CITIZEN PETITION BEFORE THE UNITED STATES
UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL PLANT HEALTH INSPECTION SERVICE

DAKOTA RESOURCE COUNCIL
P.O. Box 1095,
Dickinson, ND 58601

STATE SENATOR APRIL FAIRFIELD
312 S. Main,
Eldridge, ND 58435

NATIONAL FAMILY FARM COALITION,
110 Maryland Ave., NE, Suite 307,
Washington, DC 20002

NORTHERN PLAINS RESOURCE COUNCIL
2401 Montana Avenue #200,
Billings, MT 59101

NORTHERN PLAINS SUSTAINABLE AGRICULTURE SOCIETY
9824 79th St SE,
Fullerton, ND 58441-9725

STATE SENATOR JOHN TESTER
709 Son Lane,
Big Sandy, MT 59520

WESTERN ORGANIZATION OF RESOURCE COUNCILS,
2401 Montana Avenue, #301,
Billings, MT 59101,

et al.,

Petitioners,

Filed With:

ANN VENEMAN,
in her official capacity as,
Secretary of the United States
Department of Agriculture,
Room 200-A, Admin Bldg.
14th & Independence Ave., SW
Washington, DC 20259

Docket No. _____

BOBBY ACORD,
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Administrator, USDA, Animal Plant
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Room 312 East
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ALAN TASKER,
in his official capacity as,
USDA, APHIS
Noxious Weed Program Manager,
4700 River Road
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et al.,

Petitioned Agency.

PETITION SEEKING AN ENVIRONMENTAL IMPACT STATEMENT CONCERNING THE DEREGULATION OF GENETICALLY ENGINEERED WHEAT VARIETIES & PETITION SEEKING THE LISTING OF GENETICALLY ENGINEERED WHEAT VARIETIES AS NOXIOUS WEEDS

Pursuant to the Right to Petition Government Clause contained in the First Amendment of the United States Constitution,[1] the Administrative Procedure Act,[2] the Plant Protection Act[3] and the United States Department of Agriculture's (USDA) implementing regulations,[4] the undersigned submit this citizen petition for rulemaking and collateral relief under the National Environmental Policy Act (NEPA) and the Plant Protection Act (PPA) requesting the Secretary take actions to prevent any

[1] The right to petition for redress of grievances is among the most precious of the liberties safeguarded by the Bill of Rights. United Mine Workers of America, Dist. 12 v. Illinois State Bar Ass'n, 389 U.S. 217, 222, 88 S. Ct. 353, 356, 19 L. Ed. 2d 426 (1967). It shares the "preferred place" accorded in our system of government to the First Amendment freedoms, and has a sanctity and a sanction not permitting dubious intrusions. Thomas v. Collins, 323 U.S. 516, 530, 65 S. Ct. 315, 322, 89 L. Ed. 430 (1945). "Any attempt to restrict those First Amendment liberties must be justified by clear public interest, threatened not doubtful or remotely, but by clear and present danger." *Id.* The Supreme Court has recognized that the right to petition is logically implicit in, and fundamental to, the very idea of a republican form of government. United States v. Cruikshank, 92 U.S. (2 Otto) 542, 552, 23 L. Ed. 588 (1875).

[2] 5 U.S.C. § 553(e) (2000).

[3] 7 U.S.C. §§ 7711(c)(2), 7712(f)(2) (2000).

[4] 21 C.F.R. §§ 10.20,10.30 (2000).

environmental, economic and social injury resulting from the deregulation and commercial sale of genetically engineered wheat. This petition is also to be included in the docket used during any agency decisionmaking on Monsanto's Plant Pest Deregulation Petition No. 02-353-01p. Specifically, petitioners request the Secretary undertake the following actions:

I. Institute a moratorium on the commercial introduction, dissemination, interstate movement or conveyance of genetically engineered, herbicide resistant wheat, including but not limited to all genetically engineered wheat varieties and food products containing any ingredients or material derived for genetically engineered, herbicide resistant wheat varieties until the USDA, as mandated under §102 of NEPA, fully evaluates the environmental, human health and socio-economic impacts caused by the commercialization of genetically engineered, herbicide resistant wheat. Such action and analysis should include completion of an environmental impact statement analyzing the effects on the human environment resulting from any USDA actions deregulating (or other action allowing commercial distribution, sale and planting) genetically engineered, herbicide resistant wheat varieties.

II. Institute a moratorium on the commercial introduction, dissemination, interstate movement or conveyance of genetically engineered, herbicide resistant wheat, including but not limited to all genetically engineered wheat varieties and food products containing any ingredients or material derived for genetically engineered, herbicide resistant wheat varieties until the USDA reviews the impacts of such activities on migratory birds pursuant to the Migratory Bird Treaty Act and Executive Order 13186.

III. Upon completion of requests I and II and using the authority provided 7 U.S.C. § 7712(a), the Secretary should: (1) deny all petitions seeking deregulated status for genetically engineered, herbicide resistant wheat varieties; (2) designate all forms of genetically engineered wheat, including all forms of glyphosate-resistant genetically engineered wheat, as noxious weeds by adding them to the list of noxious weeds contained at 7 C.F.R. 360.200; and (3) prohibit the introduction of all genetically engineered, herbicide resistant wheat varieties and any and all interstate movement of such products to prevent the dissemination of this noxious weed in the United States.

PETITIONERS

Petitioner **Dakota Resource Council** (DRC) is located at P.O. Box 1095, Dickinson, North Dakota 58601. DRC was formed in 1978 to protect North Dakota's land, air, water, rural communities and agricultural economy. DRC is working for, inter alia, the preservation of the family farms; enforcement of corporate farming laws ; and protection of soil and water resources. Many DRC members are wheat farmers and the deregulation of genetically engineered wheat varieties will economically, environmentally and socially harm them as described herein.

Petitioner **State Senator April Fairfield** resides at 312 S. Main, Eldridge, ND 58435. The petitioner is a North Dakota state senator who represents 15,000 North Dakota citizens, many of whom are very concerned about the 1000s of acres of hard red spring wheat that they grow. Hard red spring wheat is sold to grain handlers for use in the United States and for export to a number of other countries. The

price received by the petitioner's constituents for their red hard spring wheat depends upon the market recognition of the superior quality of hard red spring wheat and the acceptance of this variety by international markets. Major U.S. wheat importing countries have voiced their strong opposition to the introduction of Round Ready and other genetically engineered wheat varieties in their markets. Thus, the contamination of the U.S. conventional wheat supply with any genetically engineered varieties threatens petitioner's constituents' ability to grow wheat for the export market. As such, the USDA's pending determination to deregulate Monsanto's herbicide resistant wheat (Plant Pest Deregulation Petition No. 02-353-01p) or other genetically engineered wheat varieties imminently threatens petitioner's constituents' ability to produce, market and sell hard red spring wheat and/or durum.

