

3. Tank Mixture with Milogard

In addition to the weeds controlled by Dual 8E alone, Dual 8E + Milogard also controls browntop panicum, common purslane, hairy nightshade, lambsquarters, and morningglory.

Preplant Surface Applied: Refer to instructions for use of Dual 8E under Application Procedures.

For minimum-tillage or no-tillage systems only, Dual 8E + Milogard 80W* may be applied up to 45 days before planting in central and western KS and eastern CO. Use only split applications for treatments made 30-45 days before planting, with 2/3 of the broadcast rate applied initially and the remaining 1/3 at planting. On sandy loams, apply 2 pts./A of Dual 8E + 0.75 - 1 lb./A of Milogard 80W*. On medium soils, apply 2.25 pts./A of Dual 8E + 1-1.2 lbs./A of Milogard 80W*. On fine soils, apply 2.5 pts./A of Dual 8E + 1.2-1.3 lbs./A of Milogard 80W*. Treatments less than 30 days before planting may be made either as a split or single application. Under dry conditions, irrigation after application is recommended to move Dual 8E + Milogard 80W* into the soil.

Preplant Incorporated or Preemergence: Refer to instructions for use of Dual 8E under Application Procedures.

On sandy loams, apply 1.25-1.5 pts./A of Dual 8E + 0.75-1 lb./A of Milogard 80W*. On medium soils, apply 1.5-1.9 pts./A of Dual 8E + 1-1.2 lbs./A of Milogard 80W. On fine soils, apply 1.9-2.1 pts./A of Dual 8E + 1.2-1.3 lbs./A of Milogard 80W.

*When using Milogard 4L or Milogard Maxx[®] 90, use equivalent rates. One lb. of Milogard 80W equals 0.9 lb. of Milogard Maxx 90 or 1.6 pts. of Milogard 4L.

Do not apply on sands and loamy sands.

Precautions: Do not incorporate on sandy loam soils in AR, GA, OK, NM, TX, and the Gulf Coast states.

4. Tank Mixture of Dual 8E, Dual 8E + AAtrex, Dual 8E + Igran or Dual 8E + Milogard with Paraquat or Roundup for Minimum-Tillage or No-Tillage Systems

In minimum-tillage or no-tillage systems where sorghum (Concept treated seed) is planted directly into a cover crop, stale seedbed, established sod or previous crop residues, the contact herbicides paraquat or Roundup may be tank mixed with Dual 8E, Dual 8E + AAtrex, Dual 8E + Igran or Dual 8E + Milogard. When used as directed, the paraquat portion of the tank mixture controls most emerged annual weeds and suppresses many perennial weeds. Roundup combinations will control emerged annual and perennial weeds when applied as directed on the Roundup label. The Dual 8E, Dual 8E + AAtrex, Dual 8E + Igran or Dual 8E + Milogard portion of the tank mixture provides preemergence control of the weeds listed on this label under the respective sections.

Refer to the label of each product used in combination and observe the planting details, restrictions, and all other precautions and limitations.

Application: Apply before, during, or after planting but before sorghum emerges, at the appropriate rates listed under Grain or Forage Sorghum - Dual 8E Alone or Grain or Forage Sorghum - Dual 8E Combinations for use rates of Dual 8E, Dual 8E + AAtrex, Dual 8E + Igran or Dual 8E + Milogard respectively. Add Paraquat or Roundup at the following broadcast rates:

Paraquat: 1-2 pts. per acre plus 8 oz. or X-77 Spreader per 100 gals. of spray mixture. Use the lower rate for control of annual weeds less than 4 inches tall and the higher rate for weeds 4-6 inches tall. This treatment will not consistently control weeds taller than 6 inches.

Roundup: 1.5 qts. per acre for control of existing annual weeds, or 2-4 qts. per acre for existing perennial weeds. See the Roundup label for weeds controlled and recommended rates for specific weeds.

Apply in a minimum of 20 gals. of water per acre with conventional spray equipment.

P. Soybeans - Dual 8E Alone

Apply Dual 8E either preplant surface applied, preplant incorporated or preemergence using the appropriate rate specified below. Preplant surface applied, preplant incorporated or preemergence: Follow instructions for use of Dual 8E alone under Application Procedures.

Preplant Surface Applied: Use on medium and fine soils with minimum-tillage or no-tillage systems in CO, IL, IN, IA, KS, KY, MN, MO, MT, NE, ND, SD, WI, WY. Apply 2/3 the recommended rate of Dual 8E (2.5 pts./A on medium soils and 3 pts./A on fine soils) as a split treatment 30-45 days before planting and the remainder at planting, or as a split or single treatment when applied less than 30 days before planting. Apply 2 pts./A on coarse soils not more than 2 weeks prior to planting.

Preplant Incorporated or Preemergence: On coarse soils, apply 1.5-2 pts./A of Dual 8E if organic matter content is less than 3%, or 2 pts./A if organic matter content is 3% or greater. On medium soils, apply 2-2.5 pts./A of Dual 8E. On fine soils, apply 2-2.5 pts./A of Dual 8E if organic matter content is less than 3%, or 2.5-3 pts./A if organic matter content is 3% or greater.

Q. Soybeans - Dual 8E Combinations

Water or fluid fertilizer may be used as carrier for Dual 8E in combination with Amiben, Sencor, Lexone, or Lorox 50W. Only water may be used as carrier for Dual 8E + Dyanap, Dual 8E + Lorox L, or Dual 8E + Premerge 3.

1. Tank Mixture with Sencor or Lexone

In addition to those weeds controlled by Dual 8E alone, Dual + Sencor or Lexone, when applied as directed, also controls the following broadleaf weeds: cocklebur*, hairy nightshade, hemp sesbania, jimsonweed*, lambsquarters, prickly sida, ragweed, smartweed, velvetleaf, Venice mallow, and wild mustard.

*Partially controlled.

Apply Dual 8E and Sencor or Lexone preplant incorporated or preemergence using the appropriate rates from Table 5. Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures. Sequential: Apply Dual 8E alone Preplant Incorporated, as specified in Table 5 for this tank mixture. Follow with a preemergence application of Sencor or Lexone during planting (behind the planter) or after planting before weeds or soybeans emerge.

Refer to the Sencor or Lexone labels for planting details and soybean variety restrictions.

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Table 5: Dual 8E + Sencor or Lexone - Soybeans

Soil texture**	Broadcast rates per acre			
	0.5% to less than 3% organic matter		3% organic matter or greater	
	Dual 8E	Sencor 50WP* or + Lexone	Dual 8E	Sencor 50WP* or + Lexone
<u>COARSE:</u> Loamy sand (over 2% organic matter), sandy loam	1.25-1.5 pts.	+ .5 lb.	1.5 pts.	+ .75 lb.
<u>MEDIUM:</u>	1.5-2 pts.	+ .75 lb.	2 pts.	+ 1 lb.***
<u>FINE:</u>	2 pts.	+ 1 lb.	2-2.5 pts.	+ 1 lb.
<u>Mississippi Delta only:</u> Silty clay, clay	2 pts.	+ 1.5 lbs.	2-2.5 pts.	+ 1.5 lbs.
muck or peat soils	DO NOT USE			

*When using Sencor 4 or Lexone 4L, substitute pints for pounds (1 pint equals 1 pound). For Sencor DF or Lexone DF, multiply pounds 50WP by 0.67.

**On all sand and on loamy sand with less than 2% organic matter, do not use this tank mixture preemergence, or the sequential treatment. Do not use the tank mixture preplant incorporated on any sand, loamy sand, or sandy loam, or crop injury may occur.

***Use 0.75 lb./A if applied preplant incorporated.

Precautions: 1) Do not use the tank mix or sequential application on soil with less than 0.5% organic matter or on alkaline soil with a pH over 7.4, or crop injury may occur. 2) If heavy rain occurs soon after application, crop injury may result, especially in poorly drained areas where water stands for several days.

2. Tank Mixture with Lorox

In addition to those weeds controlled by Dual 8E alone, Dual 8E + Lorox, applied preemergence, also controls the following broadleaf weeds: cocklebur*, jimsonweed*, lambsquarters, morningglory*, prickly sida, ragweed, smartweed, velvetleaf*, Venice mallow, and wild mustard.

*Partially controlled.

Apply during planting (behind planter) or after planting but before weeds or soybeans emerge. Refer to the Lorox label for planting details. Apply the appropriate rates from Table 6.

Table 6: Dual 8E + Lorox - Soybeans

	Broadcast rates per acre	
	0.5% to less than 3% organic matter	3% organic matter or greater
Soil texture*	Dual 8E + Lorox***	Dual 8E + Lorox***
<u>COARSE</u> **	1.25 pts. + 1 lb.	1.5 pts. + 1-1.5 lbs.
<u>MEDIUM</u> :	1.5 pts. + 1-1.5 lbs.	2 pts. + 1.5-2 lbs.
<u>FINE</u> :	2 pts. + 2 lbs.	2-2.5 pts. + 2.5-3 lbs.
muck or peat soils	DO NOT USE	

*Do not use on sand, gravelly soils, or exposed subsoils.

**Do not use on loamy sand, except in the northeastern U.S. on loamy sand with over 1% organic matter.

***When using Lorox L, use equivalent rates. One pt. of Lorox L equals one lb. of Lorox wettable powder.

Precaution: 1) Do not use on soil with less than 0.5% organic matter or crop injury may occur. 2) Only water should be used as a carrier for Dual 8E + Lorox L.

3. Tank Mixture with Dyanap

In addition to those weeds controlled by Dual 8E alone, Dual 8E + Dyanap, when applied as directed, also controls the following broadleaf weeds: cocklebur*, jimsonweed, lambsquarters, morningglory*, prickly sida, purslane, ragweed, smartweed, and wild mustard.

*Cocklebur and morningglory controlled with crook stage application only.

Apply Dual 8E + Dyanap in 20-40 gals. of spray mixture per acre during the interval preemergence during planting (behind the planter) through crook stage (from soil cracking to before the soybean true leaves open) according to the rates specified below. Do not apply this tank mixture in fluid fertilizer.

On coarse soils, apply 1.25 pts./A of Dual 8E plus 4.5 qts./A of Dyanap if organic matter content is less than 3%, or apply 1.5 pts./A of Dual 8E + 4.5 qts./A of Dyanap if organic matter content is 3% or greater. On medium soils, apply 1.5 pts./A of Dual 8E + 6 qts./A of Dyanap if organic matter content is less than 3%, or apply 2 pts./A of Dual 8E + 6 qts./A of Dyanap if organic matter content is 3% or greater. On fine soils, apply 2 pts./A of Dual 8E + 6 qts./A of Dyanap if organic matter content is less than 3%, or apply 2-2.5 pts./A of Dual 8E + 6 qts./A of Dyanap if organic matter content is 3% or greater.

If 1/2-1 inch of rainfall does not occur within 7 days after application, shallow incorporation (1/2-1 inch) is recommended. Cultivate if weeds develop. Refer to the Dyanap label for planting and other product use information.

