

Pummel®

GROUP 2 | 15 HERBICIDE

For control of certain grasses and broadleaf weeds in soybeans

ACTIVE INGREDIENTS:	% BY WT.
Metolachlor:	55.49%
Imazethapyr:	2.77%
OTHER INGREDIENTS:	41.74%
TOTAL:	100.00%

Contains 5.0 lbs. of metolachlor and 0.25 lbs. of imazethapyr acid per gallon.

EPA Reg. No. 66222-251

EPA Est. No. 37429-GA-001^{RT}
37429-GA-002^{SD}

Letter(s) in lot number correspond(s) to superscript in EPA Est. No.

KEEP OUT OF REACH OF CHILDREN CAUTION/PRECAUCIÓN

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

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Harmful if swallowed. Harmful if absorbed through skin. Avoid contact with skin, eyes or clothing. Causes moderate eye irritation. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Wear protective eyewear, coveralls, socks, shoes, and gloves. This product may cause skin sensitization reaction in some people.

How can we help?
1-866-406-6262

Manufactured for:
Makhteshim Agan of North America, Inc.
d/b/a ADAMA
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604



HERBICIDE
ADAMA

FIRST AID

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact Prosar at 1-877-250-9291 for emergency medical treatment information.

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal. KEEP FROM FREEZING. DO NOT STORE BELOW 32° F.

PESTICIDE STORAGE: Store product in original container only.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL:

Nonrefillable Container (five gallons or less): Non-refillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. If recycling is not available, puncture or dispose of in a sanitary land-fill or incineration or if allowed by state and local authorities, by burning. If burned stay out of smoke.

SPILL, FIRE, LEAK or OTHER CHEMICAL EMERGENCY: In case of spill or leak on floor or paved surfaces, soak up with sand earth, or synthetic absorbent. Remove to chemical waste area.

For additional Precautionary Statements, Storage and Disposal, and Directions for Use, see inside of this booklet

Net Contents
2.5 gallons

14712
092515-1.0

PEEL BACK BOOK HERE

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For First Aid, precautionary, handling and use statements, see inside of this booklet.

**How can we help?
1-866-406-6262**



HERBICIDE

ADAMA

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PERSONAL PROTECTIVE EQUIPMENT (PPE)

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

Mixers, loaders, applicators and other handlers must wear:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyethylene and PVC or Viton
- Chemical-resistant footwear wear socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing or loading

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

Mixers and loaders supporting aerial applications are required to use closed systems. The closed system must be used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40CFR 170.240(d)(4)]. When using the closed system, the mixers' and loaders' PPE requirements may be reduced or modified as specified in the WPS.

ENGINEERING CONTROLS STATEMENTS

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

USER SAFETY RECOMMENDATIONS

Users should:

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

ENVIRONMENTAL HAZARDS

Do not apply directly to water or areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate. DO NOT clean equipment or dispose of equipment washwaters in a manner that will contaminate water resources.

GROUND WATER ADVISORY

This product contains chemicals which have the potential to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.

Imazethapyr has properties and characteristics associated with chemicals detected in ground water. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow,

low, may result in ground water contamination.

SURFACE WATER ADVISORY

Metolachlor has the potential to contaminate surface water through ground spray drift. Under some conditions, metolachlor may also have a high potential for runoff into surface water (primarily via dissolution in runoff water) for several months post-application. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, and areas overlying extremely shallow ground water, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters with vegetated filter strips, and areas overlying tile drainage systems that drain to surface water.

Care must be taken when using this product to prevent back siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates.

Check-valves or anti-siphoning devices must be used on all mixing and/or irrigation equipment.

Do not mix or load this product within 50 ft. of perennial or intermittent streams and rivers, natural or impounded lakes, and reservoirs. Do not mix, load or use this product within 50 ft. of all wells, including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 ft of any well are prohibited unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment rinse or wash-water, and rain water that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self-contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner incon-

sistent with its labeling.

This labeling must be in the possession of the user at the time of pesticide application. Observe all restrictions, precautions and limitations in this label. Do not use Pummel® other than in accordance with the instructions set forth in this label. The use of Pummel not consistent with this label can result in injury to crops, animals, or persons. Keep container closed to avoid spills and contamination.

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

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours. Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

For early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, wear:

- Coverall.
- Chemical-resistant gloves such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyethylene and PVC or Viton
- Shoes plus socks

IMPORTANT: FAILURE TO FOLLOW THE DIRECTIONS FOR USE, RESTRICTIONS AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

Steps to be taken in case material is released or spilled:

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing and wash affected skin area with soap and water.
- Wash clothing before re-use.
- Keep the spill out of all sewers and open bodies of water.

USE PRECAUTIONS

Not for sale, use or distribution in Nassau or Suffolk Counties, NY or in the state of California.

Only for use in certain states. Refer to the map in the "PUMMEL USE AREAS" section to determine if this product is allowed for use in your state.

Apply only one application per year.

USE RESTRICTIONS

- Do not apply under conditions which favor runoff or wind erosion of soil containing this product to non-target areas.
- Do not apply earlier than 45 days prior to planting soybeans.
- Do not apply through any type of irrigation equipment.
- Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.
- Do not graze or feed treated soybean forage, hay or straw to livestock.
- Do not apply products containing chlorimuron ethyl (Classic[®], Canopy[®], Lorox Plus[®], etc.); or imazaquin (Scepter[®], Squadron[®], Scepter[®]-O.T[®]., or Scepter[®] 70DG) or products containing imazethapyr (Pursuit[®], Pursuit[®] Plus, Thunder™, Thunder Master[®]) the same year as Pummel or injury to follow crops may occur.
- Do not tank-mix Pummel with clomazone containing herbicides (Command[®] or Commence[®]).

PRODUCT INFORMATION

Pummel is a selective herbicide which may be applied pre-plant, pre-emergence, or post-emergence for control or suppression of broadleaf weeds, grasses and sedges in soybeans. Pummel is a suspension concentrate formulation.

Certain germinating broadleaf weeds, grasses and sedges may be controlled or suppressed by soil residual activity from either pre-plant, pre-emergent or post-emergence applications if rainfall occurs shortly after application. The extent and consistency of soil activity is dependent upon soil characteristics, ground cover, amount of rainfall following application and the rate of Pummel used.

