(11-1-93)

DP Barcode :D194585 D194592
PC Code No :129034
EEB Out :

To: JOANNE MILLER
Product Manager 23
Registration Division H7505C

From: Anthony F. Maciorowski, Chief
Ecological Effects Branch/EFED (7507-C)

Attached, please find the EEB review of...

Reg./File # :059639-EUP-RRI
Chemical Name :FLUMIOXAZIN
Type Product :HERBICIDE
Product Name :
Company Name :VALENT U.S.A. CORP.
Purpose :EUP FOR CONTROLING BROADLEAVED WEEDS AND SOME GRASSES IN THE CULTIVATION OF SOYBEANS

Action Code :710 Date Due :
Reviewer :ALVARO YAMHURE Date In EEB:

EEB Guideline/MRID Summary Table: The review in this package contains an evaluation of the following:

GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT
71-1(A)			72-2(A)			72-7(A)		
71-1(B)			72-2(B)			72-7(B)		
71-2(A)			72-3(A)			122-1(A)		
71-2(B)			72-3(B)			122-1(B)		
71-3			72-3(C)			122-2		
71-4(A)			72-3(D)			123-1(A)		
71-4(B)			72-3(E)			123-1(B)		
71-5(A)			72-3(F)			123-2		
71-5(B)			72-4(A)			124-1		
72-1(A)			72-4(B)			124-2		
72-1(B)			72-5			141-1		
72-1(C)			72-6			141-2		
72-1(D)						141-5		

Y=Acceptable (Study satisfied Guideline)/Concur
P=Partial (Study partially fulfilled Guideline but additional information is needed
S=Supplemental (Study provided useful information but Guideline was not satisfied)
N=Unacceptable (Study was rejected)/Nonconcur

ECOLOGICAL EFFECTS BRANCH EUP REVIEW

V-53482 WP Herbicide

100 Submission Purpose, Pesticide Label/Use and Description of the EUP.

Valent U.S.A. Corporation is proposing an EUP program to evaluate their 51% a.i. wettable powder (WP), water-soluble packets of the broadleaf weed herbicide identified as V-53482 WP herbicide on soybeans cultivation.

100.1 Formulation Information

V-53482 WP herbicide (51.0% a.i.)

Active Ingredient:
7-fluoro-6[(3,4,5,6,-tetrahydro)phthalimido-4-(2-propynyl)-1,4--benzoxazine-3(2H)-one.....51%
Inert Ingredient:.....49%
Total.....100%

ID#: 059639-EUP-RRI

100.2 Application Methods, Directions, Rates

The maximum amount of herbicide allowed per acre is 43.4 grams a.i./A (0.096 lbs a.i. or about one tenth of one pound of a.i./A) applied preemergence.

Directions For Use

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

VALENT V-53482 WP Herbicide is a 51% wettable powder in a water-soluble packet for the control of certain broadleaf weeds and grasses in soybeans.

Growth and development of rotated crops are unaffected by V-53482.

Plant soybeans at least one (1") inch deep on flat or raised seedbeds only and adjust planters to ensure proper seed coverage or crop injury may result.

Read labels of all tank-mix components for use restrictions, precautions and limitations. Always follow the more restrictive label limitations and precautions.

Application Instructions

For broad spectrum weed control apply V-53382, as a stand alone

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treatment or as part of a tank mix, after planting but before the crop emerges.

Moisture is necessary to activate this herbicide in soil for residual weed control. Dry weather following application may reduce effectiveness. When moisture is received following dry conditions, this herbicide will control susceptible germinating and recently-emerged weeds.

To ensure coverage, use 10 to 30 gallons spray solution per acre (gal/A). For banded applications of V-53482 WP herbicide, use proportionally less product per acre in a band versus a broadcast application.

Fill the spray tank 1/4 to 1/2 full with clean water and begin agitation. Add the required amount of V-53482 WP Herbicide to spray tank and continue to add water. If an adjuvant is used for non-selective postemergence applications in reduced-tillage soybeans, add it last when the tank is nearly full.

Apply V-53482 WP Herbicide with properly calibrated ground equipment at a spray pressure of 20 to 40 psi. Agitate spray solution thoroughly before and during application. Avoid misapplication, skips and gaps in spray patterns and overlap sprays which increase dosage.

IMPORTANT: Crop injury may occur under the following conditions: heavy rainfall within four weeks of planting can cause temporary injury to soybeans; heavy rainfall with cool temperatures can magnify the injury. When used as directed, injury associated with weather does not result in yield reductions. Crop injury may be minimized if soybeans are planted at least one inch deep and completely covered by soil prior to preemergence applications.

RESTRICTIONS AND LIMITATIONS

Do not apply when weather conditions favor spray drift.
*** Do not apply more than three ounces of this herbicide per acre during a single season (our emphasis).**

Crop Rotation: Read the labels of all tank mix components and follow all crop rotation restrictions and precautions.

100.3 Target Organisms

Attachment A (two pages), lists all target weeds intended at this time. Page 1 (Table 1 by the registrant) lists the weeds controlled by preemergence treatment and page 2 (the registrant's Table 2) lists grasses and broadleaf weed suppressed by V-53482. This herbicide is a broadleaf weed herbicide being tested for the protection of soybeans cultivation.

100.4 Precautionary Labeling

ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from areas treated. Do not contaminate water when disposing of equipment washwaters. (See our comment on page 11, Section 106: "Adequacy of Labeling".)

100.5 Proposed EUP Program

100.5.1 Objectives

To evaluate the use (efficacy) of V-53482 WP as a preemergence broadleaf weed herbicide (see **Attachment A**) in the cultivation of soybeans, application with different types of tillage, the packaging system, use under different climatic and geographic conditions, different application factors including rates, methods and equipment, efficacy of tank mixes with other broadleaf herbicides, evaluate grower acceptance, herbicide performance and application technology, and if needed, conduct a worker exposure study (mixer/loader/applicator).

100.5.2 Date, Duration

This is a two-year EUP. The program is scheduled to start on April 1, 1994.

100.5.3 Amount Shipped, Geographic Distribution

States, Acreage, and Quantity of material for proposed Experimental Use of V-53482 WP are listed in the two pages of Attachment B. The product is to be used in seventeen States representing the most important areas of soybean cultivation in the U.S.A. The registrant expects to need a **total of 89,834 grams (198.1 lbs) of active ingredient for the two-year program to treat 810 acres.** The first year the total acreage will be 1,260 acres (A) to be treated with a maximum of 54,684 grams (120.58 lbs) of a.i. The second year 35,154 grams of a.i. (77.52 lb) are to be used. There will be a total of 57 trials. An additional 19,530 grams (42 lbs) of a.i. would be used on a worker exposure test if requested by EPA.

101 Physical, Chemical Properties and Environmental Fate Data
(Data obtained on 10/19/93 from Jose L. Melendez, EFED/EFB)

101.1 ACTIVE INGREDIENT (7-fluoro-6[(3,4,5,6,-tetrahydro)phthalimide-4-(2-propynyl)-1,4--benzoxazine-3(2H)-one.) [proposed common name flumioxazin]

[This data obtained from a draft review by the EFB on 7/12/93 and EFED's 6/21/1993 Pesticide Environmental Fate One Line Summary].

Physical state	:	Solid, odor slightly vinegar-like
Molecular weight:		354.34
Melting point	:	201.8 - 203.8° C
Solubility	:	1.79 mg/L in water at 25° C 1.78 g/100 mL in ethyl acetate 0.156 g/mL in methanol 0.00247 g/mL in hexane 0.0163 g/mL in n-octanol 1.70 g/mL in acetone 3.23 in acetonitrile 19.1 g/mL in dichloromethane 5.38 g/mL in tetrahydrofuran
Octanol/H_2O Part. Coef.	:	Log K_{ow} = 2.55 @ 20° C
Vapor pressure	:	2.41 X 10^{-6} mm of Hg @ 22°

101.2 FORMULATION

Wettable powder [(WP and wettable dispersable granules (WDG) but WP is the only formulation proposed for this EUP].

101.3 ABIOTIC HYDROLYSIS

Half Lives (T 1/2): @ pH 5 = 3.4 - 5.1 days
@ pH 7 = 21.4 - 24.6 hours
@ pH 9 = 14.6 - 22 minutes

101.4 DEGRADATION IN SOIL

Aerobic half-life of 11.9 days in a California sandy loam soil incubated in the dark at 22-26° C. V-53482 residues bound to soil. No major degradates detected.