4. Tank Mixture with Amiben

This tank mixture controls all weeds controlled by Dual 8E alone and by Amiben alone. Refer to the Dual 8E Applied Alone section of this label for weeds controlled by Dual 8E alone and to the Amiben label for weeds controlled by Amiben.

Apply Dual 8E and Amiben preplant incorporated or preemergence. Apply 1 gal./A of Amiben plus either 1.5 pts./A of Dual 8E on coarse soils, 1.5-2 pts./A of Dual 8E on medium soils, or 2-2.5 pts./A of Dual 8E on fine soils. Use 1.5 gals. of Amiben/A on fine-textured high organic matter soils or where a dense stand of difficult to control broadleaf weeds, such as black nightshade, velvetleaf, or wild mustard is expected to occur. Preplant Incorporated: Apply the tank mixture to the soil and incorporate into the top 2 inches of soil just before planting. Follow instructions for use, other than the preplant interval, of Dual 8E alone under Application Procedures. Preemergence: Apply the tank mixture during planting (behind the planter) or after planting before weeds or soybeans emerge. Sequential: Apply Dual 8E alone Preplant Incorporated, as specified above for this tank mixture. Follow with a preemergence application of Amiben during planting (behind the planter) or after planting before weeds or soybeans emerge.

Refer to the General Information section of this label and to the Amiben label for weather and cultural practices that affect performance of these products.

5. Tank Mixture and Sequential Application with Premerge 3

This mixture controls those weeds controlled by Dual 8E alone and by Premerge 3 alone. Refer to the Dual 8E Applied Alone section of this label for weeds controlled by Dual 8E alone and to the Premerge 3 label for weeds controlled by Premerge 3.

Preemergence: Using the appropriate rates specified below, apply the tank mixture during planting (behind the planter) or after planting, but before weeds or crop emerge; or application may be delayed to ground cracking. Sequential: Apply Dual 8E preplant incorporated as specified for Dual 8E alone. Follow with a preemergence or ground crack application of Premerge 3; or Dual 8E may be applied preemergence as specified for Dual 8E alone followed by a ground crack application of Premerge 3. At Emergence (when soybeans are emerging and are still in the cotyledon stage before leaves open to expose the terminal bud): To control small emerged weeds, use the Dual rate specified for Dual 8E alone plus 2-3 qts./A of Premerge 3.

Do not apply this tank mix in fluid fertilizer.

On coarse soils, apply 1.5 pts./A of Dual 8E + 4 qts./A of Premerge 3. On medium soils, apply 1.5 pts./A of Dual 8E + 6 qts./A of Premerge 3 if organic matter content is less than 3%, or apply 2 pts./A of Dual 8E + 6 qts./A of Premerge 3 if organic matter content is 3% or greater. On fine soils, apply 2 pts./A Dual 8E + 6 qts./A of Premerge 3 if organic matter content is less than 3%, or apply 2-2.5 pts./A of Dual 8E + 6 qts./A of Premerge 3 if organic matter content is 3% or greater.

Refer to the Premerge 3 label for weather, temperature, cultural practices, and all other precautions and limitations that affect performance and crop tolerance of this product.

Precaution: Do not use on light sandy soils having little or no organic matter.

6. Tank Mixture with Amiben and Sencor or Lexone

This tank mixture effectively controls those weeds as listed on the current Dual 8E, Amiben, and Lexone WP/4L/DF or Sencor WP/4/DF labels.

Apply Dual + Amiben + Lexone or Sencor preplant incorporated or preemergence using the appropriate rates from Table 7. Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures.

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Table 7: Dual 8E + Amiben + Sencor or Lexone - Soybeans

Soil texture	Broadcast rates per acre*		
	Dual 8E	+ Amiben	+ Sencor 50WP** or Lexone
<u>COARSE:</u> Loamy sand (over 2% organic matter), sandy loam	1.5-2 pts.	+ 3-4 qts.	+ .5 lb.
<u>MEDIUM:</u>	2-2.5 pts.	+ 4-5 qts.	+ .5-.75 lb.***
<u>FINE:</u>	2.5-3 pts.	+ 5-6 qts.	+ .75-1 lb.***
muck or peat soils	DO NOT USE		

*Refer to the Amiben + Dual + Sencor/Lexone section of the Amiben label for determining product use rate within rate ranges.

**When using Sencor 4 or Lexone 4L, substitute pints for pounds (1 pint equals 1 pound). For Sencor DF or Lexone DF, multiply pounds 50WP by 0.67.

***On Clarion-Webster or similar alkaline (calcareous) soils with a pH of 7.5 or above, apply the WP at 0.5 lb./A on medium soils and 0.5-0.75 lb./A on fine soils.

Special Precautions: Refer to the Dual + Sencor/Lexone section of this label, the Amiben + Dual + Sencor/Lexone section of the Amiben label and the Sencor/Lexone labels for planting details, variety limitations, and all cautions and restrictions concerning use of these products on soybeans.

7. Tank Mixture with Treflan

Dual 8E + Treflan tank mix applied preplant incorporated controls those weeds listed under Dual 8E Applied Alone and those weeds listed for Treflan alone on the Treflan E.C. label. Dual + Treflan may be applied by ground or aerial equipment and incorporated up to 14 days prior to planting. Follow the recommended procedures on the Treflan E.C. and Dual labels using equipment that provides uniform 2 inch incorporation.

Apply Dual + Treflan tank mix using the appropriate rate from the Dual alone section of this label and the Treflan alone section of the Treflan E.C. label for the specific soil texture/organic matter classification and weed species expected.

Note: Follow all restrictions and precautions on the Treflan E.C. label and on the Dual alone portion of this label.

8. Tank Mixture with Lexone, Sencor, or Lorox plus Paraquat or Roundup for Minimum-Tillage or No-Tillage Systems

In minimum-tillage or no-tillage systems where soybeans are planted directly into a cover crop, stale seedbed, established sod, or previous crop residues, the contact herbicides paraquat or Roundup may be added to a tank mix of either Dual 8E + Sencor or Lexone, or Dual 8E + Lorox. When used as directed, the paraquat portion of the tank mixture controls most emerged weeds and suppresses many perennial weeds. Roundup combinations will control emerged annual and perennial weeds when applied as directed on the Roundup label. The Dual 8E + Sencor/Lexone or Lorox portion of the tank mixture provides preemergence control of the weeds listed on this label in the tank mixture section for Dual 8E + Sencor/Lexone, or Dual 8E + Lorox, respectively.

Refer to the label of each product used in combination and observe the planting details, soybean variety restrictions, and all other precautions and limitations.

Refer below for rates of Dual 8E + Sencor/Lexone or Dual 8E + Lorox, respectively.

Refer to the section for tank mixtures with AAtrex or Princep, or AAtrex plus Princep with paraquat or Roundup on corn for rates of paraquat or Roundup, for volume of water, and other instructions and limitations.

Dual 8E + Lexone/Sencor + Paraquat or Roundup:

On loamy sand with over 2% organic matter, apply 1.5 pts./A of Dual 8E + 0.5-0.75 lb./A of Sencor 50WP* or Lexone. On medium soils, apply 2 pts./A Dual 8E + 0.75-1 lb./A of Sencor 50WP or Lexone. On fine soils, apply 2-2.5 pts./A of Dual 8E + 1 lb./A of Sencor 50WP or Lexone.

*When using Sencor 4 or Lexone 4L, substitute pints for pounds (1 pint equals 1 pound). For Sencor DF or Lexone DF, multiply pounds 50W by 0.67.

Note: On all sand and on loamy sand with less than 2% organic matter, do not use this tank mixture or crop injury may occur.

Precautions: 1) Do not use the tank mix on soil with less than 0.5% organic matter or on alkaline soil with a pH over 7.4 or crop injury may occur. 2) If heavy rain occurs soon after application, crop injury may result, especially in poorly drained areas where water stands for several days or where the seeding slit has not been properly closed.

Dual 8E + Lorox + Paraquat or Roundup:

On coarse soils,* apply 1.5 pts./A of Dual 8E + 1-1.5 lbs./A of Lorox**. On medium soils, apply 2 pts./A of Dual 8E + 1-2 lbs./A of Lorox. On fine soils, apply 2-2.5 pts./A of Dual 8E + 2-3 lbs./A of Lorox.

*Do not use on loamy sand, except in the northeastern U.S. on loamy sand with over 1% organic matter. Do not use on sand, gravelly soils, or exposed subsoils.

**When using Lorox L, use equivalent rates. One pt. of Lorox L equals one lb. of Lorox wettable powder.

Precaution: 1) Do not use on soil with less than 0.5% organic matter or crop injury may occur. 2) Only water should be used as a carrier for Dual 8E + Lorox L + paraquat or Roundup.

R. Dual 8E Alone and Combinations - Field and Liner Grown Woody Ornamentals

To control the weeds indicated below for approximately 60 days, use one of the following:

1. Dual 8E: Barnyardgrass, crowfootgrass, fall panicum, giant foxtail, goosegrass, green foxtail, large crabgrass, redroot pigweed, smooth crabgrass, yellow foxtail, yellow nutsedge, and other weeds listed for Dual 8E alone on this label.
2. Dual 8E + Princep: Galinsoga, lambsquarters, purslane, ragweed, smartweed, yellow nutsedge, Venice mallow and other weeds listed for Dual 8E alone on this label.

Apply Dual 8E alone or in combination with Princep at the rates shown below in a minimum of 15 gals. of water per acre. Direct the spray towards the base of established ornamentals or ornamentals transplanted a minimum of 10 days. Apply before weeds emerge or after removing existing weeds. Use the higher rate of Dual alone on fine-textured soil and where heavy infestations of grass weeds are expected. Use the lower rate of Dual on coarse-textured soil and where light infestations of grass weeds are expected. Use the higher rate of Dual + Princep on fine-textured soils and where broadleaf weeds are expected to form a significant part of the infestation. Use the lower rate of Dual + Princep on coarse-textured soil and where light infestations of broadleaf weeds are expected.

Apply Dual 8E at 2-3 pts./A or Dual 8E at 2-3 pts./A plus Princep 4L at 1.6-2 pts./A posttransplant to the field or liner grown woody ornamentals listed below. For band applications, use a proportional amount of herbicide. When using Princep 80W or Princep Caliber 90, use equivalent rates; 2 pts. of 4L equals 1.25 lbs. of 80W or 1.1 lb. of Caliber 90.