Pummel also kills weeds by root and/or foliage uptake and rapid

translocation to the growing points. Adequate soil moisture is important for optimum Pummel activity. When adequate soil moisture is present, Pummel will provide residual control of susceptible germinating weeds, activity on established weeds will depend on the weed species and the location of its root system in the soil.

Rainfall or overhead irrigation is necessary to move Pummel into the weed germination zone for effective weed control. The amount of rainfall or irrigation required following application depends on existing soil moisture, soil texture and organic matter content. Sufficient water to moisten the soil to a depth of 2 inches is normally adequate. If adequate moisture is not received within 7 days after treatment, a cultivation or alternative herbicide is recommended to control escaped weeds. When adequate moisture is received after dry conditions, Pummel will provide residual control of susceptible germinating weeds; activity on established weeds will depend on the weed species and the location of its root system in the soil.

Occasionally, internode shortening and/or temporary yellowing/ speckling of crop plants may occur following Pummel applications. These effects occur infrequently and are temporary. Normal growth and appearance should resume within 1 to 2 weeks.

SOYBEANS

PUMMEL HERBICIDE USE AREAS

Apply Pummel to soybeans only in the states or parts of states shaded in the map below: (In Minnesota Pummel may be applied south of state highway 210. In Texas, Pummel may be applied east of state highway 83).



Use Rate

Apply Pummel at a broadcast rate of 1.6 to 2 pints per acre for all methods of application:

1. Pre-plant surface (including minimum and no-till).
2. Pre-plant incorporated or pre-emergence.
3. Apply postemergence at 2 pt./acre.

SOIL TEXTURE	Broadcast Rates Per Acre	
	Less than 3% Organic matter	3% or more Organic Matter
	Pummel	Pummel
Course	Do not use	1.6 pt
Medium	2 pt	2 pt
Fine	2 pt	2 pt*
Muck or Peat (Soils with more than 20% organic matter)	Do not use	
*Add metolachlor (Parallel® PCS) to the spray mixture at 0.4 pt/A if Pummel is applied 15 to 45 days prior to planting for soil applications.		

Restrictions:

- Only make one application of Pummel during the season.
- A maximum of 1.25 lbs/A of Pummel can be applied per year.
- A maximum of 0.063 lbs/A of imazethapyr can be applied per year.
- A maximum of 2.49 lbs/A of metolachlor can be added per year.

SOIL APPLIED - GRASS and WEEDS CONTROLLED APPLICATION

Pummel may be applied in no-till, minimum tillage, or conventional tillage soybean production. Apply Pummel either pre-plant surface-applied (in no-till or minimum tillage), pre-plant incorporated, pre-emergence, or post-emergence. Apply Pummel up to 45 days prior to planting soybeans. Follow specific instructions as directed throughout the label. After Pummel is applied to susceptible weeds, they either die or growth stops and the weeds are no longer competitive with the crop. The weed killing activity of Pummel involves herbicide uptake by weed roots and rapid translocation to the growing points. Therefore, adequate soil moisture is important for optimum Pummel activity. When adequate soil moisture is present, Pummel will provide residual control of susceptible germinating weeds.

When applied as directed, Pummel will control or reduce competition from grass and broadleaf weeds listed below.

Preplant incorporated/pre-emergence control of weeds with Pummel

NOTE: C - Control, R - Reduced Competition

Broadleaf Weeds Controlled	Preplant Incorporated	Preemergence
Anoda, spurred	C	C
Beggarweed, Florida	R	R
Buffalobur	C	
Carpetweed	C	C
Cocklebur, common*	C	
Devilsclaw	C	
Galinsoga	C	C
Jimsonweed	C	
Kochia	C	C
Lambquarters, common	C	
Mallow, Venice	R	
Morningglory		
Entireleaf	R	
Ivyleaf	R	
Pitted	R	
Smallflower	C	C
Tall	R	
Mustard species	C	C
Nightshade		
Black	C	C
Eastern black	C	C
Hairy	C	C
Pigweed		
Palmer	C	C
Redroot	C	C
Smooth	C	C
Spiny	C	C
Poinsettia, wild	C	C
Puncturevine	C	C
Purslane, common	C	C
Pusley, common	C	C
Ragweed		
Common	R	
Giant	R	
Sida, prickly (teaweed)	C	
Smartweed		
Ladysthumb	C	C
Pennsylvania	C	C
Spurge		
Prostrate	C	C
Spotted	C	C
Sunflower, common	C	
Velvetleaf	C	C
Waterhemp, tall	C	C

*Cultivation and/or a post-emergence herbicide may be required for season-long control.

See Resistance Management section

NOTE: C - Control, R - Reduced Competition

Grass Weeds Controlled	Preplant Incorporated	Pre-emergence
Barnyardgrass	C	C
Crabgrass		
large	C	C
Smooth	C	C
Crowfootgrass	C	C
Cupgrass, Southwestern	C	
Foxtail		
Giant	C	C
Green	C	C
giant green	C	C
robust purple	C	C
robust white	C	C
Yellow	C	C
Goosegrass	C	C
Johnsongrass		
Seedling	C	C
Rhizome	R	
Millet		
Foxtail	C	C
wild proso	R	
Panicum		
Fall	C	C
Texas	R	
Sandbur, field	R	R
Shattercane	R	
Signalgrass, broadleaf	C	
Witchgrass	C	C
See Resistance Management section		

NOTE: C - Control, R - Reduced Competition

Sedges Controlled	Preplant Incorporated	Pre-emergence
Nutsedge		
Yellow	R	R
Purple	R	R
See Resistance Management section		

Post emergence control of broadleaf weeds with Pummel

Weed	Max Leaf Stage	Size (inches)
Alligator weed	4	1 to 3
Anoda, Spurred	4	1 to 3
Artichoke, Jerusalem	8	6 to 10
Buffalobur	R	1 to 3
Cocklebur, Common†	8	1 to 8
Jimsonweed	4	1 to 3
Kochia (non-ALS resistant)	4	1 to 3
Lambsquarters	R	1 to 2
Marshelder	4	1 to 3
Morningglory, entireleaf	2	1 to 2
Morningglory, ivyleaf	2	1 to 2
Morningglory, pitted	2	1 to 2
Morningglory, smallflower	4	1 to 3
Morningglory, tall	2	1 to 2
Mustard, Species	4	1 to 3
Nightshade, Black	4	1 to 3
Nightshade, Eastern Black	4	1 to 3
Nightshade, Hairy	4	1 to 3
Pigweed, Redroot	8	1 to 8
Pigweed, Smooth	8	1 to 8
Pigweed, Spiny	8	1 to 8
Ragweed, Common	R	1 to 3
Ragweed, Giant	R	1 to 3
Sage, Barnyard		1 to 3
Smartweed, Ladysthumb	4	1 to 3
Smartweed, Pennsylvania	4	1 to 3
Spurge, Prostrate	4	1 to 3
Spurge, Spotted	4	1 to 3
Starbur, Bristly	2	1 to 2
Sunflower, Common	4	1 to 3
Thistle, Canada	R	1 to 3
Velvetleaf†	4	1 to 3