Petitioners **Wayne & Joy Fisher** reside at 4425 115th Ave. SW., Dickinson, ND 58601. Petitioners are third generation farmers who regularly grow 1490 acres of hard red spring wheat. These products are sold to Southwest Grain elevators for use in the United States and for export to a number of other countries. The price received by the petitioners for their hard red spring wheat depends upon the market recognition of the superior quality of the wheat and the acceptance of this variety by international markets. Major U.S. wheat importing countries have voiced their strong opposition to the introduction of Round Ready and other genetically engineered wheat varieties in their markets. Thus, the contamination of the U.S. conventional wheat supply with any genetically engineered varieties threatens petitioners' ability to grow wheat for the export market. As such, the USDA'a pending determination to deregulate Monsanto's herbicide resistant wheat (Plant Pest Deregulation Petition No. 02-353-01p) or other genetically engineered wheat varieties imminently threatens petitioner's ability to produce, market and sell hard red spring wheat and/or durum.

Petitioner **Lonnie Leake** resides at RR1 Box # 55A, Emerado ND 58228. The petitioner is a fourth generation farmer who regularly grows 1000 acres of hard red spring wheat. These products are sold to grain handlers for use in the United States and for export to a number of other countries. The price received by the petitioners for their red hard spring wheat depends upon the market recognition of the superior quality of the wheat and the acceptance of this variety by international markets. Major U.S, wheat importing countries have voiced their strong opposition to the introduction of Round Ready and other genetically engineered wheat varieties in their markets. Thus, the contamination of the U.S. conventional wheat supply with any genetically engineered varieties threatens petitioner's ability to grow wheat for the export market. As such, the USDA's pending determination to deregulate Monsanto's herbicide resistant wheat (Plant Pest Deregulation Petition No. 02-353-01p) or other genetically engineered wheat varieties imminently threatens petitioner's ability to produce, market and sell hard red spring wheat and/or durum.

Petitioner **Todd Leake** resides at RR1 Box #35, Emerado ND 58228. The petitioner is a fourth generation farmer who regularly grows 1000 acres of hard red spring wheat. These products are sold to grain handlers for use in the United States and for export to a number of other countries. The price received by the petitioner for his hard red spring wheat depends upon the market recognition of the superior quality of the wheat and the acceptance of this variety by international markets. Major U.S. wheat importing countries have voiced their strong opposition to the introduction of Round Ready and other genetically engineered wheat varieties in their markets. Thus, the potential contamination of the U.S. conventional wheat supply with any genetically engineered varieties threatens petitioner's ability to grow wheat for the export market. As such, the USDA's pending determination to deregulate Monsanto's herbicide resistant wheat (Plant Pest Deregulation Petition No. 02-353-01p) or other

genetically engineered wheat varieties imminently threatens petitioner's ability to produce, market and sell hard red spring wheat and/or durum.

Petitioner **National Family Farm Coalition** (NFFC) is located at 110 Maryland Ave., NE, Suite 307, Washington, DC 20002. NFFC was founded in 1986 to serve as a national link for grassroots organizations working on family farm issues. NFFC's membership currently consists of 33 grassroots farm, resource conservation, and rural advocacy groups from 33 states. Many NFFC member organizations represent wheat farmers and the deregulation of genetically engineered wheat varieties will economically, environmentally and socially harm them as described herein.

Petitioner the **Northern Plains Resource Council** (NPRC) is located at 2401 Montana Avenue #200 Billings, Montana 59101. NPRC was formed in 1972 to preserve Montana's greatest assets: its land, environmental quality and unique rural character and values. NPRC is works for, inter alia, fair prices for farmers and ranchers. Many NPRC members are wheat farmers and the deregulation of genetically engineered wheat varieties will economically, environmentally and socially harm them as described herein.

Petitioner **Northern Plains Sustainable Agriculture Society** (NPSAS) is located at 9824 79th St SE Fullerton, ND 58441-9725. NPSAS is a grassroots educational organization committed to the development of a sustainable society through the promotion of ecologically and socially sound food production and distribution systems in the Northern Plains. NPSAS's constituency is farm families and others interested in sustainable agriculture. Members are located primarily in North Dakota, South Dakota, Minnesota, and Montana, as well as neighboring states of Iowa, Wyoming, and Nebraska. Many NPSAS members are organic grain producers and the deregulation of genetically engineered wheat varieties will economically, environmentally and socially harm them as described herein.

Petitioner **Russell Salisbury** resides at Salisbury Farm, 5000 Lewis Trail, P.O. Box 65, Floweree, MT 59440. Petitioner is a farmer concerned about that environmental and economic impacts that will be associated with the commercially growing of genetically engineered wheat. Petitioner believes that use of Roundup Ready wheat will be a disaster in his part of the country. Even though only 1% of the wheat pollen becomes air-borne, the high winds in the plains of Montana are enough to transport the pollen to his farm and contaminate his crops. Major U.S. wheat importing countries have voiced their strong opposition to the introduction of Round Ready and other genetically engineered wheat varieties in their markets. Thus, the potential contamination of the U.S. conventional wheat supply with any genetically engineered varieties threatens petitioner's livelihood and the markets for his crops.

Petitioner **Arlo Skari** is located at P.O. Box 296, Chester, Montana 59522. Petitioner and his family reside in northern Liberty County and raise primarily spring wheat. Petitioner is concerned that the commercial introduction of Roundup Ready wheat will cause economic and other impacts to his family farm. Major U.S. wheat importing countries have voiced their strong opposition to the introduction of Round Ready and other genetically engineered wheat varieties in their markets. Thus, the potential contamination of the U.S. conventional wheat supply with any genetically engineered varieties threatens petitioner's ability to grow wheat for the export market

Petitioner **State Senator John Tester** (D) SD 45 resides at 709 Son Ln., Big Sandy, MT 59520. Petitioners major concerns about genetically engineered grains revolve around market acceptance and

the impacts on Montana's economy. Currently, Montana's wheat customers do not want genetically engineered grains. Petitioner experienced the state of the export market during a visit to Taiwan a year ago. In meeting with the Taiwanese Agriculture Department petitioner was asked directly "why is your government forcing GMO grains on us." Clearly, Montana's grain customers do not want genetically engineered grains. As such, the USDA's pending determination to deregulate Monsanto's herbicide resistant wheat (Plant Pest Deregulation Petition No. 02-353-01p) or other genetically engineered wheat varieties imminently threatens Montana's farmers ability to produce, market and sell hard red spring wheat.

Petitioner **Elsie Tuss** and Kinkeye Limited (farm corporation) are located at P.O. Box 41, Floweree, MT 59440. Petitioner is a small grain farmer that sells some of her grain to the Pacific Rim nations. Petitioner does not want any genetically engineered wheat to be commercially introduced into Montana until there are safeguards for her farm, her markets and her crops. Petitioner believes that there must be a confirmed market before any commercial growing of genetically engineered wheat can occur, and that there must be established segregation of grain handling for genetically engineered wheat that insures that there will be no contamination of non-genetically engineered wheat. Further, plaintiff asserts that there must be scientific proof that commercialization of genetically engineered wheat will not degrade Montana's environment by, inter alia, creating unwanted plants which are difficult to eradicate.