Apply Dual 8E alone or Dual 8E + Princep as recommended above to the following field and liner grown ornamentals:

Dual 8E Alone

Arborvitae (<u>Thuja</u> spp.)*	Honeysuckle (<u>Lonicera</u> spp.)
Aucuba (<u>Aucuba</u> spp.)*	Hybrid Tea Rose (<u>Rosa</u> spp.)
Azalea (<u>Rhododendron</u> sp.).	Ivy (<u>Hedera</u> sp.), English
Hershey Red, Herbert, Purple	Japanese Andromeda (<u>Pieris</u> spp.)*
Splendor	Japanese Red Maple (<u>Acer</u> spp.)
Barberry (<u>Berberis</u> spp.),	Juniper (<u>Juniperus</u> spp.)*,
Mentor, Warty, Wintergreen	Andorra, Creeping, Shore,
Box Tree (<u>Buxus</u> spp.)	Bar Harbor, Blue Rug
Cotoneaster (<u>Cotoneaster</u> spp.)*	Leucothoe (<u>Leucothoe</u> spp.)*
Crabapple (<u>Malus</u> spp.)*	Lilac (<u>Syringa</u> spp.) James
Dogwood (<u>Cornus</u> sp.), Red Stem	McFarland
Euonymus (<u>Euonymus</u> spp.), in-	Liriope (<u>Liriope</u> spp.)* Silver
cluding Purple Winter	Sunproof
Creeper	Maple whips (<u>Acer</u> spp.)*
Firethorn (<u>Pyracantha</u> spp.)	Miniature Rose (<u>Rosa</u> spp.)
Forsythia (<u>Forsythia</u> spp.), in-	Mountain Laurel (<u>Kalmia</u> spp.)
cluding Spring Glory and	Osmanthus (<u>Osmanthus</u> spp.)*
Golden Bells	Pachysandra (<u>Pachysandra</u> spp.)
Holly (<u>Ilex</u> spp.), American,	Privet (<u>Ligustrum</u> spp.)
Boxleaf Japanese*, Japanese*,	Red Oak (<u>Quercus</u> spp.)*
Green Lustre Japanese	Rhododendron (<u>Rhododendron</u> spp.)*
	Rosebay (<u>Rhododendron</u> spp.)
	Spirea (<u>Spiraea</u> spp.)
	Viburnum (<u>Viburnum</u> spp.)
	Weigela (<u>Weigela</u> spp.)*
	Yew (<u>Taxus</u> spp.), Dwarf
	Japanese*, Hicks

*Use Dual 8E + Princep on these field and liner grown ornamentals only.

Note: Length of weed control may be reduced when continuous wet soil conditions follow herbicide application.

Precautions: Do not use on seedbeds or on unrooted cuttings. Do not use in greenhouses or other enclosed areas.

S. Storage and Disposal

Pesticide Disposal:

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Wastes resulting from the use of this product are acutely toxic. Improper disposal of unused pesticide, spray mixture, or rinsate is a violation of federal law. Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to federal, state or local procedures under the Resource Conservation and Recovery Act. For guidance in proper disposal methods, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office.

Container Disposal:

Do not reuse empty container. Triple rinse (or equivalent) and offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or by open burning, if allowed by state and local authorities. If burned, keep out of smoke.

This product may be stored at temperatures down to 30 degrees below 0°F.

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Precautionary Statements

Hazards to Humans and Domestic Animals

WARNING

The active ingredient, metolachlor, may cause skin sensitization reactions in certain individuals. Wear protective clothing (coveralls and gloves) while handling or using this product. Causes skin and eye irritation. Do not get in eyes, on skin, or on clothing. Harmful if inhaled. Avoid breathing spray mist.

Harmful if swallowed or absorbed through the skin. Wash thoroughly after handling. Avoid contamination of food.

First Aid: In case of contact, immediately flush eyes and/or skin with plenty of water. Call a physician. Remove and wash contaminated clothing before reuse.

If inhalation occurs, the victim should be moved to fresh air, and medical attention should be sought.

If swallowed, contact your local Poison Control Center, hospital, or physician immediately. If patient is unconscious, maintain breathing and heartbeat (CPR: cardiopulmonary resuscitation). If patient is conscious, induce vomiting (syrup of ipecac; if not available, stimulate back of throat with finger). Never give anything by mouth to an unconscious person! [Note to Physician: If swallowed, there is no specific antidote. Induce emesis and lavage stomach. Treat symptomatically! The use of an aqueous slurry of activated charcoal (such as Norit A) and a saline cathartic should be considered.]

Environmental Hazards

Do not apply directly to any body of water. Do not apply where runoff is likely to occur. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not apply when weather conditions favor drift from areas treated.

AAtrex® trademark of CIBA-GEIGY for atrazine

Amiben™ trademark of Union Carbide Agricultural Products, Inc.
(formerly Amchem Products, Inc.)

Balan® trademark of Elanco Products for benefin

Banvel® trademark of Velsicol Chemical Corp. for dicamba

Bladex® trademark of Shell Chemical Company for cyanazine

Caliber® trademark of CIBA-GEIGY

Caparol® trademark of CIBA-GEIGY for prometryn

Compex® trademark of Kalo Agricultural Chemicals, Inc.

Concep® trademark of CIBA-GEIGY
U.S. Patent No. 4,070,389

Dual® trademark of CIBA-GEIGY for metolachlor
U.S. Patent No. 3,937,730

Dyanap® trademark of Uniroyal Chemical for Alanap®-Dinitro

Eptam® trademark of Stauffer Chemical Company for EPTC

Igran® trademark of CIBA-GEIGY for terbutryn

Lexone® trademark of E. I. duPont de Nemours and Co. for
metribuzin

Lorox® trademark of E. I. duPont de Nemours and Co. for linuron

Maxx® trademark of CIBA-GEIGY

Milogard® trademark of CIBA-GEIGY for propazine

Nine-O® trademark of CIBA-GEIGY

Premerge® trademark of the Dow Chemical Company for dinoseb

Princep® trademark of CIBA-GEIGY for simazine

Roundup® trademark of Monsanto Company for glyphosate

Sensor® trademark of the Parent Company of Farbenfabriken Bayer
GmbH, Leverkusen, for metribuzin

100-577

Treflan® trademark of Elanco Products for trifluralin

Unite® trademark of Hopkins Agricultural Chemical Company for compatibility agent HA-914

Vernam® trademark of Stauffer Chemical Company for vernolate

X-77® trademark of Kalo Laboratories, Inc.

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FEB 11 1984

Dear Dr. Holt:

Subject: Repeat Two-Year Chronic Toxicity
& Oncogenicity Study with
Metolachlor in Rats (Accession
Numbers 250369 through 250375)
Metolachlor Technical
EPA Registration No. 100-597
Your Submission of May 19, 1983

We have reviewed the above study and consider the no-observed-effect-level (NOEL) to be 30 ppm, based on the atrophy of the testes with degeneration of the tubular epithelium in the mid and high dose groups. An increase in primary liver tumors is observed in the male and female high dose groups. If the high dose female neoplastic nodules and hepatocellular carcinomas are combined, it is statistically significant (control = 0/45, 3000 ppm = 6/50). There is a conflict in the number of incidences of tumors reported in your letter of December 9, 1982, and the final report. We do not consider the discrepancy resolved by the pathologist's (Dr. Jackson) memorandum of November 1, 1983. Your letter of May 19, 1983, states your conclusion that metolachlor is not an oncogen.

We will require an independent and blind review of the rat liver slides with a new pathology narrative. No further action on the pending petition and new use registration actions can occur until these issues are resolved. We will defer review of the repeat chronic mouse study for metolachlor until we can adequately assess this rat study.

Sincerely yours,

Richard F. Mountfort
Product Manager (23)
Fungicide-Herbicide Branch
Registration Division (TS-767)

PD-DIS:DCS-10864:Mountfort:bic:Paven:557-2226:RD-19:2/25/PA:del.3/1/84

Gene Holt, Ph.D.
Agricultural Division
Ciba-Geigy Corporation
P.O. Box 18300
Greensboro, NC 27419

JAN 6 1984

Dear Dr. Holt:

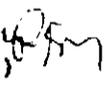
Subject: Amendment/Label Revision - Add Preplant
Surface Application, Tank Mixes and New
Ornamentals - Update per PR Notices 83-2 and 83-3.
Dual 8E Herbicide
EPA Registration No. 100-597
Your Submission dated December 20, 1983

The amendment referred to above, submitted in connection with registration
under FIFRA is acceptable, provided that you:

1. Make the labeling change listed below before you release
the product for shipment bearing the amended labeling:
 - a. Under directions for use of Dual 8E alone in corn and grain
or forage sorghum and tank mixtures of Dual 8E with Aatrex
and Dual 8L with Hilogard in sorghum, clearly indicate that
the preplant surface applied treatment is an alternative to
preplant incorporation or preemergence treatments, and not
an additional treatment.
2. Submit one (1) copy of your final printed labeling before you
release the product for shipment.

A stamped copy of the labeling is enclosed for your records.

Sincerely yours,

Richard A. Mountfort 
Product Manager (23)
Fungicide-Herbicide Branch
Registration Division (TC-767)

Enclosure

100-10928;Mountfort:1/4/84;PR-2;Dist:1/9/84;reg

SYMBOL ▶								
SURNAME ▶								
DATE ▶								

(Front Cover)

Dual® 8E

Herbicide

For weed control in corn, cotton, peanuts, pod crops,
potatoes, safflowers, grain or forage sorghum, soybeans,
and woody ornamentals

Active Ingredient:

Metolachlor: 2-chloro-N-(2-ethyl- 6-methylphenyl)-N-(2-methoxy-1- methylethyl) acetamide	86.4%
Inert Ingredients:	13.6%
Total:	100.0%

2 1/2 Gallons
U.S. Standard Measure

Dual 8E contains 8 lbs. active
ingredient per gal.

Keep Out of Reach of Children.

WARNING

See additional precautionary statements
inside booklet.

AVISO

PRECAUCION AL USUARIO: Si usted no lee ingles,
no use este producto hasta que la etiqueta
haya sido explicado ampliamente.

EPA Reg. No. 100-597

Dual® trademark of CIBA-GEIGY for metolachlor
U.S. Patent No. 3,937,730

See directions for use inside booklet.

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Agricultural Division
CIBA-GEIGY Corporation
Greensboro, North Carolina 27419

CGA 49L12N
CIBA-GEIGY

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DIRECTIONS FOR USE AND CONDITIONS OF SALE AND WARRANTY

IMPORTANT: Read the entire Directions for Use and the Conditions of Sale and Warranty before using this product.

Conditions of Sale and Warranty

The Directions for Use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application all of which are beyond the control of CIBA-GEIGY or the Seller. All such risks shall be assumed by the Buyer.

CIBA-GEIGY warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use subject to the inherent risks referred to above. CIBA-GEIGY makes no other express or implied warranty of Fitness or Merchantability or any other express or implied warranty. In no case shall CIBA-GEIGY or the Seller be liable for consequential, special, or indirect damages resulting from the use or handling of this product. CIBA-GEIGY and the Seller offer this product, and the Buyer and user accept it, subject to the foregoing Conditions of Sale and Warranty, which may be varied only by agreement in writing signed by a duly authorized representative of CIBA-GEIGY.

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Directions for Use

General Classification

It is a violation of federal law to use this product in a manner inconsistent with its labeling. In accordance with 40 CFR Part 170, no user shall permit the application of this product in such a manner as to directly or through drift expose workers or other persons except those knowingly involved in the application. The area being treated must be vacated by unprotected persons.

Re-entry Statement

Do not enter treated areas without protective clothing until sprays have dried.

Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.

Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. Oral warnings must inform workers of areas or fields that may not be entered without specific protective clothing until sprays have dried, and appropriate actions to take in case of accidental exposure, as described under Precautionary Statements at the back of this label booklet. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information: "WARNING. Area treated with Dual 8E on (date of application). Do not enter without appropriate protective clothing until sprays have dried. In case of accidental exposure, flush eyes or skin with plenty of water. Call physician if irritation persists. Remove and wash contaminated clothing before reuse."

