21001
AUGHNESSEY NO.

REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 11/30/82 OUT 12/20/82

LE OR REG. NO. 7969 - LI

TITION OR EXP. PERMIT NO.

TE OF SUBMISSION 11/22/82

TE RECEIVED BY HED 11/30/82

REQUESTED COMPLETION DATE 3/20/83

B ESTIMATED COMPLETION DATE 3/14/83

ACTION CODE/TYPE OF REVIEW 111 New Chemical Food/Feed Use;
Incremental Risk Resubmission

PE PRODUCT(S): I, D, (H,) F, N, R, S

TA ACCESSION NO(S). N/A

ODUCT MANAGER NO. 25 - Taylor/Dzuiban

ODUCT NAME(S) Poast

MPANY NAME BASF Wyandotte Corp

BMISSION PURPOSE Add cotton use to label

AUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
121001	2-[1-(ethoxyimino)butyl] -5-[2-ethylthio)propyl] -3-hydroxy -2- cyclohexen -1- one	18
	Inert Ingredients	82
	Total	100

100 Pesticide Use

For controlling of annual and perennial grass in cotton.

100.1 Application Methods/Directions/Rates

Directions for use

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

General Information

Poast® is a selective broad spectrum postemergence herbicide for control of annual and perennial grass weeds in cotton. Poast does not control sedges or broadleaf weeds.

Cotton at all stages of growth is tolerant to Poast.

Since all grass crops such as sorghum, corn, small grains, rice, and turf are extremely susceptible to Poast, avoid all direct or indirect contact with any grass crop.

Control Symptoms: Poast rapidly enters the plant through the foliage and translocates throughout the plant. Control symptoms exhibited by the grass plant progress from a slowing or stopping of growth (generally within two days), to reddening of the foliage and to leaf tip burn. Subsequently, burn back of the foliage occurs. These symptoms will generally be observed within three weeks depending on environmental conditions.

Timing of Application

Apply Poast herbicide postemergence to actively growing grasses when they are within the recommended stage of growth given in the rate tables.

A timely cultivation no sooner than 7 days after Poast application may aid in providing season-long control.

Do not make applications to grasses under stress, such as stress due to lack of moisture or herbicide injury, as unsatisfactory control will result.

Water Volume and Spray Pressure

Apply Poast as follows to ensure thorough spray coverage of foliage.

Ground Equipment: Use a minimum of 10 gallons of water per acre with a minimum of 40 psi pressure at the nozzle. Increase water volume to 20 gallons per acre and increase pressure to a minimum of 60 psi if grass foliage is dense.

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Use standard high pressure pesticide hollow cone or flat fan nozzles.

Do not use flood or whirl chamber nozzles.

Do not use selective application equipment such as recirculating sprayers, wiper applicators, or shielded applicators.

Air Equipment: Use a minimum of 5 gallons of water per acre. Increase water volume to 10 gallons per acre if grass foliage is dense.

Addition of oil Concentrate

ALWAYS add a nonphytotoxic oil concentrate to the spray solution at 2 pints per acre for ground and aerial applications. The oil concentrate must contain only EPA exempt ingredients. Since the exact composition of suitable products will vary; see your supplier for a list of oil concentrates recommended by BASF Wyandotte Corporation.

Restrictions and limitations

Do not make applications to grasses under stress, such as stress due to lack of moisture or herbicide injury, as unsatisfactory control will result.

Do not apply if rainfall is expected within one hour following application as grass control will be unsatisfactory.

Do not apply Poast to cotton within 40 days of harvest.

Do not mix or apply Poast with any other pesticide, additive, or fertilizer except as specifically recommended on this labeling.

RECOMMENDATIONS FOR GRASS CONTROL
STATES OTHER THAN CALIFORNIA, ARIZONA, AND NEW MEXICO

°Apply to actively growing grasses.
°Follow water volume and spray pressure recommendations.
°Apply only to grasses at the size indicated below.
°A timely cultivation no sooner than 7 days after Poast application may aid in providing season-long control.
°ALWAYS ADD 2 PINTS PER ACRE OF OIL CONCENTRATE.