Petitioner **Donald Vig** resides at 3115 110 Ave. SE, Valley City, ND 58072. Petitioner is a fourth generation farmer who regularly grows 160 - 480 acres of hard red spring wheat. This certified organically produced wheat is sold to grain handlers for use in the United States and for export to a number of other countries including the European Union and Japan. The price received by the petitioner for this red hard spring wheat depends upon the market recognition of the superior quality of hard red spring wheat and the acceptance of this variety by international markets. Major U.S. wheat importing countries have voiced their strong opposition to the introduction of Round Ready and other genetically engineered wheat varieties in their markets. Thus, the contamination of the U.S. wheat supply with any genetically engineered varieties threatens the petitioner's ability to grow wheat for the export market. As such, the USDA's pending determination to deregulate Monsanto's herbicide resistant wheat (Plant Pest Deregulation Petition No. 02-353-01p) or other genetically engineered wheat varieties imminently threatens the petitioner's ability to produce, market and sell hard red spring wheat.

Petitioner **Helen Waller** resides at 615 Weldon Road, Circle, MT 59215. Petitioner and her husband have raised wheat on their farm since they began farming in 1953. Their survival as wheat farmers in Montana is dependent upon stable markets. About 60% of Montana grown wheat goes into the export market to the Pacific Rim countries. Petitioners have historically sold their grain to facilities that move the product into the export market. Petitioners sold last year's crop primarily into the Harvest States system that has recently completed three major collection points in their marketing area. Petitioner has been told by a reliable source within Harvest States that their system is not prepared to segregate genetically engineered crops from traditional crops. Since their Pacific Rim customers have indicated that they will not buy genetically engineered crops at any tolerance, the Harvest States system will not purchase genetically engineered wheat or wheat that has been contaminate with any genetically engineered wheat variety. Without the export market for their wheat, petitioner's farming operation would no longer be viable, and would be out of business. Therefore, petitioner believes that genetically engineered wheat should not be deregulated and allowed for commercial use until export markets are secure, and segregation procedures are in place within transportation and elevator/warehouse facilities.

Petitioner **Western Organization of Resource Councils** (WORC) is located at 2401 Montana Avenue, #301, Billings, Montana 59101. WORC was formed in 1979 to advance the vision of a democratic, sustainable, and just society through community action. WORC is working for, inter alia, stewardship and conservation of land, air, water, and energy resources, family farms, sustainable agriculture, and just economic and social policies. Many WORC members are wheat farmers and the deregulation of genetically engineered wheat varieties will economically, environmentally and socially harm them as described herein.

Petitioners **Thomas J. and Gail M. Wiley** reside at 5111 77th Ave. SE, Montpelier, ND. Petitioners are farmers who regularly grow about 1500 acres of hard red spring wheat. These products are sold to local elevators for use in the United States and for export to a number of other countries. The price received by the petitioners for their red hard spring wheat depends upon the market recognition of the superior quality of hard red spring wheat and the acceptance of this variety by international and domestic markets. Major U.S wheat importing countries and also several domestic customers have voiced their strong opposition to the introduction of Round Ready and other genetically engineered wheat varieties in their markets. Thus, the contamination of the U.S. conventional wheat supply, either by cross-pollination or by commingling of grain during handling, with any genetically engineered varieties threatens the petitioners' ability to make a living selling their product into the export or domestic market. As such, the USDA's pending determination to deregulate Monsanto's herbicide resistant wheat (Plant Pest Deregulation Petition No. 02-353-01p) or other genetically engineered wheat varieties imminently threatens the petitioners' ability to produce, market and sell hard red spring wheat.

STATEMENT OF GROUNDS

Genetic engineering is a novel technology that is fundamentally altering our food supply and the environment. Biotechnologists now are able to take genetic material from one organism and insert it into the permanent code of another. Among these novel food creations are varieties of genetically engineered wheat destined for human food markets. Scientific research indicates that introducing genetically engineered wheat into the environment carries potential adverse ecological effects, particularly if released at a commercial scale. Further, economic strategists predict grave economic effects for United States farmers exporting wheat internationally. Finally, the introduction of genetically engineered foods also raises dangers to human health and threats to social and religious traditions.[5]

Since 1994, USDA has "authorized" at least 210 field tests for genetically engineered wheat conducted

[5] On March 21, 2000, the Center for Food Safety and 54 other consumer, environmental and farming organizations filed a legal petition with the Food and Drug Administration (FDA) seeking, *inter alia*, mandatory pre-market safety testing, pre-market environmental review and labeling for all genetically engineered foods. FDA Docket No. 00-1211P (March 21, 2000). The petition is still pending before the FDA.

on over 1315.9 acres in at least 18 states[6] by 11 institutions.[7] More specifically, USDA has 222 records for field test sites of transgenic wheat in the United States.[8] Seven field trials have been withdrawn, six denied, 19 are "issued" permits, the remaining 190 are "acknowledged" notifications.[9] Total acreage of issued permits or acknowledged notifications is over 1315 acres.[10] Twelve permits and notifications do not specify acreage. Field tests have been or are being conducted by 7 private corporations,[11] 3 public educational institutions[12] and the U.S. government.[13] The majority of the field tests involve wheat genetically engineered for herbicide tolerance,[14] some for pest and disease resistance,[15] and others for product quality improvement.[16] These field trials are expected to culminate next year in the commercial introduction of genetically engineered wheat varieties. In particular, Oregon State University, Washington State University, South Dakota State University and the University of Minnesota have agreed with Monsanto to develop and bring to market a Roundup Ready® hard red spring wheat as early as 2003.[17] On December 19, 2002, APHIS received a petition for deregulated status from Monsanto for herbicide resistant wheat. APHIS assigned this as petition number 02-353-01p and lists the status as "under review for completeness."

To ensure that any federal action allowing and/or facilitating the commercial introduction of genetically engineered wheat varieties completely and thoroughly provides protection to the environment, economy and public health, for the reasons outlined herein, petitioners request that the agency, through denial of all petitons seeking deregulated status and/or any other means, impose a moratorium on the commercialization of genetically engineered herbicide resistant wheat unless the USDA takes all actions requested by petitioners, and other federal agencies have established a regulatory approval process requiring mandatory pre-market safety testing, full pre-market environmental review and (should commercialization occur) mandatory labeling and segregation of all genetically engineered wheat.

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[6] These eighteen states are AR, AZ, CA, CO, FL, HI, ID, IL, IN, KS, MN, MT, NC, ND, NE, OR, SD, WA.

[7] *Field Test Releases in the U.S.,* Information Systems for Biotechnology, *available at* http://www.isb.ut.edu/cfdocs/fieldtest1.fm (last visited Nov. 26, 2001).

[8] *Id.*

[9] *Id.*

[10] *Id.*

[11] AgrEvo, Applied Phytologics, Cargill, Goertzen Seeds, Monsanto, Novartis Seeds, and Syngenta.

[12] Kansas State University, Montana State University and the University of Idaho.

[13] United States Department of Agriculture, Agricultural Research Service.

[14] Traits include glyphosate tolerant (i.e. Round-Up Ready® by Monsanto) and phosphinothricin tolerant (by ARS).

[15] Traits include Fusarium resistant, powdery mildew resistant, WSMV resistant, BYDV resistant, Septoria resistant, fungal resistant, and general disease resistance.