A. General Information

Observe all precautions and limitations on the labels of each product used in tank mixtures. FAILURE TO FOLLOW ALL PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

Dual 8E is a selective herbicide recommended as a preplant incorporated or preemergence surface-applied treatment in water or fluid fertilizer for control of most annual grasses and certain broadleaf weeds in corn, cotton, peanuts, pod crops, potatoes, safflowers, grain or forage sorghum, soybeans, and woody ornamentals.

Where directions specify a Dual 8E tank mixture with AAtrex formulations, other brands of atrazine may be used. Follow the rates, recommendations, and limitations on the respective product label, if other brands of atrazine are used.

If Dual 8E is incorporated, any supplemental tillage before planting must not exceed the specified depth of incorporation.

Dry weather following preemergence application of Dual 8E or a tank mixture may reduce effectiveness. Cultivate if weeds develop.

Where reference is made to weeds partially controlled, partial control can either mean erratic control from good to poor, or consistent control at a level below that generally considered acceptable.

Precaution: Injury may occur following the use of Dual 8E under abnormally high soil moisture conditions during early development of the crop.

1. Soil Textures and Herbicide Rates

Where rates are based on coarse, medium, or fine-textured soils, it is understood that soil textural classes are generally categorized as follows:

<u>Coarse:</u>	<u>Medium:</u>	<u>Fine:</u>
Sand	Loam	Silty clay loam
Loamy sand	Silt	Sandy clay loam
Sandy loam	Silt loam	Silty clay
		Sandy clay
		Clay loam
		Clay

Within rate ranges in the rate tables and elsewhere on this label, use the lower rate on soils relatively coarse-textured or low in organic matter; use the higher rate on soils relatively fine-textured or high in organic matter.

Note: Dual 8E may be applied preemergence alone, or in combination with tank mix partners specified on this label, following preplant incorporated herbicides when used according to their label recommendations, provided that such use is not prohibited on the respective labels.

Thoroughly clean sprayer prior to use. Do not use a sprayer contaminated with any other materials, or crop damage or sprayer clogging may result.

2. Mixing Instructions

Dual 8E Alone: Mix Dual 8E with water or fluid fertilizer and apply as a spray. Fill the spray tank one-half to three-fourths full with water or fluid fertilizer, add the proper amount of Dual 8E, then add the rest of the water or fluid fertilizer. Provide sufficient agitation during mixing and application to maintain a uniform emulsion.

Tank Mixtures: Fill the spray tank one-fourth full with water, and start agitation; add AAtrex, Amiben, Balan, Banvel, Bladex, Caparol 4L, Dyanap, Eptam, Lexone, Lorox, Milogard, Premerge 3, Princep, AAtrex + Princep, Sencor or Treflan, and allow it to become dispersed, then add Dual 8E, then add paraquat or Roundup if these products are being used, and finally the rest of the water. If Igran or Bladex is to be used in the tank mixture, first add a compatibility agent, such as Unite[®] or Compex[®], at 2-3 pts./100 gals. of spray mixture. Then add Igran or Bladex and allow it to become dispersed. Then add Dual 8E, and finally add the rest of the water. Agitate during mixing and applica-

tion to maintain a uniform suspension. For tank mixtures with AAtrex, Amiben, Banvel, Bladex, Caparol 4L, Eptam, Igran, Lexone, Lorox (but not Lorox L), Milogard, Princep, AAtrex + Princep, Sencor or Treflan, fluid fertilizers may replace all or part of the water as carrier, except in the AAtrex postemergence tank mix. Do not apply tank mixtures of Dual 8E + Dyanap, Dual 8E + Lorox L, or Dual 8E + Premerge 3 in fluid fertilizers. For tank mixtures with AAtrex, see additional mixing instructions on the AAtrex label. Check compatibility of mixture with fluid fertilizer, as described below, before mixing in spray tank.

Tank mixtures with Bladex should not be allowed to stand without agitation. If there is any evidence of incompatibility with Bladex in tank mixtures, add Compex, Unite, or an equivalent compatibility agent, to the mixture as with Igran or Bladex above. Check the compatibility of tank mixtures containing Bladex closely if fluid fertilizers are used as carriers. Empty the spray tank during the spraying operation.

Compatibility Test: Since liquid fertilizers can vary, even within the same analysis, always check compatibility with herbicide(s) each time before use. Be especially careful when using complete suspension or fluid fertilizers as serious compatibility problems are more likely to occur. Commercial application equipment may improve compatibility in some instances. The following test assumes a spray volume of 25 gals. per acre. For other spray volumes, make appropriate changes in the ingredients. Check compatibility using this procedure:

- 1) Add 1 pint of fertilizer to each of 2 one-quart jars with tight lids.
- 2) To one of the jars add 1/4 tsp. or 1.2 milliliters of a compatibility agent approved for this use, such as Compex or Unite (1/4 tsp. is equivalent to 2 pts. per 100 gals. spray). Shake or stir gently to mix.
- 3) To both jars add the appropriate amount of herbicide(s). If more than one herbicide is used, add them separately with dry herbicides first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix. The appropriate amount of herbicides for this test follows:

Dry herbicides: For each pound to be applied per acre, add 1.4 level teaspoons to each jar.

Liquid herbicides: For each pint to be applied per acre, add 0.5 teaspoon or 2.5 milliliters to each jar.

Note: For Dual 8E tank mixtures with AAtrex + Princep, use $\frac{1}{3}$ - $\frac{1}{2}$ the amount of AAtrex specified above and the remainder as Princep, depending on whether the 1:2 or 1:1 ratio of AAtrex to Princep is to be applied.

- 4) After adding all ingredients, put lids on and tighten, and invert each jar ten times to mix. Let the mixtures stand 15 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the two jars. If either mixture separates, but can be remixed readily, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the following methods of improving compatibility: (A) slurry the dry herbicide(s) in water before addition, or (B) add $\frac{1}{2}$ of the compatibility agent to the fertilizer and the other $\frac{1}{2}$ to the emulsifiable concentrate or flowable herbicide before addition to the mixture. If incompatibility is still observed, do not use the mixture.

3. Application Procedures

Application Timing

Dual alone or in some tank mixtures with other labeled herbicides may be applied for weed control in certain crops at various times. Refer to the given crop section of the label to determine if application timings listed below are recommended.

- (1) Preplant Surface Applied: For minimum-tillage or no-tillage systems only, Dual 8E alone and some Dual 8E tank mixtures may be applied up to 45 days before planting certain crops. Use only split applications for treatments made 30-45 days before planting, with $\frac{2}{3}$ the recommended broadcast rate for the crop and soil texture applied initially and the remaining $\frac{1}{3}$ at planting. Treatments less than 30 days before planting may be made either as a split or a single application. Refer to individual crop to determine if early preplant surface application is recommended. If weeds are present at the time of treatment, apply in a tank mixture combination with a contact herbicide (e.g., paraquat or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide. Soil disturbance at planting should be minimal, i.e., treated soil should not be moved out of the row and untreated soil should not be moved to the surface during planting as weeds will not be controlled.

- (2) Preplant Incorporated: Apply Dual 8E to the soil and incorporate into the top 2 inches of soil within 14 days before planting using a finishing disk, harrow, rolling cultivator, or similar implement capable of providing uniform 2 inch incorporation. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application is expected. If crop will be planted on beds, apply and incorporate Dual 8E after bed formation unless specified otherwise.
- (3) Preemergence: Apply Dual 8E during planting (behind the planter) or after planting but before weeds or crops emerge.

Special Application Procedures - California Only (Corn, Safflower, Pod Crops)

Preplant Incorporated: Broadcast Dual 8E to the soil and thoroughly incorporate with a disk or similar implement set to till 4-6" deep. For more thorough incorporation, till the soil in two different directions (cross-till). Crops may be planted on flat surface or on beds. Caution should be used when forming the beds that only soil from the Dual 8E treated zone is used (i.e., untreated soil should not be brought to soil surface). If the application is made to preformed beds, incorporate Dual 8E with a tillage implement set to till 2-4" deep. Care should be taken during tilling to keep the tilled (Dual 8E treated) soil on the beds.

Preemergence: Apply Dual 8E after planting. Water with sprinkler or flood irrigation within 7-10 days.

Ground Application: Apply Dual 8E alone or in tank mixtures by ground equipment in a minimum of 10 gals. of spray mixture per acre unless otherwise specified.

Use sprayers that provide accurate and uniform application. For Dual 8E tank mixtures with wettable powder or dry flowable formulations, screens and strainers should be no finer than 50-mesh. Rinse sprayer thoroughly with clean water immediately after use.

Calculate the amount of herbicide needed for band treatment by the formula:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{amount needed per acre of field}$$

Aerial Application: Apply Dual 8E in water alone or in tank mixtures with AAtrex, Lorox, Lexone, or Sencor in a minimum total volume of 2 gals. per acre by aircraft. Avoid application under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur. In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft., using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply Dual 8E alone or Dual 8E + AAtrex by aircraft at a minimum upwind distance of 400 ft. from sensitive plants, or apply Dual 8E + Lexone, Sencor, or Lorox at a minimum upwind distance of 300 ft. from sensitive plants.

Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin and should wash thoroughly before eating and at the end of each day's operation.

Center Pivot Irrigation Application: Dual 8E alone or tank mixtures with AAtrex, or other herbicides on this label which are registered for center pivot application, may be applied in irrigation water preemergence (after planting but before weeds or crop emerge) at rates recommended on this label. Use only center pivot systems that apply water uniformly. Prepare a mixture with a minimum of 1 part of water to 1 part herbicide(s), and inject

this mixture into the center pivot system using a positive displacement pump. Injecting a larger volume of a more dilute mixture per hour will usually provide more accurate calibration of metering equipment. Maintain sufficient agitation to keep the herbicide(s) in suspension. Apply in 1/2-1 inch of water. Use the lower water volume (1/2 inch) on coarser textured soils and the higher volume (1 inch) on finer textured soils. More than 1 inch of water at application may reduce weed control by moving the herbicide below the effective zone in the soil. Refer to supplemental literature published by CIBA-GEIGY for more information on calibration.

Precautions for center pivot applications: 1) Apply only through irrigation systems containing anti-syphon and check valves to prevent contamination of well during shutdown and overflow of solution tank. 2) Inject ahead of any right angle turn in the main line to insure adequate mixing. 3) Chemical injection pumps and water pumps must have interlocking controls to insure simultaneous shutoff. 4) Application when drift may occur, such as from windy conditions, or when system joints and connections are leaking, or when nozzles are not providing uniform distribution, may cause crop injury. 5) Where sprinkler distribution patterns do not overlap sufficiently, unacceptable weed control may result. Where sprinkler distribution patterns overlap excessively, crop injury may result.

4. Dry Bulk Granular Fertilizers

Many dry bulk granular fertilizers may be impregnated or coated with Dual 8E alone or Dual 8E tank mixtures registered for pre-plant incorporated application to control weeds in crops on the Dual 8E label.