101.5 SOIL ADSORPTION

Mobility in four different types of soil ranged from weak to high. A California College sandy loam had a K_{oc} value of 118; a plain field sand had a K_{oc} value of 265; a Kewaunee clay loam had a K_{oc} value of 816 and Mississippi silt loam had the highest K_{oc} value of 1705. Adsorption was linear and correlated better with soil pH than with organic soil contents.

The mobility of unaged V-53482 was low to high in 36-cm soil leaching columns, using four soil types. The average calculated values obtained are as follows:

Soil	[Ph-^{14}C]			[THP-^{14}C]		
	R_f	K_d	K_{oc}	R_f	K_d	K_{oc}
Plainfield sand	0.61	0.465	265	0.59	0.484	277
California College sandy loam	0.56	0.833	118	0.57	0.744	105
Mississippi silt loam	0.15	11.0	1705	0.30	4.37	675
Kewaunee clay loam	0.08	24.0	816	0.11	14.6	497

The majority of the radioactivity detected was identified as

parent V-53482. Several minor degradation components were present at ≤10% of the applied.

Additional data obtained by testing a two-ring-radiolabeled molecule are being requested by the EFGWB of EFED.

101.6 FISH BIOACCUMULATION

EFGWB granted the registrant's request for a waiver for the fish bioaccumulation test on the basis that: 1) The observed Octanol/Water partition coefficient is smaller than 1000 (log K_{ow} = 2.55, K_{ow} = 3.55 - value not confirmed). 2) This herbicide degrades quickly in water with a half-life of about one day at pH 7 and about 20 min. at pH 9. 3) "The aerobic soil metabolism shows that V-53482 degradates are tightly bound to soil and could not be desorbed into surrounding waters" and therefore not likely to bioaccumulate in fish.

DISCUSSION

This herbicide has low water solubility (1.7 mg/L @ 25° C); relatively low vapor pressure (2.41 X 10^{-6} mm Hg @ 22° C); at pH 7 degrades quickly in water; soil adsorption correlated better with pH than with organic soils and its organic soil metabolism shows that its degradates are tightly bound to soil and could not be desorbed into surrounding waters. These environmental fate and physical characteristics are such that favor lower exposure for non-target organisms.

According to the OPP/ Environmental Fate Branch, the registrant appears to have satisfied the environmental fate requirements for this EUP.

102 Hazard Assessment

102.1 Likelihood of Adverse Effects to Non-Target Organisms

ECOTOXICOLOGICAL DATA AVAILABLE FOR V-53482

Table 1 below lists the studies that have been presented to EEB in support of this EUP:

Table 1. V-53482
Ecotoxicological Studies Presented to EEB

Guid. No.	Test Species	% a.i.	LC/LD_{50} (ppm/-mg/kg)	MRID/ACC.	Evaluation Date	Status
FISH TESTS						
72-1(c)	Rainbow trout	94.8	2.3 ppm NOEL 0.92 ppm	422849-48	05/11/93	core
72-1(a)	Bluegill	94.8	>21 ppm NOEL 3.9 ppm	426849-49	05/11/93	core
AVIAN TESTS						
71-1(a)	Bobwhite	94.8	>2250 mg/kg NOEL =2250 mg/kg	426849-45	05/14/93	core
71-2(a)	Bobwhite	94.8	>5620 ppm NOEC 3160 ppm	426849-47	05/05/93	core
71-2(b)	Mallard	94.8	>5620 ppm NOEC =5620 ppm	426849-46	05/05/93	core
FRESHWATER INVERTEBRATE						
72-2(a)	Daphnia	94.7	EC_{50} = 5.5 ppm No NOEC	426849-50	05/11/93	under review
HONEY BEE						
141-1	Apis m.	94.8	LD_{50}>105 ug/bee NOEL=105 ug/bee	426849-51	05/12/93	core
ACUTE ORAL RAT						
81-1	Rat(M&F)		LD_{50}>5000 mg/kg			

CITATION: Reed, D. and J.P. Swigert. 1992. A 48-Hour Flow-Through Acute Toxicity Test with the Cladoceran (Daphnia magna). Project No. 263A-104. Prepared by Wildlife International Ltd., Easton, MD. Submitted by Valent U.S.A. Corporation, Walnut Creek, CA. EPA MRID No. 426849-50. **(This study is presently under review).**

At present, EEB does not have any additional ecotoxicological data on this compound. The acute oral rat study is evaluated by the Toxicology Branch of OPP's Health Effects Division and EEB uses the rat as a toxicological surrogate, representative of small mammals.

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102.2 Discussion

The active ingredient of the herbicide under discussion is formulated as both, a wettable powder (V-53482 WP) and a water-dispersible granule (V-53482 WDG). Both formulations are claimed to be the same chemically where the WP formulation is used to allow packaging in polyvinyl alcohol water-soluble bag. The WP formulation is the one to be used in this EUP.

This EUP is intended to investigate the various aspects listed above regarding the efficacy and commercial uses of this herbicide for the pre-emergence and pre-plant control of broadleaved weeds in soybeans at a maximum use rate of 43.4 grams of active ingredient per acre (g a.i./A) or 0.094 pounds a.i./A and, if required by EPA, to evaluate farm worker exposure/risk.

102.3 Toxicity Information

Table 2. BIRDS

Guid. No.	Test Species	% a.i.	LC/LD_{50} (ppm/-mg/kg)	MRID/ACC.	Evaluation Date	Status
AVIAN TESTS						
71-1(a)	Bobwhite	94.8	>2250 mg/kg NOEL =2250 mg/kg	426849-45	05/14/93	core
71-2(a)	Bobwhite	94.8	>5620 ppm NOEC 3160 ppm	426849-47	05/05/93	core
71-2(b)	Mallard	94.8	>5620 ppm NOEC =5620 ppm	426849-46	05/05/93	core

The above avian data shows that V-53482 is practically non-toxic to this group of organisms.

Table 3. MAMMALS (Verbal communication (7/13/93) from Alberto Protzel of HED/TB - Preliminary review)

Guid. No.	Test Species	LD_{50} (mg/kg)	MRID No.	Date of Test	Coregrade/ Document #
81-1	Rat	(M&F) > 5000 mg/kg	426849-11	1993	Guideline 010090

From the above mammalian acute toxicity data it can be inferred that V-53482 is practically non-toxic to small rodent-type mammals.

Table 4. FISH

Guid. No.	Test Species	% a.i.	LC/LD_{50} (ppm/-mg/kg)	MRID/ACC.	Evaluation Date	Status
72-1(c)	Rainbow trout	94.8	2.3 ppm NOEL 0.92 ppm	422849-48	05/11/93	core
72-1(a)	Bluegill	94.8	>21 ppm NOEL 3.9 ppm	426849-49	05/11/93	core

V-53482 appears to be moderately toxic to the rainbow trout but only slightly toxic to the bluegill.

Table 5. AQUATIC INVERTEBRATES

Guid. No.	Test Species	% a.i.	LC/LD_{50} (ppm/-mg/kg)	MRID/ACC.	Evaluation Date	Status
FRESHWATER INVERTEBRATE						
72-2(a)	Daphnia	94.7	EC_{50}= 5.5 ppm No NOEC	426849-50	05/11/93	*under review

*This study is presently under review.

Table 6. BENEFICIAL INSECTS

Guid. No.	Test Species	% a.i.	LC/LD_{50} (ppm/-mg/kg)	MRID/ACC.	Evaluation Date	Status
HONEY BEE						
141-1	Apis m.	94.8	LD_{50}>105 ug/bee NOEL 105 ug/bee	426849-51	05/12/93	core

With the above LD_{50} value, V-53482 is considered to be practically non-toxic to the honey bee.

PLANTS

The registrant has not given EEB/OPP any data on the toxicity of this herbicide to non-target plants (aquatic or terrestrial).