R- Reduced competition

See **Resistance Management** section

Post emergence control of grass weeds with Pummel

Weed	Max Leaf Stage	Size (inches)
Barnyardgrass	3	1 to 3
Crabgrass, Large	3	1 to 3
Crabgrass, Smooth	3	1 to 3
Cupgrass, Woolly (emerged)	3	1 to 3
Foxtail, Giant	6	1 to 6
Foxtail, Green	3	1 to 3
Foxtail, Yellow	3	1 to 3
Johnsongrass, Seedling	6	1 to 8
Johnsongrass, Rhizome	R	6 to 12
Millet, Wild Proso	R	1 to 3
Red Rice	3	1 to 3
Shattercane	6	1 to 8
Signalgrass, Broadleaf	4	1 to 8
Nutsedge, Purple	R	1 to 3
Nutsedge, Yellow	R	1 to 3

R - Reduced competition

See **Resistance Management** section

HERBICIDE COMBINATIONS AND SEQUENTIAL PROGRAMS

Pummel is recommended as part of a planned two pass program with preemergence application followed by post emergence products. Pummel may also be applied post emergence as part of a two pass system. Pummel provides initial control and residual activity on a broad range of weeds while delivering multiple modes of action in diverse weed management system.

To improved post emergence control of common and giant ragweed as well as Pigweed, Waterhemp (Amaranthus species) which may be resistance to ALS inhibitor products, its it recommended that fomesafen (Rumble®, Flexstar®) be tank mixed at rates between 0.75 pt to 1.5 pt/a. Refer to label for specific recommendations and limitations.

Glyphosate may be mixed with Pummel to control emerged grass and broadleaf species which are not Glyphosate resistant for burn-down. Pummel will provide residual activity as defined in the pre-emergence section of this label to assist in season long weed control. Foliar activity of Pummel will be reduced if a canopy of crop or weeds intercept the herbicide prior to reaching the soil.

Foundation Treatment for Planned Two-pass Weed Control Programs:

Pummel may be applied in conventional, Libertylink soybeans and glyphosate-tolerant soybeans as a pre-emergence application to reduce competition from weeds for a period of up to 45 days when followed by a planned post-emergence herbicide application. Be sure

to consult the separate post-emergence section of this label for weeds controlled, optimum weed size, application rate, additional use directions, restrictions, precautions and limitation before use.

HERBICIDES THAT MAY BE APPLIED POSTEMERGENCE FOLLOWING PUMMEL

To provide additional control of certain weeds, Pummel can be applied alone, sequentially in tank mixtures with post-emergence herbicides. Post-emergence herbicides that may be applied with Pummel include: Aim®, Arrow®, Assure® II, Basagran®, Cobra®, FirstRate®, Flexstar, Fusilade® DX, Fusion®, Harmony® GT XP, Liberty® 280SL, Poast®, Poast Plus®, Resource®, Rumble, Roundup® Brands®, Select® and Ultra Blazer® or their generic equivalents.

¹Use on LibertyLink® soybean only.

²Use on glyphosate-tolerant soybeans only.

When applied in soil application in areas with heavy grass pressure, Pummel can be tank-mixed with a grass herbicide such as Prowl® or Triflurex® HPF for improved grass control.

See directions for addition of glyphosate (such as Roundup PowerMAX®) or paraquat (such as Gramoxone® or Parazone®) to the spray solution under the NO-TILL OR Reduced Tillage section. When Pummel is used in combination with another herbicide, refer to the respective label for rates, methods of application, proper timing, weeds controlled, restrictions and precautions. Always use in accordance with the more restrictive label restrictions and precautions.

Restrictions:

- Do not exceed labeled rates.
- Pummel cannot be mixed with any product with a label prohibiting such mixtures.

RESISTANCE MANAGEMENT

Pummel is both a Group 2 and a Group 15 herbicide. Any weed population may contain or develop plants naturally resistant to Group 2 and/or Group 15 herbicides. Weed species with acquired resistance to Group 14) and/or Group (15) herbicides may eventually dominate the weed population if Group 2 and/or Group 15 herbicides are used repeatedly in the same field or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species by MANA 125311 or other Group 2 and/or Group 15 herbicides.

To delay herbicide resistance consider:

- Avoiding the consecutive use of Pummel or other Group 2 or Group 15 herbicides that might have a similar target site of action, on the same weed species.
- Using tank mixtures or premixes with herbicides from different tar-

get site of action Groups as the involved products are all registered for the same use, have different sites of action and are both effective at the tank mix or prepack rate on the weed(s) of concern.

- Basing herbicide use on a comprehensive Integrated Pest Management (IPM) program.
- Monitoring treated weed populations for loss of field efficacy.
- Contacting your local extension specialist, certified crop advisors and/or manufacturer for herbicide resistance management and/or integrated weed management recommendations for specific crops and resistant weed biotypes.

APPLICATION PROCEDURES

Activation: Pummel must be activated by a small amount of soil moisture following application. In areas of low rainfall, a pre-emergence application should be followed with light irrigation of 0.25 to 0.5 inch of water. As with many surface-applied herbicides, weed control and crop tolerance may vary with rainfall and/or soil texture.

Restriction: Do not apply heavy irrigation immediately after application.

Crop Rotation: Restriction: Do not rotate to food or feed crops other than those listed on this label. See the **CROP ROTATION** section of this label for specific instructions on crop rotation. Crop injury may result if crop rotation guidelines are not followed.

Replanting: If replanting is necessary in fields previously treated with Pummel, the field may be replanted to soybeans. Rework the soil no deeper than the treated zone. Before replanting, refer to the specific crop use sections for directions, precautions and restrictions about replanting.

