those states listed in Group III of the "ROTATIONAL CROP GUIDELINES" where "Gemini" can be applied to soils up to 7.5 pH.

- o CAUTION: Soil pH varies greatly, even within the same field. pH variations as much as 2 pH units are common. Composite soil samples taken across an entire field, such as those samples taken for soil fertility recommendations, may not detect areas of high pH (greater than pH 6.8). Sub-sampling areas likely to have pH values higher than the field average is recommended.

Soil pH may vary with soil type. Where different soil types are evident within a field, these types should be sampled separately.

Soil pH may vary due to conditions within a field. Such areas include, but are not limited to, areas bordered by limestone gravel roads, river bottoms subject to flooding, low areas in hardpan soils where evaporative ponds may occur, eroded hillsides, along drain tile lines, and areas where drainage ditch spoil has been spread. These areas should be sampled separately.

Soil pH may vary within the soil profile. For instance, fields in which lime has not been deeply incorporated may exhibit significantly higher pH values in the upper 3 inches of soil. Composite soil samples taken at a 6-8 inch depth may not reflect the elevated pH near the surface. In these cases shallow sampling, the upper 3 inches, is advised.

Determine soil pH by laboratory analysis using a 1:1 soil:water suspension.

- o Do not graze treated fields or harvest for forage or hay.
- o Do not use on sand, muck, or peat soils, nor on soils with less than 1/2% organic matter as crop injury may result.
- o Do not apply "Gemini" after the soybean crop has emerged.
- o Use of "Gemini" may affect rotational crops. Follow "ROTATIONAL CROP GUIDELINES".
- o Do not apply to Black Belt Soils of Alabama and Mississippi with soil pH greater than 7.0, or on soils with a history of nutrient deficiencies such as iron chlorosis or injury may occur.
- o When recommended tank mix combinations are used, consult the product label for replanting and recropping instructions and observe the directions that are the most restrictive.
- o If "Scepter" [3], "Pursuit" [3] or any product containing the active ingredients, imazaquin or imazethapyr (such as "Squadron" [1], "Partner" [5]) is applied the same year as "Gemini", do not plant crops other than soybeans for at least 15 months from the last application. Crops listed in the "Gemini" Rotational Crop Guidelines may be planted after 15 months; all other crops require a successful field bioassay.
- o Do not apply to land that has been or will be treated with "Ally", "Finesse" or "Glean" herbicides in the states of Nebraska, Kansas, North Dakota and South Dakota.

STORAGE AND DISPOSAL

Storage: Store product in original container only, away from other pesticides, fertilizer, food, or feed.

Product Disposal: Do not contaminate water, food, or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

NOTICE TO BUYER: Purchase of this material does not confer any rights under patents of countries outside of the United States.

NOTICE OF WARRANTY

Du Pont warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for the purposes stated on such label only when used in accordance with the directions under normal use conditions. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors such as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Du Pont. In no case shall Du Pont be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks are assumed by the buyer. DU PONT MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

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- 4 Trademark of Elanco Products Co., Indianapolis, IN
- 5 Trademark of Kalo Agricultural Chemicals, Inc., Overland Park, KS
- 6 Trademark of Witco Chemical Corp., Houston, TX
- 7 Compounded for Thomas G. Killfoil Co., Inc., San Bruno, CA
- 8 Registered Trademark of Loveland Industries, Inc.
- 9 Manufactured for General Land 'O Lakes Agronomy Co.
- 10 Manufactured by Farmbelt Chemicals, Inc.
- 11 Trademark of Precision Laboratories, Inc.
- 12 Manufactured for Cornbelt Chemical Co.

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