ANNUAL GRASSES

For broad spectrum control of annual grasses in Group A below, use 1 pint of Poast per acre. When weed populations include additional grasses in Groups B and/or C, increase the rate of Poast as indicated below. If subsequent flushes of annual grasses emerge after the first application, make additional applications at the same rate.

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Group	Grass Species	Plant Height	Poast Rate Per Acre	Oil Concentrate Rate Per Acre Ground and Air
A	Barnyardgrass (Echinochloa crus-galli) Broadleaf Signalgrass (Brachiaria platyphylla) Fall Panicum (Panicum dichotomiflorum) Foxtails Giant (Setaria faberi) Green (Setaria viridis) Yellow (Setaria lutescens) Johnsongrass, Seedling (Sorghum halepense) Junglerice (Echinochloa colonum) Sprangletop (Leptochloa filiformis) Texas Panicum (Panicum texanum) Witchgrass (Panicum capillare)	2-8"	1 pt.	2 pts.
	Goosegrass (Eleusine indica) Large Crabgrass (Digitaria sanguinalis) Smooth Crabgrass (Digitaria ischaemum)	Up to 4"		
	Wildcane/Shattercane (Sorghum bicolor)	6-18"		
B	Volunteer Corn (Zea mays)	6-18"	1 1/4 pts.	2 pts.
C	Volunteer Cereals Barley (Hordeum vulgare) Oats (Avena sativa) Rye (Secale cereale) Wheat (Triticum aestivum)	Up to 6"	2 pts.	2 pts.
	Itchgrass (Rottboellia exaltata) Red Rice (Oryza sativa)	Up to 4"		

PERENNIAL GRASSES

Grass Species	Application Time	Poast Rate Per Acre	Oil Concentrate Rate Per Acre Ground and Air
Bermudagrass (Cynodon dactylon) °First Application	Before plant diameter exceeds 6" or leaf height above ground exceeds 1"	2 1/2 pts.	2 pts.
°Subsequent Applications If regrowth occurs or new plants emerge.	1-4" length of regrowth or new plants.	1 1/2 pts.	2 pts.
Johnsongrass, rhizome (Sorghum halepense) For best results, rhizomes should be thoroughly fragmented (less than 6"). °First Application	15-20" height	1 1/2 pts.	2 pts.
°Subsequent Applications If regrowth occurs or new plants emerge.	6-10" height	1 pt.	2 pts.

RECOMMENDATIONS FOR GRASS CONTROL
CALIFORNIA, ARIZONA, AND NEW MEXICO

Apply to actively growing grasses.
° Follow water volume and spray pressure recommendations.
°Apply only to grasses at the size indicated below.
°A timely cultivation no sooner than 7 days after Poast application may aid in providing season-long control.
°For best results, apply Poast 2-4 days after an irrigation.
°ALWAYS ADD 2 PINTS PER ACRE OF OIL CONCENTRATE.

ANNUAL GRASSES

For broad spectrum control of annual grasses in Group A below, use 1 1/2 pints of Poast per acre. When weed populations include additional grasses in Group B, increase the rate of Poast as indicated below. If subsequent flushes of annual grasses emerge after the first application, make additional application at the same rate.

Group	Grass Species	Plant Height	Poast Rate Per Acre	Oil Concentrate Rate Per Acre Ground and Air
A	Barnyardgrass (Echinochloa crus-galli) Broadlead Signalgrass (Bachiaria platyphylla) Fall Panicum (Panicum dichotomiflorum) Foxtails Giant (Setaria faberi) Green (Setaria viridis) Yellow (Setaria lutescens) Johnsongrass, Seedling (Sorghum halepense) Junglerice (Echinochloa colonum) Sprangletop (Leptochloa filiformis) Texas Panicum (Panicum texanum) Witchgrass (Panicum capillare)	2-8"	1 1/2 pts.	2 pts.
	Goosegrass (Eleusine indica) Large Crabgrass (Digitaria sanguinalis) Smooth Crabgrass (Digitaria ischaemum)	Up to 4"		
	Wildcane/Shattercan (Sorghum bicolor)	6-18"		
B	Volunteer Cereals Barley (Hordeum vulgare) Oats (Avena sativa) Rye (Secale cereale) Wheat (Triticumm aestivum)	Up to 6"	2 pts.	2 pts.