[16] Traits include storage protein altered, digestibility improved, yield increase, starch level increased, novel protein produced, drought tolerant, capable of growth on defined synthetic media, nitrogen metabolism altered, carbohydrate metabolism altered, and photosynthesis enhanced

[17] *Gene-altered U.S. Wheat Coming to Market by 2003*, CNN.com, *available at* http://www.cnn.com/2000/FOOD/news/08/17/food.gene.wheat.reut/ (last visited July 17, 2002).

STATEMENT OF THE LAW

Administrative Procedure Act, 5 U.S.C. § 551, et seq.

Migratory Bird Treaty Act, 16 U.S.C. § 701, et seq.

National Environmental Policy Act, 42 U.S.C. § 4321, et seq.

Plant Protection Act, 7 U.S.C. § 7701, et seq.

Executive Order 13816

All other applicable statutes and regulations.

ARGUMENT

I. USDA Is Required under the National Environmental Policy Act to Review the Impacts to Environment, Human Health and Economy that Will Result From the Commercialization of Genetically Engineered, Herbicide Resistant Wheat.

The National Environmental Policy Act ("NEPA") is the "basic national charter for protection for the environment."[18] NEPA is intended to "promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man."[19] The duties under this section are not "inherently flexible."[20] The purpose behind NEPA is to "insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken."[21]

Recognizing the affects of new technologies on the environment, Congress explicitly states in NEPA that "new and expanding technological advances" are activities that could threaten the environment.[22] In the legislative history, Congress expressed its concern with "[a] growing technological power * * * far outstripping man's capacity to understand and ability to control its impact on the environment."[23] Thus, in order to understand and control the effects of new technologies, Congress requires federal agencies to consider their environmental effects by complying with the requirements of NEPA. In addition to environmental concerns, the proposed action's possible direct, indirect, and cumulative

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[18] 40 C.F.R. § 1500.1.

[19] 42 U.S.C. § 4321.

[20] Calvert Cliffs Coordinating Comm. Inc. v. U.S. Atomic Energy Comm'n, 449 F.2d 1109 (D.C. Cir. 1971).

[21] 40 C.F.R. § 1500.1(b),(c).

[22] 42 U.S.C. § 4331(a).

[23] Found. on Economic Trends v. Heckler, 756 F.2d 143, 147 (D.C. Cir. 1985) quoting S. Rep. No. 91-296 (1969).

impacts on public health must be reviewed.[24]

As mandated by Congress, USDA must comply with NEPA before it attempts to deregulate and allow the commercialization of genetically engineered, herbicide resistant wheat varieties. USDA is the lead federal agency designated to undertake NEPA analysis for the commercialization of genetically engineered plant varieties. In the Food and Drug Administration's ("FDA") 1992 Statement of Policy: Foods Derived From New Plant Varieties ("1992 Food Policy"), the FDA categorically excluded its voluntary consultation process for genetically engineered foods from NEPA assessment.[25] The 1992 Food Policy specifically notes that FDA relies on the USDA to conduct such assessments as part of its regulatory oversight on the field testing of genetically engineered crops.[26] In 1999, the FDA reiterated its reliance on USDA's compliance with NEPA to a Federal court.[27] The FDA also produced a ten-page document delineating a number of the impacts of a genetically engineered food that must be analyzed under the NEPA process.[28] Accordingly, it is clear that the Federal government views USDA as the lead agency to meet the procedural requirements of NEPA on all aspects of the use of genetically engineered plants, including the impacts associated with the major federal action of commercialization of genetically engineered varieties, such as wheat, associated with granting of any petition seeking deregulated status of a genetically engineered plant.

In the past, the USDA has failed to undertake an environmental impact statement ("EIS") assessing the impacts resulting from the commercialization of any genetic engineered plant variety. USDA's NEPA implementing regulations presume that "approvals and issuance of permits for proposals involving genetically engineered or nonindigenous species" require only an environmental assessment ("EA").[29] USDA's decisions on whether or not to grant such genetically engineered, herbicide tolerant wheat varieties deregulated status are major federal actions that may significantly affect the environment and clearly overcome the agency's regulatory presumption in favor of an EA. In 2000, the estimated, planted wheat acreage in the U.S. was 62,529,000 acres.[30] Spring wheat varieties were planted on 15,244,000 acres.[31] The commercial planting of genetically engineered herbicide resistant wheat that will result on such a vast number of acres will clearly have significant impacts on the environment, and triggers the need for a full EIS.

Moreover, the USDA's regulatory presumption in favor of accompanying deregulation petitions with EAs ignores that intent and language the Council on Environmental Quality's implementing regulations for NEPA. The CEQ regulations list factors that determine whether a federal action, such as

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[24] 40 C.F.R. § 1508.8(b); Baltimore Gas & Elec. Co. v. NRDC, 462 U.S. 87, 106 (1983)(explaining that "NEPA requires an EIS to disclose the significant health, socioeconomic, and cumulative consequences of the environmental impact of a proposed action.").

[25] Food Derived from New Plant Varieties, 57 Fed Reg 22984 (May 29, 1992).

[26] *Id.* at 23004.

[27] *See* Def's Mot. Dismiss./Mot. Summ. J. at 46, Alliance for Bio-Integrity v. Shalala, 116 F. Supp. 2d 166 (D.D.C. 2000), (No. ????????)).

[28] *See* Attach. 1.

[29] 7 C.F.R. § 372.5(b)(4).

[30] Data derived from *Wheat Situation and Outlook Yearbook,* Market and Trade Economics Division, Economic Research Service/U.S. Department of Agriculture, WHS-2001 (Mar. 2001) at 42 (hereinafter *"Wheat Yearbook"*).

[31] *Id.*

deregulating genetically engineered herbicide tolerant wheat, is "significant." The USDA has specifically adopted these CEQ's regulations.[32] The factors include:

> - the degree to which the proposed action affects public health or safety;
>
> - the degree to which the effects on the quality of the human environment are likely highly controversial;
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> - the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks;
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> - the degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about future consideration; and
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> - the degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

Courts have found that the presence of one or more of these factors should trigger an agency decision to prepare an EIS.[33] The USDA's imminent deregulation of genetically engineered herbicide resistant wheat is federal action that possesses these enumerated factors and mandates full EIS review. As outlined herein, the commercial introduction of genetically engineered herbicide tolerant wheat varieties on millions of acres poses novel human health threats, unique environmental impacts, controversial socio-economic impacts, adverse impacts on migratory bird species and will set a precedent allowing the use and introduction of all genetically engineered wheat varieties.

More specifically, the environmental impacts associated with GE wheat commercialization include, *inter alia*, impacts on herbicide use, creation of herbicide tolerant weeds, groundwater contamination, adverse impacts on non-target organisms, impacts on soil ecosystems, impacts on human health and socio-economic impacts. Below are some of the impacts the USDA must analyze.

(1). Contamination of Existing Wheat Germplasm

Wheat is predominantly self-pollinating, but can also outcross. Wheat can outcross to a significant extent under test conditions with a relatively small pollen source.[34] In addition to wind travelled pollen, seed can be moved distances by small animals such as field mice or birds. Under experimental conditions in the laboratory pollen travels about 60 m.[35] More recent information has noted that wheat

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[32] 7 C.F.R. § 372.4

[33] Public Service Co. v. Andrus, 825 F.Supp 1483, 1495 (D. Idaho 1993).