103 RESIDUES AND EXPOSURE ASSESSMENT

103.1 Aquatic Exposure

The maximum application rate, according to the label provided by the registrant, will be 43.4 g a.i./A or about 0.1 lb a.i./A. If 10 acres of ground (drainage basin) are treated at a rate of 0.1 lbs a.i./A drain into a hypothetical one-acre pond (two different depths for the same pond are used to estimate different dilution factors), if total solubility of the herbicide in water is assumed and 1% of the pesticide were to reach the pond via runoff produced by rainfall following application, the following preliminary estimated environmental concentrations (PEEC) would be expected:

a. 6-inch deep, 1 acre pond, surrounded by a 10 acre drainage basin = 7.34 ppb (0.00734 ppm)

b. 6-foot deep, 1 acre pond, surrounded by a 10 acre drainage basin = 0.61 ppb (0.00061 ppm)

Comparing the lowest aquatic toxicity LC_{50} from the registrant's tests, namely the one for rainbow trout - or 2.3 ppm (NOEL= 0.92 ppm), with the above PEEC, this chemical at the proposed application rate is not likely to adversely affect fish similar in sensitivity to the surrogate tests species used in these tests. The sensitivity of freshwater invertebrates is still to be estimated from the daphnid study presently in EEB's possession.

Because no data are available, the effects on aquatic vegetation are unknown.

103.2 Avian and Mammalian Exposure

Test data for these two groups of organisms suggest that V-53482 is practically non-toxic to birds and small, rodent type mammals . At the maximum proposed application rate of 0.1 lb a.i./A, the concentration of this material on short range grasses would be about 24 ppm and 5.8 ppm for forage and insects.

Again, this level of exposure is not expected to have adverse effects on birds or small mammals similar to the test organisms (bobwhite quail, mallard duck and rats) where the lowest toxicity avian value was the avian LC_{50}'s > 5620 ppm. The young rat tests show all LD_{50}s >5000 mg/kg with estimated LC_{50}s = 50,000 ppm (assuming a body weight of 100 g and 10% daily consumption of this body weight or 10.0 g of food). Clearly no adverse effects are expected on this group of terrestrial organisms.

The formula used to estimate LC_{50}s from LD_{50}s is as follows:

$$LC_{50} = \frac{\text{Lowest } LD_{50} \text{ X Weight of Bird or Mammal}}{\text{Total Amount Eaten/day}}$$

103.3 Plant Exposure (Terrestrial and Aquatic)

The adverse effects of this chemical to non-target plant species cannot be evaluated at present for a total lack of phytotoxicological data. Since this chemical is a herbicide it is potentially hazardous to plants.

104 Endangered Species Considerations

104.1 Terrestrial Species

Birds and Mammals

Test data for these two groups of organisms suggest that V-53482 is practically non-toxic to birds an small mammals. At the proposed maximum

application rate of 0.1 lb a.i./A the concentration of this material on short rangegrasses would be about 24 ppm (24,000 ppb) and 5.8 ppm (5800 ppb) for forage and insects.

As we stated before, this level of exposure is not expected to have adverse effects on birds or small mammals similar to the test organisms (bobwhite quail, mallard duck and rats) where the lowest toxicity avian value was the avian LC_{50}'s > 5620 ppm. The young rat tests show all LD_{50}s >5000 mg/kg with estimated LC_{50}s = 50,000 ppm (assuming a body weight of 100 g and 10% daily consumption of this body weight or 10.0 g of food). Clearly no adverse effects are expected on this group of terrestrial organisms. These estimated terrestrial residue values (ETRV)- from: Hoerger and Kenaga, 1972 - are much lower than 1/10 the lowest LC_{50} (5620 ppm/10 = 562 ppm). The ETRVs for the broadcast applications is also lower than 1/10 the lowest LC_{50} (50,000 ppm/10=5000 ppm) calculated for mammals. The proposed exposure levels resulting from the proposed maximum application rates do not appear to present a hazard to these two groups of organisms.

104.2 Aquatic Species

Fish and Freshwater Aquatic Invertebrates

Section 103.1 above describes the potential aquatic exposure to aquatic organisms or an application rate of 0.1 lb a.i. to a 6-inch deep, 1-acre pond with a 10-acre drainage basin would produce an EEC of 7.34 ppb and a similar pond 6 foot-deep will have a resulting EEC of 0.61 ppb. One tenth of the lowest scientifically valid reported LC_{50} values for this group of organisms or 2.3 ppm/10 = 0.23 ppm (Bluegill - see Table 1) is considerably higher than these EEC values for the above broadcast unincorporated applications (7.34 and 0.61 ppb). As indicated above, the Daphnid test acute toxicity test (MRID 426849-50) is presently under review so that the risk to this type of organism from the proposed EUP has not been estimated. As indicated in Section 104 above, presently there are no listed endangered or threatened animal aquatic species in the proposed counties.

104.3 Terrestrial and Aquatic Plants

As stated above, the adverse effects of this chemical to non-target plant species cannot be evaluated at present for a total lack of data. However, because of the likely presence of listed endangered plants in some of the areas to be treated, EEB **strongly recommends** that the adverse-impact mitigating measure, as described under section 106 below, be observed.

Attachment C is an updated list of all endangered and threatened U.S. plants found in the 17 States where V-53482 WP is to be tested. The specific counties where these endangered plants are found are also listed.

105 Adequacy of toxicity Data

The toxicity data presented are adequate to evaluate this EUP proposal. For FIFRA Section 3 registration of this herbicide, additional data may be needed to fully assess risk. These data may include among others:

phytotoxic tests, specially if aerial application is to be used; chronic birds tests [71-4(a) and (b)] and fish and aquatic invertebrates ([72-4(a) and (b)]) tests. The acute daphnid test [72-2 (a)] is presently under review.

106 Adequacy of Labeling

The environmental precautionary labeling for the proposed use and maximum application rate is not adequate. It is recommended that the **following verbiage be removed** from the Environmental Hazards statement of the proposed label: *Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from areas treated.*

Also, the inclusion on the label of one or both of the following mitigating measures is highly recommended (if only one of these mitigating measures is to be used in the label, EEB would prefer the first one:

1." Do not use this herbicide in any of the counties listed in Attachment C where endangered plants are found."

2. "Do not spray within 100 yards of areas covered with native vegetation and rights-of-way."

A listing of the counties where endangered plant species are found is included for your convenience and use as **"Attachment C"**.

NOTE: The label clearly indicates that this herbicide is to be applied by "properly calibrated ground equipment" but does not clearly specify that it should not be applied by aircraft as to avoid possible misuse by future buyers and EUP participants.

107 Conclusions:

Given the relatively low maximum application rate proposed, the application methods to be used (no aerial application is proposed), the fact that the area to be treated is relatively small, the environmental fate and toxicological characteristics of this herbicide to test organisms at the proposed application rates, EEB believes that no significant ecological hazard to **non-target, non-endagered species** is likely to occur by the implementation of this EUP.

Listed, endangered terrestrial and semi-aquatic plants are unlikely to be placed at risk as long as the proposed mitigation measures suggested above are adhered to.

The risk to aquatic invertebrates is being estimated from the daphnid test presented to EEB by the registrant. Additional tests may be required for future registration actions.

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Alvaro A. Yamhure, Aquatic Biologist Signature:
Ecological Effects Branch
Environmental Fate and Effects Division Date: 10/28/93
H7507C

Daniel Rieder, Head Section 3 Signature:
Ecological Effects Branch
Environmental Fate and Effects Division Date: 11-1-93
H7507C

Anthony F. Maciorowski, Chief Signature:
Ecological Effects Branch
Environmental Fate and Effects Division Date:
H7507C

TABLE 1. WEEDS CONTROLLED BY V-53482 WP HERBICIDE
Preemergence Uses

SECTION A					
WEED SPECIES		Preemergence Uses *Acres Treated Per 6-oz Packet			
Common Name	Scientific Name		Soil Organic Matter		
		Soil Texture	Less than 2%	2 to 4%	Over 4%
Carpetweed	*Mollugo verticillata*				
Common Groundsel	*Senecio vulgaris*				
Common Lambsquarters	*Chenopodium album*				
Common Purslane	*Portulaca oleracea*				
Eclipta	*Eclipta alba*				
Florida Beggarweed	*Desmodium tortuosum*				
Florida Pusley	*Richardia scabra*				
Goosegrass	*Eleusine indica*	Coarse Soils (sandy loam, loamy sand)	4	4	4
Hairy indigo	*Indigofera hirsuta*				
Kochia	*Kochia scoparia*				
Little Mallow	*Malva parviflora*				
Nightshades					
Black	*Solanum nigrum*				
Eastern Black	*Solanum ptycanthum*				
Pigweeds					
Palmer Amaranth	*Amaranthus palmeri*	Medium Soils (loamy, silt-loam, silt, sandy clay, sandy clay loam)	4	4	3
Redroot	*Amaranthus retroflexus*				
Smooth	*Amaranthus hybridis*				
Spiny Amaranth	*Amaranthus spinosus*				
Tumble	*Amaranthus albus*				
Prickly Sida (Teaweed)	*Sida spinosa*				
Puncturevine	*Tribulis terretris*				
Redmaids	*Calandrinia ciliata*	Fine Soils (silty clay, silty clay loam, clay, clay loam)	3	3	3
Shepardspurse	*Capsella bursa-pastoris*				
Spotted Spurge	*Euphorbia maculata*				
Tall Waterhemp	*Amaranthus tuberculatos*				
Venice Mallow	*Hibiscus trionum*				