Labels, supplementary literature, and precautions regarding rates per acre, approved crops, soil texture, application, incorporation, crop rotation and other directions must be followed for Dual 8E and other herbicides used in tank mixtures with Dual 8E.

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

Apply 200-450 pounds per acre of dry granular fertilizer impregnated with recommended rates of Dual 8E alone or Dual 8E tank mixtures.

Do not impregnate Dual 8E or Dual 8E mixtures on ammonium nitrate, potassium nitrate, or sodium nitrate either alone or in blends with other fertilizers.

Do not combine mixtures of Dual 8E plus any other herbicide with single superphosphate (0-20-0) or treble superphosphate (0-46-0).

Do not use Dual 8E or Dual 8E mixtures on straight limestone, since absorption will not be achieved. Fertilizer blends containing limestone can be impregnated.

Prepare the granular herbicide/fertilizer mixtures by using any closed drum, belt, ribbon, or other commonly used dry bulk fertilizer blender. Nozzles used to spray Dual 8E and Dual 8E mixtures onto the fertilizer must be placed to provide uniform spray coverage.

If the herbicide/fertilizer mixture is too wet, use a highly absorptive powder, such as Microcel E (Johns-Manville Products Corporation), diatomaceous earth or finely powdered clay, to obtain a dry free-flowing mixture. Add the absorptive powder separately and uniformly to the herbicide/fertilizer mixture and blend to form a suitable free-flowing mixture. Generally, less than 2% by weight of absorptive powder will be needed.

Calculate amounts of Dual 8E, AAtrex, AAtrex + Princep, Bladex, Igran, Milogard, or Sencor (Lexone) by the following formula:

$$\frac{2,000}{\text{lbs. of fertilizer per acre}} \times \text{pts./acre of liquid or flowable product} = \text{pts. of liquid or flowable product per ton of fertilizer}$$

$$\frac{2,000}{\text{lbs. of fertilizer per acre}} \times \text{lbs./acre of dry product} = \text{lbs. of dry product per ton of fertilizer}$$

For best results, apply this mixture uniformly to soil with properly calibrated equipment immediately after blending, and incorporate according to directions.

Precaution: Do not use on crops where bedding occurs following the herbicide/fertilizer application or injury may occur.

B. Dual 8E Applied Alone

1. Weeds Controlled

barnyardgrass (watergrass)	green foxtail prairie cupgrass	southwestern cupgrass witchgrass
crabgrass	red rice	yellow foxtail
crowfootgrass	signalgrass	<u>yellow nutsedge</u>
fall panicum	(Brachiaria)	black nightshade
foxtail millet		carpetweed
giant foxtail		Florida pusley
goosegrass		galinsoga
		pigweed

Weeds Partially Controlled*: common purslane, hairy nightshade, sandbur, seedling johnsongrass, shattercane volunteer sorghum.

*Control of these weeds can be erratic due partially to variable weather conditions. Control may be improved by following these suggested procedures:

- 1) Thoroughly till moist soil to destroy germinating and emerged weeds. If Dual 8E is to be applied preplant incorporated, this tillage may be used to incorporate Dual 8E if uniform 2 inch incorporation is achieved as recommended under Application Procedures.
- 2) Plant crop into moist soil immediately after tillage. If Dual 8E is to be used pre-emergence, apply at planting or immediately after planting.
- 3) If available, sprinkler irrigate within 2 days after application. Apply 1/2-1 inch of water. Use lower water volume (1/2 inch) on coarse textured soils and higher volume (1 inch) on finer textured soils. Also, refer to the section on Center Pivot Irrigation Application for this method of applying Dual 8E.
- 4) If irrigation is not possible and rain does not occur within 2 days after planting and application, weed control may be decreased. Under these conditions, a uniform, shallow cultivation is recommended as soon as weeds emerge.

2. Rotational Crops: 1) If crop treated with Dual 8E alone is lost, corn, cotton, soybeans, peanuts, potatoes, safflowers, grain or forage sorghum treated with Concep, or the listed pod crops may be replanted immediately. Do not make a second broadcast application of Dual 8E. If the original application was banded and the second crop is planted in the untreated row middles, a second banded treatment may be applied. 2) Barley, oats, rye, or wheat may be planted 4 1/2 months following treatment. Corn, cotton, soybeans, peanuts, potatoes, safflowers, sorghum, pod crops, root crops, barley, buckwheat, milo, oats, rice, rye, or wheat may be planted in the spring following treatment. Do not graze or feed forage or fodder from cotton or pod crops to livestock. All other rotational crops may be planted 18 months after application.

Note: For Rotational Crops restrictions for Dual 8E used in tank mixtures, refer to the statements/restrictions above for Dual 8E and to the respective product labels of any mixing partner(s) for additional statements/restrictions.

C. Corn - Dual 8E Alone

Preplant Surface Applied: Refer to instructions for use of Dual 8E alone under Application Procedures. Use on medium and fine-textured soils with minimum-tillage or no-tillage systems in CO, IL, IN, IA, KS, KY, MN, MO, MT, NE, ND, SD, WI, WY. Apply 2/3 the recommended rate of Dual 8E (2.5 pts./A on medium soils and 3 pts./A on fine soils) as a split treatment 30-45 days before planting and the remainder at planting, or as a split or single treatment when applied less than 30 days before planting. Apply 2 pts./A on coarse soils not more than 2 weeks prior to planting.

Apply Dual 8E either preplant incorporated or preemergence using the appropriate rate specified below. Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures.

On coarse soils, apply 1.5-2 pts./A of Dual 8E if organic matter content is less than 3%, or 2 pts./A if organic matter content is 3% or greater. On medium soils, apply 2-2.5 pts./A of Dual 8E. On fine soils, apply 2-2.5 pts./A of Dual 8E if organic matter content is less than 3%, or 2.5-3 pts./A if organic matter content is 3% or greater.

Note: In corn, Dual 8E may be used up to 4 pts./A as a preplant surface, preplant incorporated, or preemergence treatment on soils having an organic matter content between 6% and 20%.

D. Corn - Dual 8E Combinations

Dual 8E alone or any tank mixture for corn (except Dual + AAtrex postemergence) may be applied in water or fluid fertilizer. Use only water in the Dual + AAtrex postemergence tank mix.

1. Tank Mixture with AAtrex or Princep, or AAtrex plus Princep - Preplant Incorporated or Preemergence

In addition to the weeds controlled by Dual 8E alone, Dual 8E + AAtrex or Princep, or Dual 8E + AAtrex + Princep, applied preplant surface applied, preplant incorporated or preemergence, also controls the following weeds: browntop panicum, cocklebur, common purslane, hairy nightshade, lambsquarters, morningglory, ragweed, smartweed, and velvetleaf.

Apply Dual 8E + AAtrex or Princep, or Dual 8E + AAtrex + Princep preplant surface applied, preplant incorporated or preemergence.

Preplant Surface Applied: Follow instructions for use of Dual 8E alone under Application Procedures and under application instructions for Dual 8E alone on corn. Apply Dual 8E + AAtrex or Princep, or Dual 8E + AAtrex + Princep on medium soils (2.5 pts./A Dual 8E + 3.2-4 pts./A of AAtrex 4L or Princep 4L, or AAtrex 4L + Princep 4L combined) and on fine soils (2.5-3 pts./A Dual 8E + 4-5 pts./A of AAtrex 4L or Princep 4L, or AAtrex 4L + Princep 4L combined in minimum-tillage and no-tillage systems in CO, IL, IN, IA, KS, KY, MN, MO, MT, NE, ND, SD, WI, WY. Apply the tank mixtures as a split or single treatment in those states and as indicated in the Dual 8E alone Preplant Surface Applied section of the label for corn. On coarse soils, apply 2 pts./A of Dual 8E and 3.2 pts./A of AAtrex 4L or Princep 4L, or AAtrex 4L + Princep 4L combined.

Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures. Apply Dual 8E + AAtrex or Princep, or Dual 8E + AAtrex + Princep using the appropriate rates from Table 1.

Table 1: Dual 8E + AAtrex or Princep, or Dual 8E + AAtrex + Princep, Preplant Incorporated or Preemergence - Corn

Soil texture	Broadcast rates per acre			
	Less than 3% organic matter		3% organic matter or greater	
	Dual 8E + AAtrex Nine-O** OR Princep Caliber® 90*	Dual 8E + AAtrex Nine-O** + Princep Caliber 90**	Dual 8E + AAtrex Nine-O* OR Princep Caliber 90*	Dual 8E + AAtrex Nine-O** + Princep Caliber 90**
<u>COARSE:</u>	1.25-1.5 pts. + 1.1-2.2 lbs.	1.25-1.5 pts. + .6-1.1 lbs. + .6-1.1 lbs.	1.5 pts. + 1.3-2.2 lbs.	1.5 pts. + .7-1.1 lbs. + .7-1.1 lbs.
<u>MEDIUM:</u>	1.5-2 pts. + 1.3-2.2 lbs.	1.5-2 pts. + .7-1.1 lbs. + .7-1.1 lbs.	2 pts. + 1.8-2.2 lbs.	2 pts. + .9-1.1 lbs. + .9-1.1 lbs.
<u>FINE:</u>	2 pts. + 1.8-2.2 lbs.	2 pts. + .9-1.1 lbs. + .9-1.1 lbs.	2-2.5 pts. + 1.8-2.2 lbs.***	2-2.5 pts. + .9-1.1 lbs.*** + .9-1.1 lbs.***
muck or peat	DO NOT USE			

*When using AAtrex 4L (or Princep 4L), AAtrex 4LC, or AAtrex 80W (or Princep 80W), use equivalent rates. One lb. of Nine-O or Caliber 90 equals 1.8 pts. of 4L (4LC) or 1.1 lb. 80W. Use Princep in preference to AAtrex when heavy infestations of crabgrass or fall panicum are expected. On soils having between 6% and 20% organic matter, Dual 8E may be used up to 3.5 pts./A in tank mix combination with 3.3 lbs./A of AAtrex Nine-O, or equivalent rates of AAtrex 80W or AAtrex 4L (4LC).

**When using the tank mixture of Dual 8E + AAtrex Nine-O + Princep Caliber 90, use equal rates of each as shown when heavy broadleaf weed infestations are expected. When heavy infestations of crabgrass or fall panicum are expected, use a 1:2 ratio of AAtrex + Princep instead of the 1:1 ratio given in Table 1 above. (Example: Total AAtrex Nine-O + Princep Caliber 90 = 1.2 lbs./A, use 0.4 lb. of AAtrex plus 0.8 lb. of Princep, respectively.) Refer to the asterisk (*) above for AAtrex 4L, 4LC and 80W, and Princep 4L and 80W conversions.

***For cocklebur, yellow nutsedge, and velvetleaf control on fine-textured soils above 3% organic matter, apply 2.25 lbs./A of AAtrex Nine-O, or equivalent rates of AAtrex 4L, 4LC or 80W, or the same total amount of AAtrex + Princep with 2-2.5 pts./A of Dual 8E.