[34] R. Van Acker and M.Entz, Dept of Plant Science, University of Manitoba, *Agronomic benefits and risks of using Roundup Ready wheat in western Canada* (2002).

[35] Joint Meeting of the Chemicals Committee and the Working Pary on Chemicals, *Consensus Document on the Biology of Triticum Aestivium (Bread Wheat)*, Organization for Economic Co-Operation and Development (Apr. 16, 1999) *availble at http://www.OECD.org* (last visited June 24, 2002) (hereinafter "*Consensus Document*").

pollen has been detected at distances as great as 400 m.[36] Contamination of non-genetically engineered seed stocks via pollen drift and dispersal, force majeure, or co-mingling in plant breeding, seed sales and grain handling areas is likely to occur upon the commercial release of genetically engineered wheat varieties. As noted in one analysis of this issue:

> Currently, little is known regarding gene flow at commercial wheat production level. Based on small-scale pollen flow studies, one would expect a very low rate of gene flow between GM and non-GM wheat fields. . . However, once GM wheat is commercialized, maintaining the integrity of non-GM wheat at a 100% level will be unrealistic.[37]

Indeed, the North Dakota State University research system has refused to guarantee that foundation wheat seed stock are not contaminated with genetically engineered material.[38] Maintaining breeder and foundation seed stocks free from genetically engineered traits is critical to ensure that farmers may still obtain non-GMO wheat varieties. Thus, the potential for the biological pollution of non-genetically engineered wheat with genetically engineered traits must be fully analyzed by the USDA. Among the alternatives the USDA should consider in its analysis of this issue is the establishment of regulations for the mandatory labeling of all genetically engineered wheat (as "genetically engineered") pursuant to its regulations found at 7 C.F.R. §340.3(c)(3) and §340.4(f)(6).[39] Such a requirement would ensure that the identity of genetically engineered wheat material is known while it is in use and allow for maximum care to be used to avoid contamination of non-genetically engineered germplasm.

(2). Increased Herbicide Use

It is well documented that pesticides degrade the soil ecosystem, and pollute nearby streams, lakes and rivers. The first genetically engineered wheat variety being proposed for commercialization is Round-up Ready®, meaning it is resistant to an herbicide (glyphosate) whose safety is debatable.[40] However, the commercialization of Round-up Ready® technology threatens to drastically increase thatamount of

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[36] Stuart Smyth et al., *Liabilities and Economics of Transgenic Crops,* 20:6 NATURE BIOTECHNOLOGY 537, 540 (June 2002).

[37] *Wheat pollen flow and implications for maintaining the integrity of non-GM wheat cultivars,* Abstract, P. Hucl, Crop Development Center, Univ. Sask., *at* **http://www.scisoc.org/aacc/meetings/2001/abstracts/a01ma042.htm** (last visited July 10, 2002).

[38] Correspondence from Patricia Jensen, Vice President and Dean, College of Agriculture, Food Systems and Natural Resources, North Dakota State University to Theresa Podoll,and Janet Kacobson, Northern Plains Sustainable Agriculture Society (June 27, 2002).

[39] 7 C.F.R. §340.3(c)(3) provides, in pertinent part, that during field trials of genetically engineered organisms "the plants must be maintained in such a way that the identity of all material is known while in use; 7 C.F.R. §340.4(f)(6) provides, in pertinent part, that in order to prevent dissemination of a plant pest , a person with a permit allowing the field testing of a genetically engineered organism shall have the plant "identified with a label showing the name of [the plant]."

[40] *See*Richard Caplan, *Raising Risk: Field Testing of Genetically Engineered Crops in the U.S.*, U.S. Public Interest Research Group, *at* http://www.gefoodalert.org/takeaction/html/RasingRisk.pdf (last visited June, 2002), citing Caroline Cox., *Responding to a Chemical Goliath and Glyphosate (roundup)*, JOURNAL OF PESTICIDE REFORM (Fall 1998) (updated Nov. 1998)); *see also Roundup Kills More Than Weeds,* Organic Gardening, *at* http://www.organicgardening.com/watchdog/roundup.html (last accessed Dec. 2000).

glyphosate used. A 1998 survey of over 8,200 university based soybean varietal trials demonstrated that farmers use 2 to 5 times more herbicide with Round-up Ready® soybeans as compared to other popular weed management systems.[41] Prior to any approval by APHIS, the agency must consider the impact of this well-documented and expected increase in herbicide use that may occur with the commercialization of genetically engineered, herbicide tolerant wheat.

(a). Potential for Herbicide Resistant Weeds

The increased herbicide use associated with the commercial introduction of some genetically engineered crop varieties, in part, has occurred because of an accelerated shift in weed species in ways that undermine the effectiveness of glyphosate. Most weed species are able to adapt to changes in their environment. Since the 1970's there has been a growing awareness that many weeds are becoming resistant to herbicides used to control them.[42] For example, triazine resistance has been widely reported in kochia, redroot pigweed, Powell amaranth and common chickweed.[43] In addressing the commercialization of genetically engineered, herbicide tolerance wheat varieties, including Round Up Ready® varieties, USDA must assess whether the commercial use of these varieties will lead to the development of glyphosate-resistant weed varieties. An increase in use of glyphosate in-crop will greatly increase the selection pressure for glyphosate-resistant annual weeds. There are already increasing reports of several weed species becoming resistant to the Glycine group (glyphosate) of herbicides.[44] In 2000, it was reported that Horseweed develop resistance to glyphosate and infested soybean fields.[45] Similarly, in 1998 it was reported that the weed Rigid Ryegrass evolved resistance to glyphosate.[46] This confirmed press reports from two years earlier that such resistance had been documented in Australia.[47] Writing on the Rigid Ryegrass discovery, one scientist has stated with respect to wheat:

> This happenstance in wheat forces us to question the utility of genetically engineered glyphosate-resistant wheat. . . . Glyphosate use

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[41] Caplan, *supra* note 33, citing Charles Benbrook, *Evidence of the Magnitude and Consequences of the Roundup Ready Soybean Yield Drag from University Based Varietal Trials in 1998*, AgBio Tech InfoNet Technical Paper Number 1 (July 13, 1999), *available at*: **http://www.biotech-info.net/RR_yield_drag_98.pdf**. (accessed Dec. 2000); see also Charles Benbrook, *Troubled Times Amid Commercial Success for Roundup Ready Soybeans,* AgBio Tech InfoNet Technical Paper Number 4 (May 3, 2001), *available at*: **www.biotech-info.net/troubledtimes.html**. (Accessed May 2001).

[42] Herbicide resistance refers to plants within a weed species that, after repeated use of a herbicide, are no longer controlled by normal rates of that herbicide.

[43] P. Westra, *Herbicide Resistant Weeds in Western North America with a Focus on Kochia [Kochia Scoparia (L.) Schrad]* ,1994 NCWSS Proceedings, Vol. 49, *available at* **http://ianresearch.unl.edu/jgg/grasses/dbrome/pw.htm** (last visited Jan. 8, 2002).