SECTION B					
Common Name	Scientific Name	Coarse Soils (sandy loam, loamy sand)	4	4	4
Barnyardgrass	*Echinochloa crus-galli*				
Common Ragweed	*Ambrosia artemisiifolia*				
Crabgrass					
Large	*Digitaria sanguinalis*				
Smooth	*Digitaria ischaemum*	Medium Soils (loamy, silt loam, silt, sandy clay, sandy clay loam)	3	2.4	2.4
Hemp Sesbania	*Sesbania exaltata*				
Jimsonweed	*Datura stramonium*				
Morningglories**					
Entire leaf	*Ipomoea hederacea var. integriuscula*	Fine Soils (silty clay, silty clay loam, clay, clay loam)	2.4	2.4	2
Ivyleaf	*Ipomoea hederacea*				
Pitted	*Ipomoea lacunosa*				
Tall	*Ipomoea purpurea*				
Velvetleaf	*Abutilon theophrasti*				

*Note: The information in this Table describes the number of acres treated with a 6-oz packet of V-53482 WP Herbicide, depending on soil texture and organic matter for the weed species listed in the left-hand column of this Table.

**Note: Morningglory species are not adequately controlled on heavy soils or soils with greater than 4 percent organic matter when V-53482 is applied alone or in a tank-mix with LASSO®, DUAL® or PROWL®.

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TABLE 2. BROADLEAVES AND GRASSES SUPPRESSED BY V-53482 WP HERBICIDE

Preemergence Uses

BROADLEAVES		GRASSES		ACRES TREATED PER 6 OZ. PACKET
Common Name	Scientific Name	Common Name	Scientific Name	
Ladysthumb	*Polygonum persicaria*	Fall Panicum	*Panicum dichotomiflorum*	4
Pennsylvania Smartweed	*Polygonum pensylvanicum*			
Common Cocklebur	*Xanthium Strumarium*	Broadleaf Signalgrass	*Brachiaria Platyphlla*	3
Common Sunflower	*Helianthus annuusum*	Foxtails		
		Giant	*Setaria faberi*	
		Green	*Sertaria viridis*	
		Yellow	*Sertaria glauca*	
Sicklepod	*Cassia obtusifolia*	Johnsongrass seedlings	*Sorghum halepense*	2
Yellow Nutsedge	*Cyperus esculentus*			

STATE	PROPOSED ACREAGE USE	TRIAL TYPE For Soybeans*	NUMBER OF TRIALS	PRODUCT REQUIREMENT NEEDS	
				Formulated Product (oz)	Active Ingredient** (gms)
Arkansas	30	RT/NT(2)	2	90.1	1,302
Illinois	240	CP(2) RT/NT(4) WE (1)	7	720.6	10,416
Indiana	75	CP(2) RT/NT(3)	5	225.2	3,255
Iowa	90	CP(3) RT/NT(3)	6	270.2	3,906
Kansas	15	CP(1)	1	45	651
Kentucky	45	RT/NT(3)	3	135.1	1,953
Louisiana	30	RT/NT(2)	2	90.1	1,302
Maryland	15	RT/NT(1)	1	45	651
Michigan	30	RT/NT(2)	2	90.1	1,302
Minnesota	60	CP(2) RT/NT(2)	4	180.1	2,604
Mississippi	30	RT/NT(2)	2	90.1	1,302
Missouri	240	CP(3) RT/NT(3) WE(1)	7	720.6	10,416
Nebraska	45	CP(1) RT/NT(2)	3	135.1	1,953

STATE	PROPOSED ACREAGE USE	TRIAL TYPE For Soybeans*	NUMBER OF TRIALS	PRODUCT REQUIREMENT NEEDS	
				Formulated Product (oz)	Active Ingredient** (gms)
North Carolina	30	CP(1) RT/NT(1)	2	90.1	1,302
Ohio	225	CP(1) RT/NT(4) WE(1)	6	675.5	9,765
Tennessee	30	RT/NT(2)	2	90.1	1,302
Virginia	30	RT/NT(2)	2	90.1	1,302
Totals	1,260	CP=16 RT/NT=38 WE=3	57	3,783.1	54,684

* Trials conducted under this EUP will be of three types; conventional tillage preemergence (CP), reduced tillage (RT)/no-tillage (NT) and possibly worker exposure (WE) (3 trials at 150 acres per trial). For purposes of this EUP, conventional tillage will be defined as any mechanical tillage which results in a weed-free seedbed, (i.e., deep tillage, plow + disc, subsoil + disc) all weed and crop residue are buried. Reduced tillage will be defined as tillage less than conventional with weeds present at planting. No-tillage is defined as no mechanical soil disturbance with weeds present at planting (includes stale seedbed).

** The amount of V-53482 WP in water soluble packets requested for this EUP program is based on a maximum application rate of 43.4 grams active ingredient per acre per single growing season. No more than 43.4 grams active ingredient or 3 ounces of formulated product per acre of V-53482 WP in water soluble packets will be applied to an EUP-treated acre in a single growing season. This EUP Program is scheduled to last for two (2) years. **A total of 89,838 grams (198.1 lbs) active ingredient will be needed to conduct this two (2) year program.** A total of 35,154 grams (77.52 lbs) active ingredient will be used each year with the following exception: an additional 19,530 grams (43 lbs) active ingredient will be used in one year for the worker exposure study, if deemed necessary by EPA.

3. Justification for Product Requirements

Based on U.S. Agricultural Statistics for 1988 (Agricultural Statistics 1987 — Soybeans, Pages 126-127, United States Government Printing Office, Washington; 1988), the total soybean acreage planted in Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, Ohio, Tennessee, and Virginia was 52,110,000 acres.

"Attachment C" 10/19/93
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A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
** STATE - - > ARKANSAS				
BRADLEY	GEOCARPON MINIMUM	1	PLANT	338
CLAY	PONDBERRY	1	PLANT	82226
DREW	GEOCARPON MINIMUM	1	PLANT	20385
FRANKLIN	GEOCARPON MINIMUM	1	PLANT	2424
JACKSON	PONDBERRY	1	PLANT	161259
LAWRENCE	PONDBERRY	1	PLANT	74431
WOODRUFF	PONDBERRY	1	PLANT	122367
YELL	HARPERELLA	1	PLANT	15142
** Subtotal **		8		478572
** STATE - - > IOWA				
ADAIR	MILKWEED, MEAD'S	1	PLANT	66704
ADAIR	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	66704
ALLAMAKEE	MONKSHOOD, NORTHERN WILD	1	PLANT	3726
BREMER	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	52660
BUENA VISTA	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	130258
BUTLER	BUSH-CLOVER, PRAIRIE	1	PLANT	86141
CHEROKEE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	100873
CLARKE	BUSH-CLOVER, PRAIRIE	1	PLANT	24717
CLARKE	MILKWEED, MEAD'S	1	PLANT	24717
CLAY	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	10851
CLAYTON	MONKSHOOD, NORTHERN WILD	1	PLANT	10851
DELAWARE	MONKSHOOD, NORTHERN WILD	1	PLANT	26262
DICKINSON	BUSH-CLOVER, PRAIRIE	1	PLANT	74062
DICKINSON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	74062
DUBUQUE	MONKSHOOD, NORTHERN WILD	1	PLANT	4133
EMMET	BUSH-CLOVER, PRAIRIE	1	PLANT	84899
EMMET	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	84899
GUTHRIE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	72201
HOWARD	BUSH-CLOVER, PRAIRIE	1	PLANT	63110
HOWARD	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	63110
JACKSON	MONKSHOOD, NORTHERN WILD	1	PLANT	9467
JOHNSON	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	54296
KOSSUTH	BUSH-CLOVER, PRAIRIE	1	PLANT	233034
KOSSUTH	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	233034
LUCAS	BUSH-CLOVER, PRAIRIE	1	PLANT	19978
OSCEOLA	BUSH-CLOVER, PRAIRIE	1	PLANT	91774
POCOHONTAS	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	94261
STORY	BUSH-CLOVER, PRAIRIE	1	PLANT	117965
WARREN	MILKWEED, MEAD'S	1	PLANT	53371
WINNESHIEK	BUSH-CLOVER, PRAIRIE	1	PLANT	18580
DECATUR	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	31224
APPANOOSE	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	25860
CEDAR	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	71248