Application Rate Ranges: Where a rate range is provided within a soil texture or organic matter classification, use a lower rate on soils that are relatively coarse-textured and/or low in organic matter. Use a higher rate on soils that are relatively fine-textured and/or high in organic matter.

MIXING INSTRUCTIONS AND EQUIPMENT CLEANUP

Prepare no more spray mixture than is needed for the immediate operation. Thoroughly clean the spray equipment before using Pummel. Vigorous agitation is necessary to maintain uniformity of the spray mixture. Maintain maximum agitation throughout the spraying operation. Do not allow the spray mixture to stand overnight in the spray tank. Flush the spray equipment thoroughly following each use and apply the rinsate to a previously treated area.

Precaution: To avoid injury to sensitive crops, spray equipment used for Pummel applications must be drained and thoroughly cleaned with water before being used to apply other products.

Mixing and Loading: Use care when mixing or loading Pummel to prevent back-siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or reinstates. Check-valves or anti siphoning devices must be used on all mixing and/or irrigation equipment.

Do not mix or load Pummel within 50 ft. of perennial or intermittent streams and rivers, natural or impounded lakes and reservoirs. Do not mix, load or use Pummel within 50 ft. of all wells, including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of Pummel into or from pesticide handling or application equipment or containers within 50 ft. of any well are prohibited, unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment rinse or wash water, and rain water that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self-contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site.

Mixing Pummel in Water or In Liquid Fertilizers: When mixing Pummel alone, add 1/3 of the required amount of water or fluid fertilizer to the spray or mixing tank and then, with the agitator running, add Pummel to the spray tank. Continue agitation while adding the remainder of the water or fluid fertilizer. Begin application of the spray solution after Pummel has completely dispersed in the water or fluid fertilizer. Maintain agitation until all of the mixture has been applied.

APPLICATIONS WITH LIQUID FERTILIZER

Pummel can be applied to the soil in liquid fertilizers alone or in combination with Prowl, trifluralin (such as Triflurex HFP), metolachlor (such as Parallel). Follow all Pummel label directions regarding incorporation, timing of application, special instructions and precautions. Apply treatments in 20 or more gallons of liquid fertilizer per acre with

ground equipment. Always test the compatibility of Pummel with liquid fertilizer before mixing in the spray tank.

When mixing Pummel with tank mixtures, add 1/3 of the required amount of water or fluid fertilizer to the mix tank. Start the agitator running before adding any tank mix partners. In general, tank mix partners should be added in this order: products packaged in water-soluble packaging, wettable powders, wet table granules (dry flowerless), liquid flowerless, liquids such as Pummel, and emulsifiable concentrates. Always allow each tank mix partner to become fully dispersed before adding the next product. Provide sufficient agitation while adding the remainder of the water. Maintain agitation until all of the mixture has been applied.

APPLICATIONS IN COMBINATION WITH OTHER HERBICIDES

When Pummel is tank mixed with paraquat (such as Gramoxone, Parazone) (pre-emergence to soybeans only), or glyphosate (such as Roundup PowerMAX®), add Pummel to the tank first, then add paraquat (such as Gramoxone, Parazone) or Roundup. When paraquat (such as Gramoxone, Parazone) is included in a tank mixture, add 8 ounces of non-ionic surfactant per 100 gallons of spray mixture as the last ingredient in the tank.

Important: When using Pummel in tank mixtures, all products in water-soluble packaging should be added to the tank and mixed with plain water before any other tank mix partner, including Pummel. Allow the water-soluble packaging to completely dissolve and the product(s) to completely disperse before adding any other tank mix partner to the tank. Water-soluble packets will not properly dissolve in most spray solutions that contain fluid fertilizers.

If using Pummel in a tank mixture, observe all directions for use, crop/sites, use rates, dilution ratios, restrictions, precautions, and limitations that appear on the tank mix product label. The most restrictive label precautions and limitations must be followed.

Restriction: Do not exceed labeled rates.

Pummel is compatible with most common tank mix partners. However, the physical compatibility with tank mix partners should be tested before use. To determine the physical compatibility of Pummel with other products, use a jar test, as described below.

Pummel Compatibility Testing: To ensure compatibility of Pummel with other pesticides, perform a jar test before tank mixing. The following test assumes a spray volume of 25 gallons per acre. For other spray volumes, make appropriate changes in the ingredients.

Note: Nitrogen solutions or complete fluid fertilizers may replace all or part of the water in the spray for pre-plant surface, pre-plant incorporated, or pre-emergence applications only. Because liquid fertilizers vary, even within the same analysis, **always check compatibility with pesticide(s) before use.** Incompatibility of tank mixtures is more common with suspensions of fertilizer and pesticides.

Test Procedure:

1. Add 1.0 pint of carrier (fertilizer or water) to each of two one quart jars with tight lids.
Note: Use the same source of water that will be used for the tank mix and conduct the test at the temperature the tank mix will be applied.
2. To one of the jars, add 1/4 teaspoon or 1.2 milliliters of a compatibility agent— approved for this use, such as Unite® (1/4 teaspoon is equivalent to 2.0 pints per 100 gallons spray). Shake or stir gently to mix.
3. To both jars, add the appropriate amount of pesticide(s) in their relative proportions based on label rates. If more than one pesticide is used, add them separately with dry pesticides first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix.
4. After adding all ingredients, put lids on and tighten, and invert each jar ten times to mix. Let the mixtures stand 15 to 30 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 pesticide(s) in water before addition, or (b) add 1/2 the compatibility agent to the fertilizer or water and the other 1/2 to the emulsifiable concentrate or flowable pesticide before addition to the mixture. If incompatibility is still observed, do not use the mixture.
5. After compatibility testing is complete, dispose of any pesticide wastes in accordance with the **Storage and Disposal** section of this label.

Equipment Cleanup After Pummel Application: Before application of Pummel, the spray equipment must be cleaned. Follow the cleanup procedures specified on the labels of the previously applied products. If no clean-up directions are provided, follow the steps provided below for cleaning up after spraying Pummel.