[44] *See*Andrew Pollack, *Widely Used Crop Herbicide Is Losing Weed Resistance*, New York Times (Januray 14, 2002)

[45] *See* Mark Vangessel, *GroupG/9 Resistant Horseweed (*Conyza canadensis) *USA: Delaware,* International Survey of Herbicide Resistant Weeds, WeedScience, *available at* **http://www.weedscience.org/Case/Case.asp?ResistID=5086** (last visited Jan. 8, 2002).

[46] *See Group G/9 Resistant Rigid Ryegrass (Lolium rigidum) USA: California,* International Survey of Herbicide Resistant Weeds, WeedScience, *available at* **http://www.weedscience.org/Case/Case.asp?ResistID**=1034 (last visited Jan. 8, 2002).

[47] J. Gressel, *Fewer Constraints than Proclaimed to the Evolution of Glyphosate-Resistant Weeds,* 8:2 RESISTANT PEST MANAGEMENT (1996), *available at* **http://www.msstate.edu/Entomology/v8n2/news.html** (last visited Feb. 12, 2002).

> would be clearly contraindicated wherever any given weed species is found in large quantities at both preplant and post-emergence. Such a persistent use of the herbicide would simulate biological persistence akin to other herbicide (e.g. atrazine) that selected for resistance, despite very low initial frequencies of resistant individuals displaying poor fitness. We should consider similar precautions against multiple uses within a crop season with other glyphosate resistant crops.[48]

Rigid Ryegrass has been identified as a troublesome weed in wheat fields around the world.[49] Relatives of Rigid Ryegrass, such as Persian darnel (*Lolium persicum*), are also annual grass weeds that compete with wheat varieties and have been estimated to cause yield losses of up to 20-30%.[50] Persian darnel has already been identified to have developed resistance to one family of herbicides.[51]

Moreover, there are recent confirmed reports of glyphosate resistance being identified in goosegrass (*Eleusine indica*).[52] Goosegrass is one of the major annual grass weeds and is considered among the twenty worst weeds in the world.[53] It is abundant in the southern regions of Illinois, Indiana, Missouri, and Ohio and is present in most Midwest states.[54]

Accordingly, prior to any action allowing the commercialization of genetically engineered, herbicide tolerant wheat varieties, USDA must assess the potential impacts caused by the creation of numerous glyphosate resistant weeds. In particular, USDA needs to look at the potential for glyphosate resistance to develop in major wheat weeds, including cheat grasses, jointed goatgrass, rye, henbit, bushy wallflower/treacle mustard, tansy mustard/fixweed, field pennycress, blue mustard, kochia, russian thistle, wild buckwheat and field bindweed.[55] Clearly, the USDA cannot grant any herbicide tolerant, genetically engineered wheat varieties deregulated status until it fully assesses the impacts that these varieties, including Round-up Ready® varieties, will have on the development of resistant weed populations.

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[48] *Id.*

[49] J. DePrado et al., *The Effect of Diclofop on Membrane Potential and Diclofop-Methyl on Ethylene Induction in Resistant and Susceptible Biotypes of Grasses*, USDA ARS TEKTRAN, *available at* http://www.nal.usda.gov/ttic/tektran/data/000007/93/0000079344.html (last visited Feb. 13, 2002).

[50] Alvin J. Bussan and Meghan Tainor, *Persian darnel (Lolium persicum),* CropScience, Mont. State Weed Science, *available at* **http://weeds.montana.edu/crop/persian_darnel.htm** (last vistied Feb. 13, 2002).

[51] *Id.*

[52] Jerry Doll, *Glyphosate Resistance in Another Plant,* Wis. Crop Manager Newsletter, (Univ. of Wis., Madison, Wis.), Dec. 1999.

[53] Howard E. Shepherd and Jerry Gogan, *Glyphosate Resistance,* (Dec. 30, 1999), *at* **http://www.farmland.com/agoperat/croptips/archive/glyphosa.html** (last visited Feb. 13, 2002).

[54] *Id.*

[55] USDA should also analyze the potential for the development of glyphosate resistant noxious weeds per the noxious weed lists for each state in which glyphosate resistant wheat will be introduced. For example, the North Dakota noxious weed list includes Bindweed, hoary Cress, Hemp and white or hairy Ballcress. Montana's list includes Bindweed, Hoarycress, Russian Knapweed, Quackgrass, Sowthistle, leafy Spurge, Canada Thistle and Dalmatian Toadflax. See Noxious Weeds by State *available at* **http://www.prairefrontier.com/pages/noxiousweeds2.html** (Last vistied Feb. 13, 2003)

The development of glyphosate-tolerant weeds would also have significant secondary effects on overall management of wheat production rotational systems. One analysis has found concerns about crop rotational practices related to widespread use of glyphosate in chem-fallow operations, as a spring burn off chemical. The analysis sums up:

> The use of glyphosate for spring burn-off and/or chem-fallow may be restricted in years following Roundup Ready™ wheat. The existence of volunteer Roundup Ready™ wheat plants forces producers into a choice between tank-mixing another herbicide with Roundup™ or using tillage to control the volunteer wheat. The use of a second herbicide to control volunteer wheat would increase the producer's herbicide cost. The tillage option would result in additional fuel and labor costs for the producer. If contamination is a problem it may also force neighboring producers to change their weed management practices and increase costs for non-adopters.[56]

Additionally, any NEPA analysis must assess alternatives to the implementation to any genetically engineered wheat production system that is reliant on the continuous use of a herbicide such as Roundup.[57] The best alternative against developing herbicide resistance weeds is to avoid the continuous selection in those weeds, i.e. reducing exposure to that herbicide.

(1). Decreases in Land Value

The development of glyphosate resistant weeds is also predicted to have a significant financial impact on the economic value of farmland. A recent study by Syngenta indicated that weed resistance issues can reduce a farm's rentable value by 17 percent.[58] Accordingly, the USDA must assess if such impacts will occur because of the commercial introduction of genetically engineered, glyphosate tolerant wheat.

In sum, any USDA analysis and discussion of alternatives must include the no action alternative of not approving any petition seeking deregulated status for genetically engineered wheat varieties.[59]

(b). Adverse Impacts on Non-target Species

Wheat crops are a natural habitat for many non-target species including mammals and pollinators (including birds, bees, and butterflies). Increased use of glyphosate associated with the commercialization of genetically engineered, herbicide tolerant wheat varieties will impact these non-target populations. The toxicity of glyphosate formulations depends on the ingredients in the formulation. However, the common use of the surfacant POEA in glyphosate products, such as

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[56] Jeff Holzman, *The Economics of Herbicide Tolerant Wheat in Western Canadian Crop Rotations*, (Fall 2001) (unpublished M.S. thesis, Department of Agriculture, University of Saskatchewan), *available at* http://www.usask.ca/agriculture/agcc/working/Holzman%20thesis.pdf (last visited June 2002).

[57] *See*42 U.S.C. § 4332(C)(iii).

[58] Syngenta, *Glyphosate-Resistant Weeds: Will They Decrease Land Value* (2002) *available at* **http://www.syngentacropprotection.com** (last visited Feb. 13, 2003).