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT GROUP	SOYBEANS
DAVIS	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	31948
DES MOINES	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	50976
HENRY	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	49029
IOWA	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	48725
JEFFERSON	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	54787
KEOKUK	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	64470
LEE	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	60580
LOUISA	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	50482
LUCAS	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	19978
MONROE	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	19212
MUSCATINE	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	54102
SCOTT	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	38786
WAPELLO	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	46721
WASHINGTON	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	66723
WAYNE	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	38334
VAN BUREN	ORCHID, EASTERN PRAIRIE FRINGED	1 PLANT	40843
DECATUR	MILKWEED, MEAD'S	1 PLANT	31224
LUCAS	MILKWEED, MEAD'S	1 PLANT	19978
MADISON	MILKWEED, MEAD'S	1 PLANT	51363
RINGGOLD	MILKWEED, MEAD'S	1 PLANT	42819
UNION	MILKWEED, MEAD'S	1 PLANT	32681
WAYNE	MILKWEED, MEAD'S	1 PLANT	38334
DELAWARE	BUSH-CLOVER, PRAIRIE	1 PLANT	26262
ADAIR	BUSH-CLOVER, PRAIRIE	1 PLANT	66704
ADAMS	BUSH-CLOVER, PRAIRIE	1 PLANT	42173
ALLAMAKEE	BUSH-CLOVER, PRAIRIE	1 PLANT	3726
APPANOOSE	BUSH-CLOVER, PRAIRIE	1 PLANT	25860
AUDUBON	BUSH-CLOVER, PRAIRIE	1 PLANT	65109
BENTON	BUSH-CLOVER, PRAIRIE	1 PLANT	126534
BLACK HAWK	BUSH-CLOVER, PRAIRIE	1 PLANT	88213
BOONE	BUSH-CLOVER, PRAIRIE	1 PLANT	122615
BUCHANAN	BUSH-CLOVER, PRAIRIE	1 PLANT	71922
BREMER	BUSH-CLOVER, PRAIRIE	1 PLANT	52660
BUENA VISTA	BUSH-CLOVER, PRAIRIE	1 PLANT	130258
CALHOUN	BUSH-CLOVER, PRAIRIE	1 PLANT	144293
CARROLL	BUSH-CLOVER, PRAIRIE	1 PLANT	115659
CASS	BUSH-CLOVER, PRAIRIE	1 PLANT	84078
CEDAR	BUSH-CLOVER, PRAIRIE	1 PLANT	71248
CERRO GORDO	BUSH-CLOVER, PRAIRIE	1 PLANT	98942
CHEROKEE	BUSH-CLOVER, PRAIRIE	1 PLANT	100873
CHICKASAW	BUSH-CLOVER, PRAIRIE	1 PLANT	59084
CLAY	BUSH-CLOVER, PRAIRIE	1 PLANT	114582
CLAYTON	BUSH-CLOVER, PRAIRIE	1 PLANT	10851
CLINTON	BUSH-CLOVER, PRAIRIE	1 PLANT	63428
CRAWFORD	BUSH-CLOVER, PRAIRIE	1 PLANT	98070
DALLAS	BUSH-CLOVER, PRAIRIE	1 PLANT	103628

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
DAVIS	BUSH-CLOVER, PRAIRIE	1	PLANT	31948
DECATUR	BUSH-CLOVER, PRAIRIE	1	PLANT	31224
DES MOINES	BUSH-CLOVER, PRAIRIE	1	PLANT	50976
DUBUQUE	BUSH-CLOVER, PRAIRIE	1	PLANT	4133
FAYETTE	BUSH-CLOVER, PRAIRIE	1	PLANT	67824
FLOYD	BUSH-CLOVER, PRAIRIE	1	PLANT	93208
FRANKLIN	BUSH-CLOVER, PRAIRIE	1	PLANT	111856
FREMONT	BUSH-CLOVER, PRAIRIE	1	PLANT	107022
GREENE	BUSH-CLOVER, PRAIRIE	1	PLANT	139225
GRUNDY	BUSH-CLOVER, PRAIRIE	1	PLANT	103749
GUTHRIE	BUSH-CLOVER, PRAIRIE	1	PLANT	72201
HAMILTON	BUSH-CLOVER, PRAIRIE	1	PLANT	133655
HANCOCK	BUSH-CLOVER, PRAIRIE	1	PLANT	120801
HARDIN	BUSH-CLOVER, PRAIRIE	1	PLANT	105352
HARRISON	BUSH-CLOVER, PRAIRIE	1	PLANT	113656
HENRY	BUSH-CLOVER, PRAIRIE	1	PLANT	49029
HUMBOLT	BUSH-CLOVER, PRAIRIE	1	PLANT	111004
IDA	BUSH-CLOVER, PRAIRIE	1	PLANT	69740
IOWA	BUSH-CLOVER, PRAIRIE	1	PLANT	48725
JACKSON	BUSH-CLOVER, PRAIRIE	1	PLANT	9467
JASPER	BUSH-CLOVER, PRAIRIE	1	PLANT	102143
JEFFERSON	BUSH-CLOVER, PRAIRIE	1	PLANT	54787
JOHNSON	BUSH-CLOVER, PRAIRIE	1	PLANT	54296
JONES	BUSH-CLOVER, PRAIRIE	1	PLANT	40219
KEOKUK	BUSH-CLOVER, PRAIRIE	1	PLANT	64470
LEE	BUSH-CLOVER, PRAIRIE	1	PLANT	60580
LOUISA	BUSH-CLOVER, PRAIRIE	1	PLANT	50482
MADISON	BUSH-CLOVER, PRAIRIE	1	PLANT	51363
MAHASKA	BUSH-CLOVER, PRAIRIE	1	PLANT	79429
MARION	BUSH-CLOVER, PRAIRIE	1	PLANT	58702
MARSHALL	BUSH-CLOVER, PRAIRIE	1	PLANT	81281
MILLS	BUSH-CLOVER, PRAIRIE	1	PLANT	80845
MITCHELL	BUSH-CLOVER, PRAIRIE	1	PLANT	72951
MONONA	BUSH-CLOVER, PRAIRIE	1	PLANT	97936
MONROE	BUSH-CLOVER, PRAIRIE	1	PLANT	19212
MONTGOMERY	BUSH-CLOVER, PRAIRIE	1	PLANT	72597
MUSCATINE	BUSH-CLOVER, PRAIRIE	1	PLANT	54102
O'BRIEN	BUSH-CLOVER, PRAIRIE	1	PLANT	132665
PAGE	BUSH-CLOVER, PRAIRIE	1	PLANT	94261
PALO ALTO	BUSH-CLOVER, PRAIRIE	1	PLANT	126240
PLYMOUTH	BUSH-CLOVER, PRAIRIE	1	PLANT	126240
POCAHONTAS	BUSH-CLOVER, PRAIRIE	1	PLANT	142055
POLK	BUSH-CLOVER, PRAIRIE	1	PLANT	79880
POTTAWATTAMIE	BUSH-CLOVER, PRAIRIE	1	PLANT	159046
POWESHIEK	BUSH-CLOVER, PRAIRIE	1	PLANT	76368
RINGGOLD	BUSH-CLOVER, PRAIRIE	1	PLANT	42819