After application of Pummel, equipment cleanup is very important. Because some crops, are sensitive to low rates of Pummel, special attention must be given to cleaning equipment before spraying a

crop other than those registered for use and on this label. Mix only as much spray solution as needed. Immediately after spraying, clean equipment thoroughly using the following procedure:

1. Flush tank, hoses, boom, and nozzles with clean water.
2. Prepare a cleaning solution of one gallon of household ammonia per 50 gallons of water. Many commercial spray tank cleaners may be used as well. Consult your MANA representative for a partial listing of approved tank cleaners and more information about proper tank cleaning procedures. Do not use chlorine-based cleaners such as Clorox®.
3. When available, use a pressure washer to clean the inside of the spray tank with this solution. Take care to wash all parts of the tank, including the inside top surface. Completely fill the sprayer with the cleaning solution to ensure contact of the cleaning solution with all internal surfaces of the tank and plumbing. Start agitation in the sprayer and thoroughly re-circulate the cleaning solution for **at least 15 minutes**. All visible deposits must be removed from the spraying system.
4. Flush hoses, spray lines, and nozzles for at least one minute with the cleaning solution.
5. Dispose of rinsate from steps 1 to 3 as described under the **Environmental Hazards** section of the **Precautionary Statements**.
6. Repeat steps 2 to 5.
7. Remove nozzles, screens, diaphragm check valves and strainers and clean separately in the ammonia cleaning solution after completing the above procedures.
8. Rinse the complete spraying system with clean water.

APPLICATION INSTRUCTIONS

Pummel provides effective weed control in conventional, minimum and no-till conservation tillage systems. Pummel can be applied as an early pre-plant, pre-plant, incorporated, or pre-emergence treatment in soybeans. The application method of choice will depend on the anticipated weed spectrum and the preference of the applicator. If weeds have emerged see instructions under NO-TILL OR REDUCED TILLAGE section.

NOTE: See instructions under use for applications made 15 to 45 days prior to planting and application to soils containing greater than 4% organic matter. Pummel controls weeds by uptake by weed roots, and translocation to the growing points where it stops weed growth.

Adequate soil moisture is required for optimum activity of Pummel for surface applications, rainfall or overhead irrigation is necessary to move Pummel into the weed germination zone. The amount of rainfall or irrigation required following application depends on existing soil moisture, soil texture and organic matter content. Sufficient water to

moisten the soil to a depth of 2 inches is normally adequate. If adequate moisture is not received within 7 days after a surface-applied treatment, then cultivation is recommended to control escaped weeds. When adequate moisture is received after dry conditions, Pummel will provide residual control of susceptible germinating weeds; activity on established weeds will depend on the weed species and the location of its root system in the soil.

In ridge-till plantings, Pummel may be applied early pre-plant or at soybean planting. If the herbicide is banded over the row, cultivation will be required for weed control between the beds. If cultivation is not possible or if weed pressure is heavy, apply Pummel in a broadcast application. Use proportionally less Pummel per acre in a band versus a broadcast application. If rainfall does not occur within 7 days of application, a rotary hoe incorporation will enhance weed control. See **PREEMERGENCE APPLICATIONS** and **PREPLANT INCORPORATED APPLICATIONS** for further information.

Pummel may be applied by ground spray equipment and aerial spray equipment. As discussed below, use a minimum of 10 gallons per acre of spray mixture for ground application and 5 gallons per acre for aerial application.

Prepare no more spray mixture than is needed for the immediate operation. Clean spray equipment is very important so be sure to thoroughly clean before mixing Pummel. Vigorous agitation is necessary to maintain uniformity of the spray mixture. Maintain maximum agitation throughout the spraying operation. Do not allow spray mixture to stand overnight in the spray tank. Flush the spray equipment thoroughly following each use and apply the rinsate to a previously treated area.

Surface Applications Made Before Planting

Apply Pummel up to 30 days prior to planting soybeans in minimum tillage or no-tillage systems. If sufficient rain does not occur before planting to activate Pummel, shallow incorporation before planting will enhance weed control.

Pre-emergence Applications

Apply Pummel during planting (behind the planter), or after planting but before crop emergence.

Pre-Plant Incorporated Applications

Pummel may be applied following land preparation and should be thoroughly incorporated to a depth of 1 to 2 inches. Application may be made up to 14 days prior to planting (early pre-plant). Incorporate prior to soybean planting and within 7 days of application. Mechanical incorporation can be achieved by the following equipment set to

incorporate the product to a depth of 1 to 2 inches:

- (a) Disk harrow
- (b) PTO-driven equipment (tillers, cultivators, hoes)
- (c) Rolling cultivator
- (d) Field cultivator
- (e) LELY-Roterra 5
- (f) Do-Alls

If soybeans are planted on beds, apply and incorporate after bed formation using PTO-driven equipment or a rolling cultivator. For optimum weed control Pummel should be maintained in the surface 1-2 inches of the finished bed.

Post-emergence Applications

Pummel will control emerged problem weed such as velvetleaf, smartweed, common cocklebur, and pigweeds. The weed size should not exceed 3" for velvetleaf and smartweed, and 8" for cocklebur and pigweeds. Add surfactant to the spray mixture at the rate of 1qt./100 gal. and a nitrogen based fertilizer (such as 28%N, 32%N or 10-34-0) at the rate of 1-2 qt./acre for optimum activity. Ammonium sulfate (spray grade) may be substituted for liquid fertilizer at the rate of 4 lbs. per acre. If other vegetation is present (not controlled by Pummel), apply paraquat or glyphosate (such as Roundup PowerMAX) in combination with Pummel. Refer to the respective labels for rates, methods of application, proper timing, weeds controlled, restrictions, and precautions.

Note: Adjust planters to ensure adequate seed coverage.

Restriction: Use ground equipment only.

From emergence up through the fifth trifoliolate leaf stage:

Apply Pummel as a postemergence treatment to soybeans from emergence up through the **fifth trifoliolate leaf stage**. Although Pummel applied alone may control or partially control certain emerged broadleaf weeds in glyphosate-tolerant soybeans, a tank mix with glyphosate (such as Roundup brands) may increase the spectrum of weeds controlled.

Pummel may be tank mixed with one or more of the following insecticides: Silencer®, Skyraider® Insecticide.

Refer to this label and the labels of the tank mix partners for application methods and timings, precautionary statements, restrictions, rates, and weeds or insects controlled.

Precaution: Necrotic spotting, bronzing, leaf crinkling or curling of soybean leaves may occur following postemergence applications, but soybeans soon outgrow these effects and develop normally.