2. Tank Mixture with AAtrex Postemergence

Weeds Controlled

barnyardgrass	<u>yellow foxtail</u>	prickly sida
(watergrass)	jimsonweed	purslane
crabgrass	kochia	ragweed
crowfootgrass	lambquarters	smartweed
fall panicum	mustard	velvetleaf
giant foxtail	pigweed	
green foxtail		

Weeds Partially Controlled: cocklebur, morningglory, yellow nutsedge.

Apply 1.5 pts./A of Dual 8E + 1.3 lbs./A of AAtrex Nine-O* on coarse soils, 2 pts./A of Dual 8E + 1.8 lbs./A of AAtrex Nine-O on medium soils, or 2-2.5 pts./A of Dual 8E + 1.8-2.2 lbs./A** of AAtrex Nine-O on fine soils. Apply this tank mixture before grass and broadleaf weeds pass the 2-leaf stage and before corn exceeds 5 inches in height. Application to weeds larger than the 2-leaf stage will generally give unsatisfactory control. Occasionally some corn leaf burn may result, but this should not affect later growth or yield. Do not apply this postemergence tank mixture in fluid fertilizer, or severe crop injury may occur.

*When using AAtrex 4L, AAtrex 4LC, or AAtrex 80W, use equivalent rates. One lb. of Nine-O equals 1.8 pts. of 4L (4LC) or 1.1 lb. 80W.

**For better control of cocklebur, morningglory, velvetleaf, and yellow nutsedge on fine-textured soils above 3% organic matter, apply 2.2 lbs./A of AAtrex Nine-O, or equivalent rate of AAtrex 80W or AAtrex 4L (4LC), with 2-2.5 pts./A of Dual 8E.

3. Tank Mixture with Bladex (Field Corn and Silage Corn Only)

In addition to the weeds controlled by Dual 8E alone, Dual 8E + Bladex, applied preplant incorporated or preemergence, also controls the following broadleaf weeds: jimsonweed, lambsquarters, mustard, ragweed, smartweed, cocklebur*, morningglory*, and velvetleaf*.

*Partially controlled.

Apply Dual 8E + Bladex preplant incorporated or preemergence using the appropriate rate from Table 2. Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures.

Table 2: Dual 8E + Bladex - Field Corn and Silage Corn Only - Broadcast Rates Per Acre

Soil texture	Percent organic matter in soil			
	Less than 1%	1-2.5%	2.5-4%	Over 4%
	Pts. Dual 8E + Qts. Bladex 4L*			
<u>COARSE:</u> Sand, loamy sand	DO NOT USE	1.25-1.5 + .8-1.4	1.5-1.75 + 1.4-1.6	2 + 1.75
<u>COARSE:</u> Sandy loam	1.25 + .8	1.25-1.5 + 1.2-1.4	1.5-1.75 + 1.4-1.75	2 + 2
<u>MEDIUM:</u>	1.5 + 1.2	1.5-1.75 + 1.4-1.75	1.75-2 + 1.75-2	2.25 + 2.25
<u>FINE:</u>	1.5 + 1.4	1.75-2 + 1.6-2	2-2.25 + 2-2.25	2.5 + 2.5
muck or peat soils	DO NOT USE			

*When using Bladex 80W, use equivalent rates. One qt. of 4L equals 1.25 lbs. of 80W.

4. Tank Mixture with Banvel

Preemergence

Use this tank mixture only on field corn which is flat-planted (no furrows) in IL, IN, IA, MN, NE, OH, SD, and WI.

In addition to the weeds controlled by Dual 8E alone, Dual 8E + Banvel, applied preemergence, also controls lambsquarters, ragweed, smartweed, cocklebur*, jimsonweed*, morningglory*, and velvetleaf*.

*Partially controlled.

Apply Dual 8E + Banvel preemergence. Broadcast 1 pt./A of Banvel with 2 pts./A of Dual 8E on medium soils, or with 2-2.5 pts./A of Dual 8E on fine soils. Do not apply on coarse soils or on soils with less than 2.5% organic matter. Apply this tank mixture to the soil surface at planting or after planting but before corn emerges. Avoid drift to soybeans or other desirable plants. Do not apply with aircraft. Plant corn at least 1.5 inches deep and apply behind planting equipment avoiding incorporation by the planter wheel or other seed covering device. Do not incorporate before corn emergence. If it is necessary to rotary hoe to break the soil crust, do not disturb the soil more than one-half inch deep.

Postemergence for Control of Pigweed (Mid-Atlantic states including DE, MD, PA, VA, and WV)

Apply 1.5-2.25 pts. of Dual 8E plus 0.5-1 pt./A of Banvel or 1-2 pt./A of Banvel II by ground equipment when pigweed plants are less than 3 inches tall and before corn exceeds 5 inches in height in a minimum of 20 gallons of spray per acre.

Use the lower rate on coarse textured and low organic matter soils. Use the higher rate on fine textured and high organic matter soils.

Note: Avoid drift to sensitive plants during application.

5. Tank Mixture with AAtrex or Princep, or AAtrex plus Princep, with Paraquat or Roundup for Minimum-Tillage or No-Tillage Systems

In minimum-tillage or no-tillage systems where corn is planted directly into a cover crop, stale seedbed, established sod, or previous crop residues, the contact herbicides paraquat or Roundup may be added to a tank mix of Dual 8E + AAtrex or Princep, or Dual 8E + AAtrex + Princep. When used as directed, the paraquat portion of the tank mixture controls most emerged annual weeds and suppresses many perennial weeds. Roundup combinations will control emerged annual and perennial weeds when applied as directed on the Roundup label. The Dual 8E + AAtrex or Princep, or Dual 8E + AAtrex + Princep portion of the tank mixture provides preemergence control of the weeds listed on this label in the tank mixture section for Dual 8E + AAtrex or Princep, or Dual 8E + AAtrex + Princep Preplant Incorporated or Preemergence.

Application: Apply before, during, or after planting, but before the corn emerges, at the rates specified below. Add paraquat or Roundup at the following broadcast rates:

Paraquat: 1-2 pts./A* per acre plus 8 oz. of X-77®
Spreader per 100 gals. of spray mixture. Use the lower rate for control of annual weeds less than 4 inches tall and the higher rate for weeds 4-6 inches tall. This treatment will not consistently control weeds taller than 6 inches.

Note: Do not apply combinations containing paraquat in suspension type liquid fertilizers as the activity of paraquat will be reduced.

*Based on products containing 2 lbs. active ingredient per gal.

Roundup: 1.5 qts./A for existing annual weeds, or 2-4 qts. per acre for existing perennial weeds. See the Roundup label for weeds controlled and recommended rates for specific weeds.

Apply in 20-60 gals. of water or fluid fertilizer per acre with ground equipment.

On coarse soils, apply 1.5 pts./A of Dual 8E with 1.3 lbs. AAtrex Nine-O* or Princep Caliber 90*, or with 0.7 lb. Nine-O** plus 0.7 lb. Caliber 90**. On medium soils, apply 2 pts./A of Dual 8E with 1.8 lbs. AAtrex Nine-O or Princep Caliber 90, or with 0.9 lb. Nine-O plus 0.9 lb. Caliber 90. On fine soils,*** apply 2-2.5 pts./A of Dual 8E with 1.8-2.2 lbs. AAtrex Nine-O or Princep Caliber 90, or with 0.9-1.1 lbs. of Nine-O plus 0.9-1.1 lbs. Caliber 90.

*When using AAtrex 4L (or Princep 4L), AAtrex 4LC, or AAtrex 80W (or Princep 80W), use equivalent rates. One lb. of Nine-O or Caliber 90 equals 1.8 pts. of 4L (4LC) or 1.1 lbs. of 80W. Use Princep in preference to AAtrex when heavy infestations of crabgrass or fall panicum are expected.

**When using the tank mixture of Dual 8E + AAtrex Nine-O + Princep Caliber 90, use equal rates of AAtrex and Princep as shown when heavy broadleaf weed infestations are expected. When heavy infestations of crabgrass or fall panicum are expected, use a 1:2 ratio of AAtrex + Princep instead of the 1:1 ratio given above. (Example: Total AAtrex Nine-O + Princep Caliber 90 = 1.8 lbs./A, use 0.6 lb. of AAtrex plus 1.2 lbs. of Princep, respectively.) Refer to the asterisk (*) above for AAtrex 4L, 4LC and 80W, and Princep 4L and Princep 80W conversions.

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***For cocklebur, yellow nutsedge, and velvetleaf control on fine-textured soils above 3% organic matter, apply 2.25 lbs./A of AAtrex Nine-O, or equivalent rates of AAtrex 80W or AAtrex 4L (4LC), or the same total amount of AAtrex + Princep, with 2-2 1/2 pts./A of Dual 8E.

E. Cotton - Dual 8E Alone - AR, LA, MS, NM, OK, TN, TX, and
Bootheel of MO

Application: Apply Dual 8E either preplant incorporated or preemergence at the rate of 1.5 pts./A on sandy loams*, 1.5-2 pts./A on medium soils, or 2 pts./A on fine soils. Do not use on sands and loamy sands. Preplant Incorporated: Apply to the soil and incorporate into the top inch of soil immediately before planting, at planting, or after planting but before crop or weeds emerge. Use a rolling cultivator or similar implement to uniformly incorporate not more than one inch deep. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application is expected. Where furrow irrigation is used, wet the top of the bed for best results. If the crop is to be planted on beds, apply and incorporate after bed formation. Cotton should be planted below the zone of incorporation; i.e., at least 1 inch on fine soils and 1.5 inches on coarse and medium soils. If incorporated prior to planting, use a planter that will result in a minimum of soil disturbance. Preemergence: Apply to the soil surface at planting, or after planting but before weeds or crop emerge.

Note: For best control of yellow nutsedge and suppression of seedling johnsongrass, apply Dual preplant incorporated at the maximum rate for the soil texture, whether applied alone or mixed with Caparol 4L.

*Use on sandy loam soils only in NM, OK, and TX.

Precautions: 1) Do not apply Dual on sand or loamy sand soils or in areas where water is likely to "pond" over the bed, or crop injury may occur. 2) Do not apply broadcast to furrow-planted cotton. 3) Do not apply on Taloka silt loam, or injury may occur.

F. Cotton - Dual 8E Combinations

1. Tank Mixture with Caparol 4L

Dual 8E tank mixtures with Caparol 4L may be applied in water or fluid fertilizer. When fluid fertilizer is used as a carrier for Dual, either alone or in combination with Caparol 4L, mix only the amount that will be sprayed in one operation. These mixtures should not be allowed to stand without agitation.

In addition to those weeds controlled by Dual 8E alone, Dual 8E + Caparol 4L, applied preplant incorporated or preemergence, also controls the following weeds: junglerice, wild oats, annual morningglory, groundcherry, hairy nightshade, lambsquarters, malva, mustard, prickly sida (teaweed), purslane, ragweed, and shallow-germinating seedlings of cocklebur and coffeeweed.

Application: Apply Dual 8E + Caparol 4L either preplant incorporated or preemergence using the appropriate rate from Table 3.
Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone above.