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
SAC	BUSH-CLOVER, PRAIRIE	1	PLANT	117882
SCOTT	BUSH-CLOVER, PRAIRIE	1	PLANT	38786
SHELBY	BUSH-CLOVER, PRAIRIE	1	PLANT	90028
SIOUX	BUSH-CLOVER, PRAIRIE	1	PLANT	118683
TAMA	BUSH-CLOVER, PRAIRIE	1	PLANT	100936
TAYLOR	BUSH-CLOVER, PRAIRIE	1	PLANT	59816
UNION	BUSH-CLOVER, PRAIRIE	1	PLANT	32681
VAN BUREN	BUSH-CLOVER, PRAIRIE	1	PLANT	40843
WAPELLO	BUSH-CLOVER, PRAIRIE	1	PLANT	46721
WARREN	BUSH-CLOVER, PRAIRIE	1	PLANT	53371
WASHINGTON	BUSH-CLOVER, PRAIRIE	1	PLANT	66723
WAYNE	BUSH-CLOVER, PRAIRIE	1	PLANT	38334
WEBSTER	BUSH-CLOVER, PRAIRIE	1	PLANT	170666
WINNEBAGO	BUSH-CLOVER, PRAIRIE	1	PLANT	82268
WOODBURY	BUSH-CLOVER, PRAIRIE	1	PLANT	86671
WORTH	BUSH-CLOVER, PRAIRIE	1	PLANT	72543
WRIGHT	BUSH-CLOVER, PRAIRIE	1	PLANT	137106
FAYETTE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	67824
ADAMS	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	66704
APPANOOSE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	25860
AUDUBON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	65109
BENTON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	126534
BLACK HAWK	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	88213
BOONE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	122615
BUCHANAN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	71922
BUTLER	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	86141
CALHOUN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	144293
CARROLL	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	115659
CASS	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	84078
CEDAR	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	71248
CERRO GORDO	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	98942
CHICKASAW	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	59084
CLARKE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	24717
CLAYTON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	10851
CLINTON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	63428
CRAWFORD	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	98070
DALLAS	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	103628
DAVIS	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	31948
DECATUR	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	31224
DELAWARE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	26262
DES MOINES	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	50976
DUBUQUE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	4133
FLOYD	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	93208
FRANKLIN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	111856
FREMONT	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	107022
GREENE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	139225

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
GRUNDY	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	103749
HAMILTON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	133655
HANCOCK	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	120801
HARDIN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	105352
HARRISON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	113656
HENRY	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	49029
HUMBOLT	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	111004
IDA	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	69740
IOWA	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	48725
JACKSON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	9467
JASPER	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	102143
JEFFERSON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	54787
JOHNSON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	54296
JONES	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	122615
KEOKUK	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	64470
LEE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	60580
LINN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	81631
LOUISA	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	50482
LUCAS	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	19978
LYON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	105550
MADISON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	51363
MAHASKA	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	79429
MARION	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	58702
MARSHALL	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	81281
MILLS	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	80845
MITCHELL	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	72951
MONONA	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	81631
MONROE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	19212
MONTGOMERY	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	72597
MUSCATINE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	54102
O'BRIEN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	132665
OSCEOLA	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	91774
PAGE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	94261
PALO ALTO	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	126240
PLYMOUTH	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	137600
POLK	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	79880
POTTAWATTAMIE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	159046
POWESHIEK	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	76368
RINGGOLD	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	42819
SAC	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	117882
SCOTT	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	38786
SHELBY	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	90028
SIOUX	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	118683
STORY	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	117965
TAMA	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	100936
TAYLOR	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	59816

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
UNION	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	32681
VAN BUREN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	40843
WAPELLO	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	46721
WARREN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	53371
WASHINGTON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	66723
WAYNE	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	38334
WEBSTER	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	170666
WINNEBAGO	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	82268
WINNESHIEK	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	82268
WOODBURY	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	86671
WORTH	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	72543
WRIGHT	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	137106
** Subtotal **		229		16941262
** STATE - - > ILLINOIS				
COOK	BUSH-CLOVER, PRAIRIE	1	PLANT	12063
COOK	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	12063
DU PAGE	BUSH-CLOVER, PRAIRIE	1	PLANT	7186
DU PAGE	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	7186
FORD	MILKWEED, MEAD'S	1	PLANT	127522
FULTON	ASTER, DECURRENT FALSE	1	PLANT	115523
GRUNDY	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	85434
HENRY	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	87306
IROQUOIS	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	274537
JERSEY	ASTER, DECURRENT FALSE	1	PLANT	52209
KANE	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	52419
LAKE	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	19052
LEE	BUSH-CLOVER, PRAIRIE	1	PLANT	105729
MARSHALL	ASTER, DECURRENT FALSE	1	PLANT	63815
MCHENRY	BUSH-CLOVER, PRAIRIE	1	PLANT	22936
MCHENRY	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	22936
MORGAN	ASTER, DECURRENT FALSE	1	PLANT	110644
OGLE	BUSH-CLOVER, PRAIRIE	1	PLANT	62354
PUTNAM	ASTER, DECURRENT FALSE	1	PLANT	24345
RANDOLPH	POGONIA, SMALL WHORLED	1	PLANT	65503
SALINE	MILKWEED, MEAD'S	1	PLANT	40570
SCHUYLER	ASTER, DECURRENT FALSE	1	PLANT	57779
ST. CLAIR	ASTER, DECURRENT FALSE	1	PLANT	102565
TAZEWELL	DAISY, LAKESIDE	1	PLANT	105867
UNION	POTATO-BEAN, PRICE'S	1	PLANT	25455
WILL	PRAIRIE-CLOVER, LEAFY	1	PLANT	17834
WINNEBAGO	BUSH-CLOVER, PRAIRIE	1	PLANT	30119
WOODFORD	ASTER, DECURRENT FALSE	1	PLANT	98072
BUREAU	ASTER, DECURRENT FALSE	1	PLANT	118066
MASON	ASTER, DECURRENT FALSE	1	PLANT	97028

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
PEORIA	ASTER, DECURRENT FALSE	1	PLANT	70641
TAZEWELL	ASTER, DECURRENT FALSE	1	PLANT	105867
ALEXANDER	ASTER, DECURRENT FALSE	1	PLANT	35364
BROWN	ASTER, DECURRENT FALSE	1	PLANT	33238
CALHOUN	ASTER, DECURRENT FALSE	1	PLANT	13193
CASS	ASTER, DECURRENT FALSE	1	PLANT	72560
GREENE	ASTER, DECURRENT FALSE	1	PLANT	88561
GRUNDY	ASTER, DECURRENT FALSE	1	PLANT	85434
JACKSON	ASTER, DECURRENT FALSE	1	PLANT	55041
LASALLE	ASTER, DECURRENT FALSE	1	PLANT	232878
MADISON	ASTER, DECURRENT FALSE	1	PLANT	119957
MONROE	ASTER, DECURRENT FALSE	1	PLANT	54779
PIKE	ASTER, DECURRENT FALSE	1	PLANT	100207
RANDOLPH	ASTER, DECURRENT FALSE	1	PLANT	65503
SCOTT	ASTER, DECURRENT FALSE	1	PLANT	43514
UNION	ASTER, DECURRENT FALSE	1	PLANT	25455
WILL	DAISY, LAKESIDE	1	PLANT	116101
** Subtotal **		47		3342410
** STATE - - > INDIANA				
LAKE	THISTLE, PITCHER'S	1	PLANT	45728
OHIO	CLOVER, RUNNING BUFFALO	1	PLANT	871
PORTER	THISTLE, PITCHER'S	1	PLANT	53708
** Subtotal **		3		100307
** STATE - - > KANSAS				
ALLEN	MILKWEED, MEAD'S	1	PLANT	61809
ANDERSON	MILKWEED, MEAD'S	1	PLANT	80630
ANDERSON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	80630
BOURBON	MILKWEED, MEAD'S	1	PLANT	32777
COFFEY	MILKWEED, MEAD'S	1	PLANT	70461
DOUGLAS	MILKWEED, MEAD'S	1	PLANT	42051
DOUGLAS	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	42051
FRANKLIN	MILKWEED, MEAD'S	1	PLANT	62225
FRANKLIN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	62225
JACKSON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	25243
JEFFERSON	MILKWEED, MEAD'S	1	PLANT	36268
JEFFERSON	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	36268
JOHNSON	MILKWEED, MEAD'S	1	PLANT	33097
LEAVENWORTH	MILKWEED, MEAD'S	1	PLANT	31563
LEAVENWORTH	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	31563
LINN	MILKWEED, MEAD'S	1	PLANT	40829
MIAMI	MILKWEED, MEAD'S	1	PLANT	46043
NEOSHO	MILKWEED, MEAD'S	1	PLANT	50660