PERENNIAL GRASSES

Grass Species	Application Time	Poast Rate Per Acre	Oil Concentrate Rate Per Acre Ground and Air
Bermudagrass (Cynodon dactylon) °First Application	Before plant diameter exceeds 6" or leaf height above ground exceeds 1".	2 1/2 pts.	2 pts.
°Second Application	21 days after first application.	1 1/2 pts.	2 pts.
°Third Application If regrowth occurs or new plants emerge.	1-4" length of regrowth or new plants.	1 1/2 pts.	2 pts.
Johnsongrass, rhizome (Sorghum halepense) For best results, rhizomes should be thoroughly fragmented (less than 6"). °First Application	6-10" height	2 1/2 pts.	2 pts.
°Subsequent Applications If regrowth occurs or new plants emerge.	4-8" height	1 1/2 pts.	2 pts.

Spot Or Small Area Treatment

For control of rhizome johnsongrass using knapsack sprayers or high volume spray equipment utilizing hand guns or other suitable nozzle arrangements, make a 1% solution of Poast in water. A recommended oil concentrate must also be used at a concentration of 1%.

Apply to foliage of rhizome johnsongrass on a spray-to-wet basis. Spray coverage should be uniform and complete. Do not spray to point of run off.

Prepare the desired volume of spray solution by mixing the amount of Poast and the amount of oil concentrate in water according to the table below.

	AMOUNT TO BE ADDED TO OBTAIN A 1% SPRAY SOLUTION	
DESIRED SPRAY SOLUTION VOLUME	POAST	OIL CONCENTRATE
1 gallon	1 1/4 fl. oz.*	1 1/4 fl. oz.
25 gallons	1 qt.	1 qt.
50 gallons	2 qts.	2 qts
100 gallons	4 qts.	4 qts.

*2 tablespoons = 1 fl. oz.

100.2 Purpose of Submission

To add cotton to the label

100.3 Precautionary Labeling

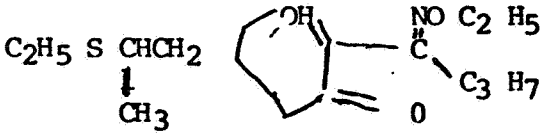
Caution! Keep out of reach of children. Cause moderate eye and skin irritation. Avoid contact with eye, skin or clothing. Wash thoroughly with soap and water after handling.

101 Physical and Chemical Properties

101.1 Chemical Name

2-[1-(ethoxyimino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one

101.2 Structural Formula



101.3 Common Name

Sodium salt of bentazon

101.4 Trade Name

Poast

101.5 Molecular Weight

240.3

101.6 Solubility

Water	0.05
Acetone	150.7
Ethanol	86.1
Olive oil	2.7

102 Behavior in the Environment

102.1 Soil

Poast will photodegrade on soil surfaces, with a half-life of approximately 3.6-3.7 hours.

Poast degrades in loamy sand soil under aerobic, sterile/ aerobic and anaerobic conditions. Microbial activity is primarily responsible for its disappearance. Half-life in loamy sand was determined to be 4-5 days and in loam about 11 days.

Laboratory soil leaching data shows that aged Poast residues could leach in soils. This is supported by the low soil adsorption coefficient (K = 0.3039 and 0.740 for soil with 0.69% and 2.44% organic matter, respectively). However, in a field leaching/dissipation study, Poast did not leach beyond the first 4 inches of soil and did not persist.

102.2 Water

Poast is fairly stable to hydrolysis with a half-life of about 40 days at pH 6 and 25°C. The major hydrolysis metabolite is M2S, an oxazole derivative.

Photolytic half-lives of Poast were about 23 and 38 minutes under anaerobic and aerobic aqueous solutions. M2S is the major hydrolysis product.