Restrictions:

- Apply only in water as the carrier for postemergence applications.
- Do not use Pummel postemergence on soybeans that are under stress including but not limited to that caused by drought, insect, disease, or injury from cultivation.
- Do not exceed 2.0 pints per acre of Pummel in a single postemergence application.
- Do not apply as postemergent if a preplant surface, preplant incorporated, or preemergence application of S-metolachlor containing products has been applied.
- Make postemergence applications at least 90 days before harvest.
- Do not graze or feed treated forage or hay from soybeans to livestock following a postemergence application of Pummel.

No-Till or Reduced Tillage

Pummel is effective in controlling weeds in conservation tillage production systems. Apply Pummel treatments up to 45 days prior to planting (early pre-plant) but before the V3 crop stage. To ensure thorough coverage, use higher water volumes such as 20 gallons of water per acre. Use higher gallonage for fields with dense vegetation or heavy crop residues. Adjust the boom height to ensure proper coverage of weed foliage (according to the manufacturers recommendation). The nozzle spacing on the boom should be 20 inches. Use only standard flat-fan nozzle tips. Use ground equipment only.

Pummel will control emerged problem weed such as velvetleaf, smartweed, common cocklebur, and pigweeds. The weed size should not exceed 3" for velvetleaf and smartweed, and 8" for cocklebur and pigweeds. Add surfactant to the spray mixture at the rate of 1qt./100 gal. and a nitrogen based fertilizer (such as 28%N, 32%N or 10-34-0) at the rate of 1-2 qt./acre for optimum activity. Ammonium sulfate (spray grade) may be substituted for liquid fertilizer at the rate of 4 lbs. per acre. If other vegetation is present (not controlled by Pummel), apply paraquat or glyphosate (such as Roundup PowerMAX) in combination with Pummel. Refer to the respective labels for rates, methods of application, proper timing, weeds controlled, restrictions, and precautions.

Note: Adjust planters to ensure adequate seed coverage.

Restriction: Use ground equipment only.

SPRAYING INSTRUCTIONS

Sensitive crops include leafy vegetables, potatoes, sugarbeets and cotton.

Restriction: Do not apply when wind velocity is greater than 10 mph. or when spray may be carried to sensitive crops.

Ground Application: Apply Pummel alone or in tank mixtures by uniformly with properly calibrated ground spray equipment in 10 to 40 gallons of spray mixture per acre, unless otherwise specified. Calibrate sprayers often. If Pummel is applied in combination with wettable powder or dry flowable formulations, screens and strainers with a minimum 50-mesh size should be used.

If Pummel is applied in a band, calculate the amount of herbicide needed for band treatment by the formula below:

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

AERIAL APPLICATION:

Uniformly apply Pummel with properly calibrated aerial equipment in 5 or more gallons of spray mixture per acre. Avoid application under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur. To avoid injury to sensitive crops from drift, aerial applicators must adhere to the following SPECIAL AERIAL USE DIRECTIONS AND PRECAUTIONS: Nozzle height above ground must be a maximum of 10 feet above the crop with low drift nozzles at a maximum pressure of 40 psi. Nozzles must be pointed toward the rear of the aircraft. The downward angle of the nozzle should not be greater than 20 degrees.

To minimize wing-tip vortex roll, nozzles or spray boom must not be located any closer to the end of wing or rotor than three-fourths the distance from the center of the aircraft. Use a maximum spray pressure of 40 psi. A buffer zone must be established between the area to be sprayed and sensitive crops.

Applicator is responsible for any loss or damage which results from spraying Pummel in any manner other than what is listed on this label. In addition, applicator must follow all applicable state and local regulations and ordinances in regard to spraying.

Restriction: Do not spray when wind velocity is greater than 5 mph.

SPRAY DRIFT MANAGEMENT

Avoiding spray drift at the application site is the responsibility of the applicator and the grower. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions regarding spraying.

For ground applications:

- Apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

For aerial applications:

- Effectiveness is reduced if the distance of the outermost nozzles on the boom exceeds $\frac{3}{4}$ the length of the wingspan or rotor. Nozzles should always point backward parallel with the air stream and should not be pointed downward more than 45 degrees.

Where states have more stringent regulations, they must be observed.

The applicator should be familiar with and take into account the information covered in the **Spray Drift Management** section.

Importance of Droplet Size

The most effective way to reduce drift potential is to apply large droplets (> 150 - 200 microns). The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (See **Wind, Temperature and Humidity, and Temperature Inversions** sections of this label).

Controlling Droplet Size

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift

Boom Length

For some use patterns, reducing the effective boom length to less than $\frac{3}{4}$ of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height

Apply at a height greater than 10 feet above the top of the largest plants, unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

Wind

Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential.

Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

When making applications in low relative humidity, set up the equipment to produce larger droplets to reduce the effects of evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions

Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas

Apply Pummel only when the potential for drift to adjacent sensitive areas (e.g., non-target crops, bodies of water, residential areas, known habitat for threatened or endangered species) is minimal

(e.g., when wind is blowing away from the sensitive areas). Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin.

Application By Impregnated Dry Bulk Granular Fertilizers: Pummel may be impregnated or coated on many dry bulk granular fertilizers and applied with the fertilizers to control weeds. When applying Pummel with dry bulk fertilizers, follow all directions for use restrictions and precautions on the Pummel label regarding target crops, rates per acre, soil texture, application methods, and rotational crops.

It is the responsibility of the individual and/or company selling the herbicide/fertilizer mixture to comply with all individual state regulations relating to dry bulk granular fertilizer blending, registration, labeling, and application.

Prepare the herbicide/fertilizer mixture by using any closed drum, belt, ribbon, or other commonly used dry bulk fertilizer blender. Nozzles used to spray Pummel onto the fertilizer must be spaced to provide uniform spray coverage. Care should be taken to aim the spray onto the fertilizer only, avoiding the walls of the blender.

If the herbicide/fertilizer mixture is too wet, add a highly absorptive material, such as Agsorb® FG or Celatom MP-79®, or similar granular clay or diatomaceous earth materials, to obtain a dry, free-flowing mixture. Absorptive materials should be added only after the herbicide has been thoroughly blended into the fertilizer mixture. Best application results will be obtained by using a granule of 6/30 particle size or of a size similar to that of the fertilizer materials being used. Generally, less than 2% by weight of absorptive material will be needed. Avoid using more than 5% absorptive material by weight.

Calculate the amount of Pummel to be used per ton of fertilizer by using the following formula: 2,000/pounds of fertilizer desired per acre X number of pints Pummel required per acre = pints of Pummel per ton of fertilizer.