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
** Subtotal **		6		97732
** STATE - - > MICHIGAN				
ALLEGAN	THISTLE, PITCHER'S	1	PLANT	5452
ALPENA	IRIS, DWARF LAKE	1	PLANT	487
ARENAC	THISTLE, PITCHER'S	1	PLANT	4476
BAY	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	20318
BERRIEN	POGONIA, SMALL WHORLED	1	PLANT	26110
BERRIEN	THISTLE, PITCHER'S	1	PLANT	26110
HURON	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	5097
IOSCO	THISTLE, PITCHER'S	1	PLANT	135
LIVINGSTON	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	4428
MASON	THISTLE, PITCHER'S	1	PLANT	206
MONROE	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	95473
MUSKEGON	THISTLE, PITCHER'S	1	PLANT	1129
OTTAWA	THISTLE, PITCHER'S	1	PLANT	1148
SAGINAW	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	110340
ST. CLAIR	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	33349
ST. JOSEPH	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	30299
TUSCOLA	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	22526
VAN BUREN	THISTLE, PITCHER'S	1	PLANT	9684
WASHTENAW	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	18349
WAYNE	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	6610
CHIPPEWA	FERN, AMERICAN HART'S-TONGUE	1	PLANT	98942
ALPENA	THISTLE, PITCHER'S	1	PLANT	487
** Subtotal **		22		521155
** STATE - - > MINNESOTA				
BROWN	BUSH-CLOVER, PRAIRIE	1	PLANT	116623
CLAY	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	67631
COTTONWOOD	BUSH-CLOVER, PRAIRIE	1	PLANT	146418
FILLMORE	ROSEROOT, LEEDY'S	1	PLANT	37702
GOODHUE	BUSH-CLOVER, PRAIRIE	1	PLANT	45532
GOODHUE	LILY, MINNESOTA TROUT	1	PLANT	45532
JACKSON	BUSH-CLOVER, PRAIRIE	1	PLANT	160063
MOWER	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	118202
NORMAN	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	40144
OLMSTED	ROSEROOT, LEEDY'S	1	PLANT	32650
POLK	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	32346
RENVILLE	BUSH-CLOVER, PRAIRIE	1	PLANT	188744
RICE	LILY, MINNESOTA TROUT	1	PLANT	36094
ROCK	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	81428
STEELE	LILY, MINNESOTA TROUT	1	PLANT	54878
CROW WING	BUSH-CLOVER, PRAIRIE	1	PLANT	1219

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
HENRY	MILKWEED, MEAD'S	1	PLANT	44851
REYNOLDS	MILKWEED, MEAD'S	1	PLANT	277
JOHNSON	MILKWEED, MEAD'S	1	PLANT	50926
LAWRENCE	BLADDERPOD, MISSOURI	1	PLANT	5664
BUTLER	PONDBERRY	1	PLANT	60238
BARRY	CLOVER, RUNNING BUFFALO	1	PLANT	1752
BENTON	CLOVER, RUNNING BUFFALO	1	PLANT	18907
BOONE	CLOVER, RUNNING BUFFALO	1	PLANT	49291
CALLAWAY	CLOVER, RUNNING BUFFALO	1	PLANT	54009
CEDAR	CLOVER, RUNNING BUFFALO	1	PLANT	4937
CHRISTIAN	CLOVER, RUNNING BUFFALO	1	PLANT	196
COLE	CLOVER, RUNNING BUFFALO	1	PLANT	6895
DENT	CLOVER, RUNNING BUFFALO	1	PLANT	595
DUNKLIN	CLOVER, RUNNING BUFFALO	1	PLANT	83709
LACLEDE	CLOVER, RUNNING BUFFALO	1	PLANT	475
ST. LOUIS	CLOVER, RUNNING BUFFALO	1	PLANT	12707
VERNON	CLOVER, RUNNING BUFFALO	1	PLANT	65985
WAYNE	CLOVER, RUNNING BUFFALO	1	PLANT	4233
** Subtotal **		44		1462375
** STATE - - > MISSISSIPPI				
BOLIVAR	PONDBERRY	1	PLANT	168543
CLAY	POTATO-BEAN, PRICE'S	1	PLANT	31501
LEE	POTATO-BEAN, PRICE'S	1	PLANT	47588
OKTIBBEHA	POTATO-BEAN, PRICE'S	1	PLANT	11998
SHARKEY	PONDBERRY	1	PLANT	83095
SUNFLOWER	PONDBERRY	1	PLANT	89392
NOXUBEE	CHAFFSEED, AMERICAN	1	PLANT	80695
** Subtotal **		7		512812
** STATE - - > NORTH CAROLINA				
BLADEN	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	18105
BLADEN	PONDBERRY	1	PLANT	18105
BRUNSWICK	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	8305
BRUNSWICK	MEADOWRUE, COOLEY'S	1	PLANT	8305
BURKE	BLAZING STAR, HELLER'S	1	PLANT	360
BURKE	HEARTLEAF, DWARF-FLOWERED	1	PLANT	360
BURKE	HEATHER, MOUNTAIN GOLDEN	1	PLANT	360
BURKE	POGONIA, SMALL WHORLED	1	PLANT	360
CABARRUS	SUNFLOWER, SCHWEINITZ'S	1	PLANT	5285
CALDWELL	BLAZING STAR, HELLER'S	1	PLANT	842
CARTERET	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	13333
CATAWBA	HEARTLEAF, DWARF-FLOWERED	1	PLANT	4421
CHATHAM	HARPERELLA	1	PLANT	1780

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
CLEVELAND	HEARTLEAF, DWARF-FLOWERED	1	PLANT	7046
COLUMBUS	MEADOWRUE, COOLEY'S	1	PLANT	32135
CUMBERLAND	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	20958
DAVIE	SUMAC, MICHAUX'S	1	PLANT	3648
FRANKLIN	SUMAC, MICHAUX'S	1	PLANT	14030
GRANVILLE	HARPERELLA	1	PLANT	3179
HOKE	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	20004
HOKE	SUMAC, MICHAUX'S	1	PLANT	20004
LINCOLN	HEARTLEAF, DWARF-FLOWERED	1	PLANT	4308
MCDOWELL	HEATHER, MOUNTAIN GOLDEN	1	PLANT	20854
MECKLENBURG	SUNFLOWER, SCHWEINITZ'S	1	PLANT	648
ONSLOW	MEADOWRUE, COOLEY'S	1	PLANT	13320
PENDER	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	13541
PENDER	MEADOWRUE, COOLEY'S	1	PLANT	13541
POLK	IRISETTE, WHITE	1	PLANT	182
RICHMOND	SUMAC, MICHAUX'S	1	PLANT	4057
ROBESON	SUMAC, MICHAUX'S	1	PLANT	81613
ROWAN	SUNFLOWER, SCHWEINITZ'S	1	PLANT	6234
RUTHERFORD	HEARTLEAF, DWARF-FLOWERED	1	PLANT	1080
RUTHERFORD	IRISETTE, WHITE	1	PLANT	1080
SCOTLAND	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	13740
SCOTLAND	SUMAC, MICHAUX'S	1	PLANT	13740
STANLY	SUNFLOWER, SCHWEINITZ'S	1	PLANT	21299
STOKES	BITTERCRESS, SMALL-ANTHERED	1	PLANT	898
UNICOI	SPIRAEA, VIRGINIA	1	PLANT	23297
UNION	SUNFLOWER, SCHWEINITZ'S	1	PLANT	49540
WAKE	SUMAC, MICHAUX'S	1	PLANT	14667
HOKE	CHAFFSEED, AMERICAN	1	PLANT	20004
HYDE	JOINT-VETCH, SENSITIVE	1	PLANT	39624
DURHAM	CONEFLOWER, SMOOTH	1	PLANT	646
GRANVILLE	CONEFLOWER, SMOOTH	1	PLANT	3179
BEAUFORT	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	62806
BEAUFORT	JOINT-VETCH, SENSITIVE	1	PLANT	62806
BLADEN	CHAFFSEED, AMERICAN	1	PLANT	18105
BURNSWICK	AMARANTH, SEABEACH	1	PLANT	8305
BURKE	AVENS, SPREADING	1	PLANT	360
CALDWELL	GOLDENROD, BLUE RIDGE	1	PLANT	842
CALDWELL	AVENS, SPREADING	1	PLANT	842
COLUMBUS	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	32135
CRAVEN	JOINT-VETCH, SENSITIVE	1	PLANT	23357
CUMBERLAND	PONDBERRY	1	PLANT	20958
DURHAM	SUMAC, MICHAUX'S	1	PLANT	646
HYDE	AMARANTH, SEABEACH	1	PLANT	39624
LEE	HARPERELLA	1	PLANT	3668
LINCOLN	SUMAC, MICHAUX'S	1	PLANT	4308
MOORE	CHAFFSEED, AMERICAN	1	PLANT	1651