102.3 Plant

Poast does not accumulate in rotational crop tissues. Measured residues were all below 0.066 ppm.

102.4 Animal

Fish accumulation data for bluegill and channel catfish indicate they will not accumulate residues of Bentazon when exposed to Bentazon residues in water, maximum concentration for bluegill whole fish was about 7X the water concentration at day 14. After 14 days depuration, over 90% of the maximum accumulated residues were eliminated. Accumulation levels in catfish are not expected to exceed 1X.

103 Toxicological Properties

103.1 References from Toxicology Branch

Species	Test	Results
Rat	A.O. LD_{50}	2676-3125 mg/kg
Mouse	A.O. LD_{50}	5600-6500 mg/kg
Rabbit	A.O. LD_{50}	4600 mg/kg

103.2 Minimum Requirements

103.2.1 Avian Acute Oral LD_{50}

Species	Test	Result	Category
Mallard duck	Acute oral LD_{50}	>2,000 mg/kg	Core

103.2.2 Avian Dietary LC_{50}

Species	Test	Result	Category
Mallard duck	8-day dietary LC_{50}	>5000 ppm	Core
Bobwhite quail	8-day dietary LC_{50}	>5000 ppm	Core

103.2.3 Fish Acute LC_{50}s

Species	Test	Result	Category
Bluegill sunfish	96-hr LC_{50}	265 ppm	Core
Rainbow trout	96-hr LC_{50}	170 ppm	Core

103.2.4 Aquatic Invertebrate LC_{50}

Species	Test	Result	Category
Daphnia magna	48-hr LC_{50}	78.1 ppm	Core

104 Hazard Assessment

104.1 Discussion

The request is for Roast to be registered for application to cotton at rates ranging from 1.0 to 2.5 pints/A to control a variety of annual and perennial weeds. These rates are equivalent to 0.18 to 0.45 lb. a.i./A. Repeat applications are allowed when necessary.

104.2 Likelihood of Adverse Effects to Non-Target Organisms

Applications at recommended label rates will result in the following maximum residues on plants and invertebrate fauna:

Vegetation/Animal	Residues (ppm) from application of: 0.18-lb/A	0.45-lb/A
Short rangegrass	43.5	115
long grass	20	49.5
leaves and leafy crops	22.5	56.5
forage/small insects	10.5	26
legumes/large insects	2.2	5.5
fruit	1.3	3.2

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These residue levels are well below the reported acute oral and dietary toxicity values for birds (>2000 mg/kg and >5,000 ppm, respectively) and mammals (>2000 mg/kg). No significant acute mortality of terrestrial species is expected from the proposed use of Poast.

A direct application of 0.45 lb a.i./A to a body of water 6 inches deep would result in residues (330 ppb) approximately 97 X lower than the no effect level for the most sensitive aquatic species tested (Daphnia magna, NOEL = 32 ppm). Direct application to water is not anticipated, as per label instructions, so exposure to aquatic species should only result from leaching or runoff. No significant acute mortality of aquatic species is expected from the proposed use.

Given the properties of bentazon, no unreasonable acute or chronic impact on terrestrial or aquatic organisms is expected. As pointed out in a previous EEB review (Stevens 7/30/82), although fairly stable to hydrolysis (T 1/2 = 40 days) bentazon photodegrades fairly rapidly in soil and water (T 1/2 < 1 day). According to the Environmental Fate Branch, leaching is not indicated under natural conditions.

104.3 Endangered Species Considerations

Given the low application rates and the fact that bentazon is not expected to persist in the environment, no endangered species are likely to be jeopardized by the proposed registration.

107 Conclusions

EEB has completed an incremental risk assessment (3(c)(7)finding) of the proposed conditional registration of Poast for use on cotton. Based upon the available data EEB concludes that the proposed use provides for no significant increase in exposure or risks to nontarget organisms.

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107.1 Environmental Hazards Labeling

The environmental Hazards labeling should be modified to read as follows:

"Do not apply directly to water or wetlands. Do not contaminate water by cleaning of equipment or disposal of wastes."

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