Application by Pneumatic (Compressed Air) Equipment: High humidity, high urea concentrations, low fertilizer use rates, and dusty fertilizer may cause fertilizer mixtures to build up or plug the distributor head, air tubes, or nozzle deflector plates. To minimize buildup, premix Pummel with ExxonMobil™ Aromatic 200 at a rate of 2.0 to 2.5 pints per gallon of Pummel. Aromatic 200 is a noncombustible/non-flammable petroleum product. Aromatic 200 may be used in either a fertilizer blender or through direct injection systems. Drying agents should not be used when using Aromatic 200.

When impregnating Pummel in a blender before application, a drier mixture can be obtained by substituting a drying agent for Aromatic

200. The use of Agorsb® FG or another drying agent of 6/30 particle size is recommended. Drying agents are not recommended for use with On-The-Go impregnation equipment.

Precautions: Mixtures of Pummel and Aromatic 200 must be used on dry fertilizer only. Poor results or crop injury may result if these mixtures are used in water or liquid fertilizer solutions for spraying applications.

Restrictions: To avoid potential for explosion,

- Do not impregnate Pummel on ammonium nitrate, potassium nitrate, or sodium nitrate, either alone or in blends with other fertilizers.
- Do not combine Pummel with a single superphosphate (1-20-0) or treble superphosphate (0-46-0).
- Do not use Pummel on straight limestone, since absorption will not be achieved. Fertilizer blends containing limestone can be impregnated.

Application of Impregnated Dry Bulk Granular Fertilizer: Apply 200 to 700 pounds of the herbicide/fertilizer mixture per acre. For best results, apply the mixture uniformly to the soil with properly calibrated equipment immediately after blending. Non-uniform application may also result in unsatisfactory weed control. In areas where conventional tillage is practiced, a shallow incorporation of the mixture into the soil is recommended to obtain satisfactory weed control. On fine- or medium-textured soils in areas where soil incorporation is not planned, i.e., reduced-tillage situations or in some conventional till situations, make applications approximately 30 days before planting to allow moisture to move the herbicide/fertilizer mixture into the soil. On coarse-textured soils, make applications approximately 14 days prior to planting.

Precaution: (1) To help avoid rotational crop injury, make applications as early as possible, since Pummel impregnated onto dry bulk fertilizers can be expected to last longer in the soil than Pummel applied as a spray in water or fluid fertilizer. (2) Uniform application of the herbicide/fertilizer mixture is essential in order to prevent possible crop injury to subsequent rotational crops.

PRECAUTIONS FOR PUMMEL USE ON SOYBEANS

When making an application of Pummel, observe all precautions and limitations on the Pummel label as well as on the labels of each product that might be used in tank mixtures. Tank mixture partners must be registered in states where they are used. Refer to and follow the label for each tank mix product used.

Restrictions:

- Do not apply under conditions which favor runoff or wind erosion of soil containing this product to non-target areas.
- Avoid treating powdery dry or light sand soils when conditions are favorable for wind erosion. Under these conditions, the soil surface

should first be settled by rainfall or irrigation.

- Do not apply to impervious substrates, such as paved or highly compacted surfaces.
- Do not use tailwater from the first flood or furrow irrigation of treated fields to treat non-target crops, unless at 0.5 inch of rainfall has occurred between application and the first irrigation.

CROP ROTATION

Rotational Crop Restrictions

The following crops may be planted after applying Pummel at the specified rate.

Note: See exceptions to rotational crop restrictions immediately following this chart.

Crop	Months
Beans, Lima (Succulent or Dried) Corn, Clearfield hybrids only (resistant to imazethapyr) Cowpeas Peanuts Peas (Blackeyed, Dried, Garden, Green, Process, Southern) Soybeans	Immediately
Beans (Green, Snap)	2
Alfalfa Beans (Dry, Mung)	4
Beans (Broad) Chickpeas (Garbanzo beans) Clearfield wheat Lupines (Grain, Sweet, White) Wheat ¹	4.5
Corn (Field) Field corn grown for seed ^{1,2}	8.5
Clover	9
Barley ²	9.5
Corn ² (Pop, sweet) Cotton Lettuce Oats Rye (in North Dakota and Minnesota north of Hwy 210) Safflower Sorghum (Grain, milo) Sunflower	18
Flax Potatoes	26

Crop	Months
Canola ¹ (Rape seed), Carrot Celery Cole crop Flax Garlic Onions Spinach Sugarbeets Tomatoes	40
<p>¹Several seed companies have tested a wide range of inbred seed corn varieties for selectivity to Pummel soil residual and have reported good crop safety. However, due to the proprietary nature of seed production, MANA of NA has not been given access to the inbred data. Growers are directed to contact the seed company for information and recommendations for planting corn grown for seed in field treated with Pummel the previous year. Since growing conditions, environmental conditions and grower practice are beyond the control of MANA, results and consequences related to planting seed corn inbreds into field treated previously with Pummel shall be assumed by the user.</p> <p>²See Exceptions to Rotational Crop Restrictions section</p>	

Restriction: Do not plant other rotational crops prior to 18 month after a Pummel application.

If soybeans are furrow irrigated, till the soil prior to planting winter wheat or barley. The beds should be broken up and the soil mixed with tillage equipment set to cut 4-6 inches deep.

Precautions

- To avoid injury to rotational alfalfa or clover, do not apply more than 1 1/4 lbs a.i. of metolachlor per acre of Pummel) pre-emergence (including preplant surface, preplant incorporated, postplant incorporated, etc.) or other postemergence applications of Pummel
- Use of Pummel herbicide in accordance with label directions is expected to result in normal growth of rotational crops in most situations; however, various environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product and therefore, rotational crop injury is always possible.
- In the event of a crop loss due to weather, soybeans can be replanted. DO NOT work the soil deeper than 2 inches.

Restrictions

- Pummel Alone:** If crop treated with Pummel is lost, any crop on this label may be replanted immediately. Do not make a second

broadcast application of Pummel. If the original application was banded and the second crop is planted in the untreated row middles, a second banded treatment may be applied.

- There must be an interval of at least 90 days between an application of Pummel and soybean harvest.
- Only rotational crops harvested at maturity may be used for feed or food.

Pummel Tank Mixtures: For rotational crop restrictions for Pummel used in tank mixtures, refer to all precautions/restrictions listed above and to the respective product labels of any mixing partner(s) for additional statements/restrictions.