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
MOORE	SUMAC, MICHAUX'S	1	PLANT	1651
MOORE	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	1651
NEW HANOVER	AMARANTH, SEABEACH	1	PLANT	796
ONSLOW	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	13320
ONSLOW	AMARANTH, SEABEACH	1	PLANT	13320
PAMLICO	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	15244
PENDER	CHAFFSEED, AMERICAN	1	PLANT	13541
PENDER	AMARANTH, SEABEACH	1	PLANT	13541
RICHMOND	LOOSESTRIFE, ROUGH-LEAVED	1	PLANT	4057
SAMPSON	PONDBERRY	1	PLANT	56294
SCOTLAND	DROPWORT, CANBY'S	1	PLANT	13740
STOKES	SUNFLOWER, SCHWEINITZ'S	1	PLANT	898
SURRY	POGONIA, SMALL WHORLED	1	PLANT	5355
WILSON	SUMAC, MICHAUX'S	1	PLANT	26319
** Subtotal **		73		1022157
** STATE - - > NEBRASKA				
GARDEN	PENSTEMON, BLOWOUT	1	PLANT	253
HALL	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	11492
LANCASTER	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	48555
MORRILL	PENSTEMON, BLOWOUT	1	PLANT	306
SEWARD	ORCHID, WESTERN PRAIRIE FRINGED	1	PLANT	45949
** Subtotal **		5		106555
** STATE - - > OHIO				
CLERMONT	CLOVER, RUNNING BUFFALO	1	PLANT	36796
HAMILTON	CLOVER, RUNNING BUFFALO	1	PLANT	4769
HOLMES	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	1625
LUCAS	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	37588
OTTAWA	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	51198
PORTAGE	MONKSHOOD, NORTHERN WILD	1	PLANT	8389
SANDUSKY	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	81313
SUMMIT	MONKSHOOD, NORTHERN WILD	1	PLANT	566
WARREN	CLOVER, RUNNING BUFFALO	1	PLANT	30363
WAYNE	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	18117
COSHOCTON	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	1420
ERIE	DAISY, LAKESIDE	1	PLANT	26559
OTTAWA	DAISY, LAKESIDE	1	PLANT	51198
BROWN	CLOVER, RUNNING BUFFALO	1	PLANT	45744
BUTLER	CLOVER, RUNNING BUFFALO	1	PLANT	25951
MONTGOMERY	CLOVER, RUNNING BUFFALO	1	PLANT	37036
SCIOTO	SPIRAEA, VIRGINIA	1	PLANT	10423

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
** Subtotal **		17		469055
** STATE - - > TENNESSEE				
BLOUNT	SPIRAEA, VIRGINIA	1	PLANT	2906
CUMBERLAND	SPIRAEA, VIRGINIA	1	PLANT	1960
DAVIDSON	CONEFLOWER, TENNESSEE PURPLE	1	PLANT	702
DAVIDSON	PRAIRIE-CLOVER, LEAFY	1	PLANT	702
FENTRESS	SANDWORT, CUMBERLAND	1	PLANT	1419
MARION	FERN, AMERICAN HART'S-TONGUE	1	PLANT	7528
MARION	POTATO-BEAN, PRICE'S	1	PLANT	7528
MARION	SKULLCAP, LARGE-FLOWERED	1	PLANT	7528
MARSHALL	PRAIRIE-CLOVER, LEAFY	1	PLANT	1626
MAURY	PRAIRIE-CLOVER, LEAFY	1	PLANT	8051
MONTGOMERY	POTATO-BEAN, PRICE'S	1	PLANT	20769
MORGAN	SANDWORT, CUMBERLAND	1	PLANT	574
MORGAN	SPIRAEA, VIRGINIA	1	PLANT	574
POLK	ASTER, RUTH'S GOLDEN	1	PLANT	873
ROANE	SPIRAEA, VIRGINIA	1	PLANT	144
RUTHERFORD	CONEFLOWER, TENNESSEE PURPLE	1	PLANT	10554
RUTHERFORD	GROUND-PLUM, GUTHRIE'S	1	PLANT	10554
RUTHERFORD	PRAIRIE-CLOVER, LEAFY	1	PLANT	10554
SEVIER	AVENS, SPREADING	1	PLANT	80
VAN BUREN	SPIRAEA, VIRGINIA	1	PLANT	185
WILLIAMSON	POTATO-BEAN, PRICE'S	1	PLANT	8665
WILLIAMSON	PRAIRIE-CLOVER, LEAFY	1	PLANT	8665
WILSON	CONEFLOWER, TENNESSEE PURPLE	1	PLANT	820
WILSON	PRAIRIE-CLOVER, LEAFY	1	PLANT	820
FENTRESS	ROSEMARY, CUMBERLAND	1	PLANT	1419
WHITE	ROSEMARY, CUMBERLAND	1	PLANT	1937
MORGAN	ROSEMARY, CUMBERLAND	1	PLANT	574
CUMBERLAND	ROSEMARY, CUMBERLAND	1	PLANT	1960
DE KALB	POTATO-BEAN, PRICE'S	1	PLANT	4147
** Subtotal **		29		123818
** STATE - - > VIRGINIA				
ALLEGANY	ROCK-CRESS, SHALE BARREN	1	PLANT	171
AUGUSTA	BULRUSH, NORTHEASTERN (=BARBED BRISTLE)	1	PLANT	113
AUGUSTA	ORCHID, EASTERN PRAIRIE FRINGED	1	PLANT	113
AUGUSTA	PINK, SWAMP	1	PLANT	113
AUGUSTA	ROCK-CRESS, SHALE BARREN	1	PLANT	113
CAROLINE	POGONIA, SMALL WHORLED	1	PLANT	14594
HENRICO	PINK, SWAMP	1	PLANT	4640
JAMES CITY	POGONIA, SMALL WHORLED	1	PLANT	3248
PRINCE WILLIAM	POGONIA, SMALL WHORLED	1	PLANT	989

A LISTING OF COUNTIES WHERE ENDANGERED
PLANT ARE FOUND FOR SELECTED CROPS

COUNTY	SPECIES	COUNT	GROUP	SOYBEANS
ROCKINGHAM	BULRUSH, NORTHEASTERN (=BARBED BRISTLE)	1	PLANT	324
SHENANDOAH	ROCK-CRESS, SHALE BARREN	1	PLANT	993
STAFFORD	JOINT-VETCH, SENSITIVE	1	PLANT	1692
KING GEORGE	JOINT-VETCH, SENSITIVE	1	PLANT	6692
ESSEX	JOINT-VETCH, SENSITIVE	1	PLANT	21872
WESTMORELAND	JOINT-VETCH, SENSITIVE	1	PLANT	15701
KING AND QUEEN	JOINT-VETCH, SENSITIVE	1	PLANT	16612
KING WILLIAM	JOINT-VETCH, SENSITIVE	1	PLANT	16999
NEW KENT	JOINT-VETCH, SENSITIVE	1	PLANT	6272
CHARLES CITY	JOINT-VETCH, SENSITIVE	1	PLANT	6400
JAMES CITY	JOINT-VETCH, SENSITIVE	1	PLANT	3248
CAMPBELL	CONEFLOWER, SMOOTH	1	PLANT	2370
FRANKLIN	CONEFLOWER, SMOOTH	1	PLANT	159
APPOMATTOX	POGONIA, SMALL WHORLED	1	PLANT	653
BUCKINGHAM	POGONIA, SMALL WHORLED	1	PLANT	878
CAROLINE	PINK, SWAMP	1	PLANT	14594
GLOUCESTER	POGONIA, SMALL WHORLED	1	PLANT	8424
GREENSVILLE	CHAFFSEED, AMERICAN	1	PLANT	8719
NEW KENT	POGONIA, SMALL WHORLED	1	PLANT	6272
NOTTOWAY	CONEFLOWER, SMOOTH	1	PLANT	1746
PAGE	ROCK-CRESS, SHALE BARREN	1	PLANT	113
PATRICK	BITTERCRESS, SMALL-ANTHERED	1	PLANT	239
PRINCE GEORGE	JOINT-VETCH, SENSITIVE	1	PLANT	8432
STAFFORD	POGONIA, SMALL WHORLED	1	PLANT	1692
SUSSEX	CHAFFSEED, AMERICAN	1	PLANT	17157
** Subtotal **		34		192347
*** Total ***		600		28980204