[59] *See*40 C.F.R. § 1502.14(d).

Roundup, has a synergistic effect on glyphosate that makes it much more toxic.[60] Glyphosate has also been shown to produce toxic effects on mammalian sperm and is a potential endocrine disruptor.[61] As a result, USDA deregulation and allowance for the commercial introduction of genetically engineered, herbicide tolerant wheat may have significant impacts on the populations of all mammalian species that use and inhabit wheat ecosystems.

The impact associated with the use of genetically engineered, herbicide tolerant wheat maybe most significant on beneficial non-mammalian species. In one study, exposure to freshly applied Roundup killed more than half of three species - parasitoid wasp, lacewing and ladybug - and more than 80% of predatory beetle.[62] Carabid beetle populations have shown significant decline and slow recovery after glyphosate application.[63] According to researchers at the University of Guelph, there is a global shortage of bees, butterflies and other bugs that pollinate plants - which is destroying crops around the world and could lead to higher prices for fruits and vegetables.[64] The report published in Conservation Ecology, an online journal, concludes that the world's food supply is in jeopardy if "pollinator abundance, diversity, and availability are not reversed." Pollinators ,such as bees, bats, butterflies and birds, play a key role in agriculture, by transferring pollen from one seed to another. It is a vital step in the production of most fruits and vegetables, as well as a handful of nuts. According to Dr. Ken Richards, a researcher with Canada's Ministry of Agriculture, "[a]ll sorts of things could possibly happen if we don't look to start to take care of our pollinators." Glyphosate has been found to be toxic to some beneficial organisms such as parasitic wasps and other arthropod predators, soil arthropods that are important for aeration and in the formation of humus; and some aquatic insects.

Therefore, APHIS needs to fully assess the impacts to all mammals, pollinators and other beneficial organisms from introducing of genetically engineered wheat into the environment before approving the commercialization of genetically engineered, herbicide tolerant wheat.

(3). Damage to Soil Ecosystems

The commercialization of genetically engineered wheat may also have significant impacts on soil ecology. A recent two year study assessing the effects of a genetically engineered, herbicide tolerant canola variety in the rhizosphere found that the root interior and rhizosphere bacterial communities associated with the use of the genetically engineered variety differed from that of conventional varieties, indicating that the composition and functional diversity and microbial community in soil were

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[60] *See*Carolyn Cox, *Glyphosate: Part 1: Toxicology*, 15:3 JOURNAL OF PESTICIDE REFORM 14 (1995).

[61] M.I. Yousef et al. *Toxic Effect of Carbofuran and Glyphosate on Semen Characteristics in Rabbits*, 30 JOURNAL OF ENVIRONMENTAL SCIENCE AND HEALTH, pt. B 515; L.P. Walsh et al., *Roundup inhibits Steriodogensis by Disrupting Steriodogenic Acute (stAR) Protein Expression,* 108:8 ENVIRONMENTAL HEALTH PERSPECTIVES 769 (Apr. 1990).

[62] S. Hassan, *Results of the Fourth Joint Pesticide Testing Programme Carried Out by the IOBC/WPRS Working Group "Pesticides and Beneficial Organisms,"* 105 JOURNAL OF APPLIED ENTOMOLOGY 321 (Nov. 1988).

[63] E. Asteraki et al, *The Impact of chemical removal of the hedge-base flora on the community structure of carabid beetles (Col., Carabidae) and spiders (Aranae) of the field and hedge bottom*," 113 JOURNAL OF APPLIED ENTOMOLOGY 398 (1992); G. Brust, *Direct and indirect effects of four herbicides on the activity of carabid beetles (Coleoptera carabidae),* 30 PESTICIDE SCIENCE 309 (1990).

[55]See Michael Friscolanti, *Global bugs shortage could end up costing shoppers*, NATIONAL POST, June 7, 2001, *available at* **http://www.nationalpost.com/home/story.html?f=/stories/20010607/584372.html**.

influenced by the use of a genetically engineered plant variety.[65] Similar studies have found that use of genetically engineered plant varieties have had different spatial and temporal effects on the structural composition of the bacterial communities when compared to conventional varieties.[66] Other studies have found that transgenic plant genotype may affect rhizosphere microorganisms.[67]

In addition to soil changes caused by the use of genetically engineered plants, the increased and frequent use of glyphosate associated with the deployment of genetically engineered, herbicide tolerant crop varieties may affect the rhizosphere and soil microorganisms. Researchers have found that Roundup Ready® soybeans receiving glyphosate at recommended rates had significantly higher incidence of Fusarium on roots within in one week of application compared with soybeans that did not received glyphosate.[68] The results have led one of the researchers to state that studies on the ecological impacts of genetically engineered plants should include an analysis of the effect on the microbial makeup of the soil.[69] Indeed, the USDA has begun funding analysis of whether the use of genetically engineered glyphosate tolerant wheat will increase soilborne disease pressures in the field.[70] At a minimum, USDA should deny any petition for deregulated status of genetically engineered wheat until such research is complete.

(4). Impacts on Human Health

Wheat is the most common eaten food and "is the most allergenic of all cereals."[71] Foods that may contain wheat include many alcoholic beverages, baked goods, battered foods, bouillon cubes, breaded meats and vegetables, breakfast cereals, candy, processed meats, cereal grains, couscous, gravy, ice cream, ice cream cones, malted milks, pasta, pepper (compound or powdered flour filler), sausage, snack foods, soups and soup mixes, soy sauce, and tablets. Thus, for those suffering from wheat allergies, it is already difficult to steer clear of wheat inclusive foods. In particular, celiac is a relatively common yet severe allergy condition. Celiac sufferers can become seriously ill from gluten, a protein enzyme that activates when flour is kneaded.

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[65] K. E. Dunfield and J.J. Germida, *Diversity of bacterial communities in the rhizosphere and root interior of field grown genetically modified Brassica napus*, 38:1 FEMS MICROBIOLOGY ECOLOGY 1 (2001).

[66] T. Lukow et al., *Use of the T-RFLP technique to assess spatial and temporal changes in the bacterial community structure within an agricultural soil planted with trangenic and non-transgenic potato plants,* 32:3 Microbiology Ecology 241 (2000)

[67] G.D. DiGiovanni et al, 1999. *Comparison of Parental and Transgenic Alfalfa Rhizosphere Bacterial communities Using Biology GN Metabolic Fingerprinting and Enterobacterial Repetitive Intergenic Consensus Sequence-PCR (ERIC-PCR)*, 37 MICROBIOLOGY ECOLOGY 129 (1999).

[68] R.J. Kremer et al., *Herbicide Impact on Fusarium spp. And Soybean Cyst Nematode in Glyphosate-Tolerant Soybean,* American Society of Agronomy, Title Summary Number: S03-104-P (2000), *at* http://www.biotech-info.net/fungi_buildup_abstract.html.