Table 3: Dual 8E + Caparol 4L - Cotton (NM, OK, TX)

Use areas	Soil texture	Broadcast rates per acre	
		Dual 8E	Caparol 4L
ALL	Sand, loamy sand	DO NOT USE	
Oklahoma, and Blacklands and Gulf Coast of Texas	loams	1.25-2 pts.	2.4 pts.
	clays	2 pts.	4.8 pts.
Rio Grande Valley of Texas	loams	1.25-2 pts.	3.2 pts.
	clays	2 pts.	4.8 pts.
New Mexico and High Plains, Rolling Plains, Edwards Plateau of Texas and Southwest Texas	sandy loam	1.25-1.5 pts.	1.6 pts.
	loams	1.25-2 pts.	2.4 pts.
	sandy clay loams	2 pts.	2.4 pts.
	other clay soils	2 pts.	3.2 pts.

Precautions: 1) To avoid concentration in the seed furrow, do not make broadcast applications of Dual + Caparol 4L to cotton planted in furrows more than two inches deep. Band applications may be made to cotton planted in furrows deeper than two inches, but band width should not exceed the width of the bottom of the furrow. 2) Do not apply on sand or loamy sand soils, or in areas where water is likely to "pond" over the bed, or crop injury may occur. 3) Do not apply in cut areas of newly leveled fields, or in areas of excess salt, or crop injury may result. 4) Do not apply to glandless cotton varieties, or crop injury may occur. 5) Do not apply on Taloka silt loam, or crop injury may occur.

Note: Do not feed treated forage to livestock, or graze treated areas.

Refer to the Caparol 4L label for further instructions and limitations.

G. Peanuts - Dual 8E Alone

Apply Dual 8E either preplant incorporated, postplant incorporated or preemergence using the appropriate rate specified below. Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures. Postplant Incorporated: Apply and shallowly incorporate Dual 8E into the soil after planting, but before peanut germination. Incorporation depth and incorporating implements must be kept above the seed or seed will be damaged.

Apply Dual 8E alone incorporated or preemergence at a broadcast rate of 1.5-3 pts./A per acre. Use the lower rate on soils relatively coarse-textured or low in organic matter.

Note: Dual 8E alone may be applied as directed after any of the following preplant incorporated herbicides when used according to their label recommendations: Balan at 3-4 qts./A; Treflan E.C. at 1 qt. A; or Vernar[®] at 2.33-3 pts./A.

H. Peanuts - Dual 8E Combinations

1. Tank Mixture with Balan L.C.

Dual 8E + Balan tank mixture applied preplant incorporated controls those weeds listed under Dual 8E Applied Alone and those weeds as listed on the Balan label.

Apply 1.5-3 pts./A of Dual 8E + 3-4 qts./A of Balan in a minimum of 10 gals. of spray volume per acre for ground application or in a minimum of 5 gals. of spray volume per acre for aerial application. Follow the recommended procedures for Balan on the Balan label for soil preparation and incorporation of this tank mixture. Apply and incorporate Dual 8E + Balan up to 14 days prior to planting.

Note: Follow all restrictions and precautions on the Balan label.

2. Tank Mixture and Sequential Application with Dyanap

In addition to the weeds controlled by Dual 8E alone, Dual + Dyanap, when applied as directed, also controls the following broadleaf weeds: bequarweed (bequarlice), chickweed, cocklebur, coffeeweed*, groundcherry, jimsonweed, lambsquarters, morning-glory, mustards, purslane, ragweed, shepherdspurse, sicklepod*, smartweed, velvetleaf, and wild sunflower.

*Partially controlled.

Tank Mixtures: Apply 1.5-3 pts./A of Dual 8E + 6 qts./A of Dyanap in 15-40 gals. of spray mixture. Use the lower rate of Dual 8E on soils relatively coarse-textured or low in organic matter; use the higher rate on soils relatively fine-textured or high in organic matter. Apply just as the peanuts begin to crack the ground or "cracking time." However, application may be made from planting time up to the time the majority of the peanut plants are in the cracking stage.

Note: (1) Peanut forage, hay, or mill cannot be fed to livestock if peanuts are treated with the Dual 8E + Dyanap tank mixture. (2) Only water may be used as a carrier for Dual 8E + Dyanap tank mixture.

Sequential Treatment: Apply Dual 8E or plant incorporated or preplant incorporated according to the directions for Dual 8E applied alone, then follow with a Dyanap treatment to cracking time treatment immediately thereafter as directed for use alone on that label.

If 1/2-1 inch of rainfall does not occur within 7 days after application, shallow incorporation (1/2-1 inch) is recommended. Cultivate if weeds develop. Refer to the Dyanap label for planting details and information on all other factors affecting its use.

Note: The tank mixture and sequential treatments with Dyanap may be applied as directed after any of the following preplant incorporated herbicides when used according to their label recommendations: Balan at 3-4 qts./A; Treflan E.C. at 1 pt./A; or Vernam at 2.33-3 pts./A.

I. Pod Crops - Dual 8E Alone

Pod crops including: garbanzo, great northern beans, kidney beans, lima beans, mung beans, navy beans, okra, peas (English*; southern peas, such as blackeye, pinkeye, crowder, etc.), pinto beans, and snap beans (green, wax, string).

Apply Dual 8E either preplant incorporated or preemergence using the appropriate rate specified below. Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures.

On coarse soils with less than 3% organic matter, apply 1.5-2 pts./A of Dual 8E or 2 pts./A if organic matter is 3% or greater. On medium soils, apply 2-2.5 pts./A of Dual 8E. On fine soils, apply 2-2.5 pts./A of Dual 8E if organic matter content is less than 3%, or 2.5-3 pts./A if organic matter content is 3% or greater.

*On English peas, use only preemergence applications. Do not use on English peas in northeastern U.S.

J. Pod Crops - Dual 8E Combinations

1. Tank Mixture and Sequential Applications with Eptam - Beans
(Green or Dry)

This mixture controls all weeds controlled by Dual 8E alone and by Eptam alone. Refer to the Dual 8E Applied Alone section of this label for weeds controlled by Dual 8E alone and to the Eptam label for weeds controlled by Eptam.

Apply Dual 8E and Eptam preplant incorporated using the appropriate rates specified below. Preplant Incorporated: Follow instructions for use of Dual 8E alone under Application Procedures. Sequential: Apply Eptam alone Preplant Incorporated, as specified on that label. Follow with a preemergence application of Dual, at rates specified for Dual 8E alone, during planting (behind the planter) or after planting before the weeds or crop emerge.

Refer to the General Information section of this label and to the Eptam label for weather, cultural practices, and all other precautions and limitations that affect performance of these products.

Apply 3.5-4.5 pts./A of Eptam 7E* with Dual 8E as specified. On coarse soils, apply 1.25 pts./A of Dual 8E if organic matter content is less than 3%, or 1.5 pts./A if organic matter content is 3% or greater. On medium soils, apply 1.5 pts./A of Dual 8E if organic matter content is less than 3%, or 2 pts./A if organic matter content is 3% or greater. On fine soils, apply 2 pts./A of Dual 8E per acre if organic matter is less than 3%, or 2-2.5 pts./A if organic matter is 3% or greater.

*Refer to the Eptam label for rate limits depending on geographical area, and for species and varietal restrictions.

Precaution: Do not exceed 4.5 pts./A Eptam 7E on small white beans or green beans grown on coarse-textured soils.

2. Tank Mixture and Sequential Applications with Premerge 3 - Beans (Field, Lima and Snap)

This mixture controls all weeds controlled by Dual 8E alone and by Premerge 3 alone. Refer to the Dual 8E Applied Alone section of this label for weeds controlled by Dual 8E alone, and to the Premerge 3 label for weeds controlled by Premerge 3.

Note: Only water may be used as a carrier for Dual 8E + Premerge 3 tank mixtures.

Preemergence: Using the appropriate rates as specified below, apply the tank mixture during planting (behind the planter) or after planting, but before weeds or crop emerge; or application may be delayed until just before or during early emergence when beans are in, but not beyond the "crook" stage. Sequential: Apply Dual 8E preplant incorporated as specified for Dual 8E alone. Follow with a preemergence or at emergence application of Premerge 3, or Dual may be applied preemergence as specified for Dual 8E alone, followed by an at emergence application of Premerge 3 according to rates and instructions specified on that label.

Refer to the General Information section of this label and to the Premerge 3 label for weather, cultural practices, and all other precautions and limitations that affect performance of these products.

Apply 1-1.5 qals./A of Premerge 3* with Dual 8E as specified. On coarse soils, apply 1.25 pts./A of Dual 8E if organic matter content is less than 3%, or 1.5 pts./A if organic matter content is 3% or greater. On medium soils, apply 1.5 pts./A of Dual 8E if organic matter content is less than 3%, or 2 pts./A if organic matter content is 3% or greater. On fine soils, apply 2 pts./A of Dual 8E if organic matter content is less than 3%, or 2-2.5 pts./A if organic matter content is 3% or greater.

*In the Premerge 3 rate range, use the high rate for preemergence application and the low rate for the at emergence application.

Precaution: Do not use on light sandy soils having little or no organic matter.

Note: Do not graze or feed forage or fodder from pod crops treated with Dual, Dual + Eptam, or Dual + Premerge 3 to livestock.

3. Tank Mixture with Treflan - Beans (Dry - Kidney, Navy, Pinto, etc., Lima and Snap)

Dual 8E + Treflan tank mix applied preplant incorporated controls those weeds listed under Dual 8E Applied Alone and those weeds listed for Treflan alone on the Treflan E.C. label. Dual + Treflan E.C. may be applied by ground or aerial equipment and incorporated up to 14 days prior to planting. Follow the recommended procedures on this label and on the Treflan E.C. label using equipment that provides uniform 2 inch incorporation.

Apply Dual + Treflan tank mix using the appropriate Dual 8E rate specified for Dual 8E alone, and the Treflan rate from the Dry Beans, and the Lima and Snap Beans sections of the Treflan E.C. label. Choose the product rate for the specific soil texture/organic matter classification and weed species expected.

Note: Follow all restrictions and precautions on the Treflan E.C. label and on the Dual alone portion of this label.

4. Tank Mixture with Amiben - Beans (White, Navy, Kidney, Pinto, and Lima)

Dual 8E + Amiben tank mix applied preplant incorporated or pre-emergence controls those weeds listed under Dual 8E Applied Alone and those weeds listed for Amiben alone on the Amiben label.

Apply Dual 8E and Amiben preplant incorporated or pre-emergence using the Dual rate as specified for Dual 8E alone, and the Amiben rate as specified on that label according to the soil texture and organic matter classification and weed species expected. Preplant Incorporated or Pre-emergence: Follow instructions for use of Dual 8E alone under Application Procedures.

Refer to the General Information section of this label and to the Amiben label for weather and cultural practices that affect performance of these products.

K. Potatoes - Dual 8E Alone

Apply Dual 8E either incorporated, preemergence, or after hilling/layby according to directions specified below for control of weeds listed under the General Information section. Within a rate range, use the lower rate on soils relatively coarse-textured or low in organic matter; use the higher rate on soils relatively fine-textured or high in organic matter. Effectiveness will be reduced if later cultural practices expose untreated soil.