EXCEPTIONS TO ROTATIONAL CROP RESTRICTIONS

ALL CROPS

Full rate application of products containing chlorimuron ethyl (Classic herbicide, etc.), chloransulam-methyl (FirstRate), flumetsulam (Hornet[®]), imazaquin (Scepter 70 DG herbicide) or products containing imazethapyr (Pursuit Plus EC herbicide) the same year as Pummel may increase the risk of injury to sensitive follow crops. Consult labels for labeled uses of these products in combinations.

Restriction: Only rotational crops harvested at maturity may be used for feed or food.

BARLEY

(North Dakota only). Barley may be planted 18 months following a Pummel application.

BARLEY

(Delaware, Indiana, Kentucky, Maryland, New Jersey, Ohio, Pennsylvania, and Virginia only). Barley may be planted four months following Pummel application in these states.

CLEARFIELD[®] CANOLA

CLEARFIELD varieties of canola, such as Pioneer[®] 45A71 and Pioneer 46A76, may be planted as a rotational crop the next season after an application of Pummel at label rates on registered crops.

CORN INBRED LINES

Corn inbred seed lines may be planted the year following an application of Pummel.

SWEET CORN AND POPCORN VARIETIES

(Illinois, Indiana, Iowa, Minnesota, Ohio, Tennessee, and Wisconsin only). Sweet corn and popcorn varieties may be planted the year following an application of Pummel. Some sweet corn and popcorn varieties may be injured when planted at less than 18 months follow-

ing an application of Pummel. Before planting sweet corn for processing, contact the processor company for information and recommendations regarding the tolerance of sweet corn varieties planned for fields treated with Pummel the previous year. Before planting popcorn, contact the popcorn company for information and recommendations regarding the tolerance of popcorn varieties planned for fields treated with Pummel the previous year.

Precaution: Stunting and maturity delay or other adverse effects may result when sweet corn or popcorn are planted following Pummel use.

Restriction: Do not plant fresh market sweet corn varieties prior to 18 months after Pummel use.

CERTAIN VEGETABLE CROPS

(Alabama, Delaware, Florida, Georgia, Indiana, Kentucky, Maryland, New Jersey, North Carolina, Pennsylvania, South Carolina, and Virginia only). The following crops may be planted 18 months following the last application of Pummel: Bahiagrass, cabbage, cantaloupe, cucumber, Irish potato, onion, sweet potato transplants, sweet pepper transplants, tomato transplants, and watermelon.

COTTON Rotation Following Application of Pummel to Alfalfa or Clover Grown for Seed		Rotation Interval (months)
Irrigation and/or Precipitation Requirements	Less than 3 acre feet or 36 inches of water	40
	Greater than or equal to 3 acre feet or 36 inches of water	18
These guidelines DO NOT apply to Pummel applications made to alfalfa or clover grown for hay or forage (use the 18-month rotational interval)		

(North Carolina, South Carolina and Virginia only)

Restrictions:

Cotton may be planted nine and one-half months after an application of Pummel if **ALL** of the following criteria are met:

- Pummel is applied to peanuts only.
- Soil texture is sandy loam or loamy sand only.

Greater than 16 inches of rainfall and/or irrigation is received following application of Pummel through October of the application year.

WHEAT

Wheat may be planted 3 months following a Pummel application in areas east of Interstate Highway I-35.

NON-CLEARFIELD® WHEAT

Rotational Interval based on pH, Moisture and Tillage (North Dakota)		Moltboard Plowing	
		No	Yes
pH and Rainfall Requirements	>10 inches R+I AND pH >6.2	4 months	4 months
	<10 inches R+I OR pH <6.2	15 months	4 months

R+I = Rainfall and overhead irrigation from the time of Pummel application up until time of wheat planting. Does not include furrow or flood irrigation.

If the rainfall or pH requirements are not fully met, and non-CLEARFIELD wheat is planted prior to the specified rotation interval, injury may be reduced by tillage, such as deep disking (greater than 6 inches deep) after crop harvest but prior to November 1. The possibility of injury to non-CLEARFIELD wheat planted the next season increases if less than normal precipitation occurs within the first two months after Pummel application.

EDIBLE LEGUMES

When Pummel is applied at no more than 1.5 pt/a in the use areas described, the following rotational restrictions apply:

- Chickpeas, lentils and peas may be planted anytime following a Pummel application.
- Snap beans may be planted 3 months and barley 4 months following an application of Pummel.

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal. KEEP FROM FREEZING. DO NOT STORE BELOW 32° F.

PESTICIDE STORAGE: Store product in original container only.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Non-refillable Container (5 gallons or less): Non-refillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container $\frac{1}{4}$ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. If recycling is not available, puncture or dispose of in a sanitary landfill or incineration or if allowed by state and local authorities, by burning. If burned stay out of smoke.

Non-refillable Container (greater than five gallons): Non-refillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container $\frac{1}{4}$ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. 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.

Refillable Container (greater than 55 gallons): Refill this container with Pummel (containing the active ingredients metolachlor and imazethopyr) only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

Refilling or Returning Containers:

If refilling or returning container is planned, end users are not authorized to remove tamper evident cables, one way valves or clean container.

Recycle or Disposal of Containers:

End users are authorized to remove tamper evident cable as required to remove the product from the container unless the container is equipped with one way valves and refilling or returning is planned. Instructions for container rinsing and either recycling or disposal are as follows:

Top Discharge IBC, Drums, Kegs (e.g. Snyder 120 Next Gen, Bonar B120, drums and Kegs)

Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To triple rinse the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Rinse all interior surfaces. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

SPILL, FIRE, LEAK OR OTHER CHMICAL EMERGENCY: In case of spill or leak on floor or paved surfaces, soak up with sand earth or synthetic absorbent. Remove to chemical waste area.

LIMITATION OF WARRANTY AND LIABILITY

Read the entire directions for use, conditions of warranties and limitations of liability before using this product. If terms are not acceptable, return the unopened product container at once. By using this product, user or buyer accepts the following **CONDITIONS, DISCLAIMER OF WARRANTIES, and LIMITATIONS OF LIABILITY.**

CONDITIONS: The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the 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 ADAMA. All such risks shall be assumed by the user or buyer.

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Manufactured for:

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d/b/a ADAMA

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Form: CS 006B - 11/8/2011

ARTWORK IS APPROVED

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