Incorporated: Apply Dual 8E at 1.5-3 pts./A to the soil and incorporate into the top 3 inches before planting using a finishing disk, harrow, rolling cultivator, or similar implement. Planting and later cultural practices should not bring untreated soil to the surface. Postplant incorporated application may be made any time after planting to lay-off, but before potato emergence. Use an implement that evenly distributes Dual in the top 2 inches of soil. Do not drag out the seed pieces or sprouts with incorporation equipment.

Preemergence: Apply Dual 8E at 1.5-3 pts./A either after planting as a preemergence, delayed preemergence, after drag-off or hilling treatment, but before weed emergence. Up to 4 pts./A of Dual 8E alone may be used some soil conditions either in between 6 $\frac{1}{2}$ and 20 $\frac{1}{2}$.

After Hilling/Layby: Apply 1.5-3 pts./A Dual 8E after hilling at layby to control Dual-resistant weeds for the remainder of the growing season. This application will not control emerged weeds. It may be applied after a second Dual 8E application, but do not apply more than 4 pts./A of Dual 8E in a single crop season.

Notes: Do not use Dual 8E on wet soil. If soil, wet soil conditions exist after application, do not delay planting and/or reduce yield of the crop and/or soil fertility of the varieties. Do not use Dual 8E on potatoes in California only both as a preemergence and as a postemergence treatment.

Potatoes treated with Dual 8E should be planted with 10-60 days after planting to bear. In California, it should be 4 days after planting to bear. For more information, contact the California Potato Commission, California.

L. Potatoes - Dual 8E Combination:

1. Tank Mixture with Sencor or Lexone

In addition to those weeds controlled by Dual 8E alone, Dual 8E + Sencor or Lexone, applied preplant incorporated, postplant incorporated or preemergence, also controls the following broad-leaf weeds: cocklebur*, hairy nightshade*, hemp sesbania, jimsonweed*, lambsquarters, prickly sida, ragweed, smartweed, velvetleaf, Venice mallow, and wild mustard.

*Partially controlled.

Dual 8E may be applied in tank mix combination with or sequentially with any of the registered Sencor or Lexone formulations for broad spectrum control of weeds listed on each product label. Dual 8E at 1.5-3 pts./A plus the labeled Sencor/Lexone use rate may be used preemergence through after last hilling. Apply 1.5-2 pts./A of Dual 8E on coarse soils and 2-3 pts./A on other soil textures. Within this rate range, use the lower rate on soils relatively coarse-textured or low in organic matter; use the higher rate on soils relatively fine-textured or high in organic matter. Effectiveness will be reduced if later cultural practices expose untreated soil. Dual will not control emerged weeds.

Refer to the Sencor or Lexone labels for precautionary statements, restrictions, application information and weeds controlled.

Note: Do not use this tank mixture on muck or peat soils.

Precaution: Do not use Dual + Sencor or Lexone on potatoes in Kern County, California. Do not apply to sweet potatoes or yams.

Note: Potatoes treated with Dual 8E in tank mixture with Sencor or Lexone cannot be harvested within 60 days after application. Potatoes may not be harvested within 40 days after a layby application of Dual 8E.

2. Dual 8E + Lorox Tank Mixture (East of Rocky Mountains)

Dual 8E may be applied in a tank mix combination with any of the registered Lorox formulations as a preemergence broadcast application to potatoes. Apply to the soil surface after planting and before emergence of the crop or after final drag-off according to the rates specified in Table 4.

Table 4: Dual 8E + Lorox - Potatoes (East of Rocky Mountains)

Soil texture	Broadcast rate per acre			
	1 to less than 3% organic matter		3 to 5% organic matter	
	Dual (Pts.)	Lorox* (Lbs.)	Dual (Pts.)	Lorox* (Lbs.)
<u>COARSE:</u> Sandy loam	1.5	1-1.5	2	1.5-2
<u>MEDIUM:</u> Loam, silt loam, silt	2	1.5-2	2.5-3	2-2.5

*When using Lorox L, use equivalent rates. One pt. of Lorox L equals one lb. of Lorox wettable powder.

Note: Do not use on sands or loamy sands. Do not incorporate nor spray over the top of emerged potatoes. Only water should be used as a carrier for Dual 8E + Lorox L.

Refer to the General Information section of this label and to the Lorox label for precautionary statements, restrictions, application information and weeds controlled.

3. Tank Mixture with Premerge 3

Dual 8E may be applied in a tank mix combination with Premerge 3 as a preemergence broadcast application 1 to 3 days before potatoes emerge. Apply 1.5-3 pts./A of Dual 8E + 4-6 pts./A of Premerge 3.

Note: Do not use on light sandy soils with less than 1.0% organic matter. Only water should be used as a carrier for Dual 8E + Premerge 3.

Refer to the General Information section of this label and to the Premerge 3 label for precautionary statements, restrictions, application information and weeds controlled.

M. Safflowers - Dual 8E Alone

Apply Dual 8E either preplant incorporated or preemergence using the appropriate rate as specified below. Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures.

On coarse soils, apply 1.5-2 pts./A of Dual 8E if organic matter content is less than 3%, or 2 pts./A if organic matter is 3% or greater. On medium soils, apply 2-2.5 pts./A of Dual 8E. On fine soils, apply 2-2.5 pts./A of Dual 8E if organic matter content is less than 3%, or 2.5-3 pts./A if organic matter content is 3% or greater.

N. Grain or Forage Sorghum (Seed treated with Concep) - Dual 8E Alone

Preplant Surface Applied: Refer to instructions for use of Dual 8E under Application Procedures.

For minimum tillage or no-tillage systems only, Dual 8E may be applied up to 45 days before planting in CO, IL, IA, KS, MO, NE, and South Dakota. Use only split applications for treatments made 30-45 days before planting, with 2/3 of the broadcast rate applied initially and the remaining 1/3 at planting. Apply 2.25 pts./A of Dual 8E on medium soils or 2.5 pts./A on fine soils. Treatments less than 30 days before planting may be made either as a split or single application. Apply 2 pts./A of Dual 8E on coarse soils not more than 2 weeks before planting.

Under dry conditions, irrigation after application is recommended to move Dual 8E into the soil.

Preplant Incorporated or Preemergence: Refer to instructions for use of Dual 8E under Application Procedures.

Broadcast 1.5-2 pts./A of Dual 8E on coarse soils, 2-2.25 pts./A on medium soils, or 2-2.5 pts./A on fine soils.

Precautions: 1) If sorghum seed is not properly treated with Concep, Dual 8E will severely injure the crop. 2) Under high soil moisture conditions prior to sorghum emergence, injury may occur following the use of Dual 8E. The crop will normally outgrow this effect. 3) Do not use Dual 8E on sorghum grown under dry mulch tillage or injury may occur.

O. Grain or Forage Sorghum (Seed treated with Concep) - Dual 8E Combinations

Dual 8E tank mixtures with AAtrex, Milogard, or Igran may be applied in water or fluid fertilizer. Apply Dual 8E alone or in the tank mixtures only when the sorghum seed has been properly treated by the seed company with Concep.

Precautions: 1) Applications of Dual 8E + AAtrex, Dual 8E + Igran, or Dual 8E + Milogard on highly alkaline soils or on eroded areas where calcareous subsoils are exposed may cause sorghum injury. 2) If sorghum seed is not properly treated with Concep, Dual 8E + AAtrex, Dual 8E + Igran, or Dual 8E + Milogard may severely injure the crop. 3) Under high soil moisture conditions prior to sorghum emergence, injury may occur following the use of Dual 8E + AAtrex, Dual 8E + Igran, or Dual 8E + Milogard. The crop will normally outgrow this effect. 4) Do not use Dual 8E + AAtrex, Dual 8E + Igran, or Dual 8E + Milogard on sorghum grown under dry mulch tillage or injury may occur.

1. Tank Mixture with AAtrex

In addition to the weeds controlled by Dual 8E alone, Dual 8E + AAtrex also controls the following broadleaf weeds when applied preplant incorporated or preemergence: cocklebur, common purslane, hairy nightshade, lambsquarters, morningglory, ragweed, smartweed, and velvetleaf.

Preplant Surface Applied: Refer to instructions for use of Dual 8E under Application Procedures.

For minimum-tillage or no-tillage systems only, Dual 8E + AAtrex may be applied up to 45 days before planting in IL, IA, eastern KS, MO, NE and SD. Use only split applications for treatments made 30-45 days before planting, with 2/3 of the broadcast rate applied initially and the remaining 1/3 at planting. Apply 2.25 pts./A of Dual 8E + 1.7-2 lbs./A of AAtrex Nine-O* on fine soils with less than 1.5% organic matter, or apply 2.5 pts./A of Dual 8E + 2-2.2 lbs./A AAtrex Nine-O* on fine soils with 1.5% organic matter or greater. Treatments less than 30 days before planting may be made either as a split or single application. Under dry conditions, irrigation after application is recommended to move Dual 8E + AAtrex into the soil.

Do not use on coarse soils. Do not use on medium soils with less than 1.5% organic matter.

Preplant Incorporated or Preemergence: Refer to instructions for use of Dual 8E under Application Procedures.

On medium soils with 1.5% organic matter or greater, apply 1.5 pts./A of Dual 8E + 1.3 lbs./A of AAtrex Nine-O*. On fine soils with less than 1.5% organic matter, apply 1.5 pts./A of Dual 8E plus 1.3 lbs./A of AAtrex Nine-O; on fine soils with 1.5% organic matter or greater, apply 1.75-2 pts./A of Dual 8E plus 1.6-1.8 lbs./A of AAtrex Nine-O.

*When using AAtrex 80W, AAtrex 4L, or AAtrex 4LC, use equivalent rates. One lb. of AAtrex Nine-O equals 1.1 lb. of AAtrex 80W or 1.8 pts. of AAtrex 4L (4LC).

Do not use on coarse soils. Do not use on medium soils with less than 1.5% organic matter.

Do not use in NM, OK, or TX except in northeast OK and the Texas Gulf Coast and Blacklands areas. Do not apply preplant incorporated in AZ or the Imperial Valley of CA.

2. Tank Mixture with Irgan 80W (Grain Sorghum Only)

In addition to the weeds controlled by Dual 8E alone, Dual 8E + Irgan 80W also controls barnyard grass, hairy nightshade, Kochia, lambsquarters, morning glory, puncturevine, ragweed, and velvetleaf. Dual 8E + Irgan 80W may not give adequate control of foxtail millet and Florida prairie.

Apply Dual 8E + Irgan 80W preplant incorporated or preemergence using the appropriate rates specified below. Preplant Incorporated or Preemergence: Follow instructions for use of Dual 8E alone under Application Procedures.

On coarse soil,* apply 1.25 pts./A of Dual 8E + 1.5 lbs./A of Irgan 80W. On medium soils, apply 1.5-1.75 pts./A of Dual 8E + 2-2.2 lbs./A of Irgan 80W. On fine soils, apply 1.75-2 pts./A of Dual 8E + 2.2-2.5 lbs./A of Irgan 80W.

*On sandy loam, apply 1.25-1.5 pts./A of Dual 8E + 1.5-2 lbs./A of Irgan 80W.