[69] *MU researchers find fungi buildup in glyphosate-treated soybean fields*, Information Specialist, University of Missouri (December 21, 2000), *at* http://www.biotech-info.net/fungi_buildup2.html

[70] K.K. Kidwell and T.C. Paulitz, *Risk Assessment of increased Disease Pressure in Glyphosate Tolerant Wheat Production*, USDA/Biotechnology Risk Assessment Research Grants Program, Abstract of Funded Research - Fiscal Year 2001 (2001) *available at* **http://www.reeusda.gov/crgam/biotechrisk/biot01nt.htm** (last visited Feb. 13, 2002).

[71] *See* H.A. Steinman, *Hidden allergens in foods*, 98 JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY 241 (1996), *available at* **http://www.zingsolutions.com/food/hidden2.htm**.

The commercialization of transgenic wheat for human consumption presents potential risks to human health, including the possibility of introducing new wheat-based allergens or toxins into food-plant varieties. And there is the possibility of exacerbating the impacts associated with known allergens (such as wheat) through the production of previously unknown protein combinations that will have unforeseen secondary (or pleiotropic) effects.[72] Use of antibiotic marker systems in genetically engineered wheat may also impact human health by possibly interfering with the oral therapeutic use of antibiotics in humans.[73]

Currently, the FDA has no mandatory pre-market safety testing regulations in place to assess such potential impacts. On March 21, 2000, the Center for Food Safety (CFS) joined by numerous other organizations, filed a legal petition with the FDA.[74] To date the FDA has not responded to this legal petition. To the extent that FDA has failed to undertake its requirements to answer the CFS petition and to establish mandatory regulatory review of the human health consequences of genetically engineered foods, the USDA must analyze such impacts under the mandate of NEPA.

(A) Occupational Human Health Impacts.

The increased use of glyphosate-resistant wheat may create new occupational hazards for those who apply glyphosate and those who handle bulk wheat and wheat commodities. A recent epidemiological study of pesticide applicators in Minnesota's Red River Valley, a major wheat producing area of the state. The study found a tentative link between applicators of glyphosate having offspring with attention deficit disorder (ADD/ADHD). More specifically, the study found:

> Similarly, the use of the phosphonamino herbicides (glyphosate, Roundup) was overrepresented in the adverse birth and developmental effect group. Forty-three percent of children (6 of 14) who had parent-reported ADD/ADHD used phosphonamino herbicides. No other commonly used pesticide compared by major organ and/or functional system was uniquely associated with specific adverse birth or developmental effects.[75]

The agency should further investigate this potential human health hazard prior to allowing the significant increase in glyphosate application that will be associated with the commercialization of genetically engineered wheat.

In addition, other farm workers and grain handlers exposed to increased applications of glyphosate

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[72] *See*Committee on Genetically Modified Pest-Protected Plants, National Research Council, *Genetically Modified Pest Protected Plants Science and Regulation,* (National Academy Press 2000) at 63 .

[73] FDA Draft Appendix: Specific Considerations in the Safety Assessment of Foods and Feeds Derived from Genetically Modified Plants (Dec 12, 1991); Jan-Peter Nap et al., *Biosafety of Kanamycin-Resistant Transgenic Plants: An Overview*, 1 Transgenic Research 239 (1992).

[74] FDA Docket 00-1211P.

[75] V. Garry, et al. Birth Defects, *Season of Conception, and Sex of Children Born to Pesticide Applicators Living in the Red River Valley of Minnesota, USA*, 110 ENVIRONMENTAL HEALTH PERSPECTIVES 441 (June 2002).

and/or elevated levels of glyphosate residues on harvested wheat may suffer elevated incidences of short-term breathing difficulties, lose of muscle control and other general health effects that have been associated with glyphosate exposure.[76] Such potential impacts need to be assessed by USDA before any deregulation of genetically engineered wheat varieties occurs.

(5) Impacts as an Animal Feed.

Wheat is widely used as an animal feed for non-ruminants in developed countries throughout the world.[77] While there is no hard data on the extent of wheat feeding to animals each year, in recent years, nearly a fourth of domestic wheat has been allocated to feed use and residual according to the USDA.[78] The impacts on animal health associated with the use of genetically engineered crops has recently been called into question. Recently, a farmer in the Midwest has recently suggested that the use of genetically engineered corn resulted in a novel toxin and high level of fusarium molds in his corn. Use of the corn as feed resulted in a number of swine pseudopregnancies.[79] Glyphosate resistant crops have been associated with creating higher level of fusarium mold in the soil. [80] Herbicide products similar to glyphosate also appear to promote fusarium growth in that they kill fungus that competes with fusarium.[81] Therefore, prior to its deregulation, the USDA must analyze the animal health impacts associated with the use of genetically engineered wheat varieties in animal feed, including the potential for the creation of novel toxins and/or increased mold levels.

(6) Social and Cultural Impacts.

In undertaking its NEPA analysis, the USDA must assess the direct and indirect impacts on the human environment caused by the commercialization of genetically engineered wheat. These effects include historic, cultural, and social effects.[82] The potential commercial introduction of genetically engineered wheat has led at least one social scientist to conclude that such action could create stress and weaken social cohesion in rural and farm communities.[83] Among the contributing factors to breakdown down

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[76] *See* Merie Watts and Ronald McFarlane, *Glyphosate: A Summary,* Pesticide Action Network, *at* **http://www.poptel.org.uk/panap/pest/pe-gly.htm** (last visited Feb.13, 2002).

[77] *See* Debasis Patanaik and Paramjit Khurana, *Wheat biotechnology: A Mini Review,* ELECTRONIC JOURNAL OF BIOTECHNOLOGY (2001), *available at* **http://www.ejb.org/content/vol4/issue2/full/4/bip** (last visited Feb. 13, 2002)

[78] Gary Vocke, *Wheat: Background and Issues for Farm Legislation,* U.S. Department of Agriculture/Economic Research Service, ERS No. WHS-0701-01 (Aug. 2001) at 5, *available at* http://www.ers.usda.gov/publications/whs-0701-01/ (last visited June 24, 2002).

[79] Tom Block, "Pseudopregnancies Puzzle Swine Producer," Iowa Farm Bureau Spokesman (April 29, 2002), *available at* http://www.ifbf.org/publications/archive/t_search1.asp?number=19120&atype=current.

[80] Kremer, et al., *Herbicide Impact on Fusarium spp. and Soybean Cyst Nematode in Glyphosate Tolerant Soybean*, AMERICAN SOCIETY OF AGRONOMY publication (2002), abstract *available at* **http://www.biotech-info.net/fungi_buildup_abstract.html** (Last visited Oct. 21, 2002).

[81] Ahmad, I., *Effect of phosphinothricin on nitrogen metabolism of Trichoderma species and its implications for their Control of Phytopathogenic fungi*, 53 PESTICIDE BIOCHEMISTRY AND PHYSIOLOGY 49 (1995).

[82] *See* 40 C.F.R. § 1508.8.

[83] Michael D. Mehta, *Agricultural Biotechnology and Social Cohesion: Is the Social Fabric of Rural Communities at Risk?* (2002) *available at* **http://www.arts.usask.ca/policynut/mehta-cwss-proceedings.doc** (last visited Feb. 13, 2003)

in social cohesion is the use of technology use agreement associated with products such as genetically engineered wheat. The agreements contribute to a culture of surveillance that lowers trust and stability in farm communities.[84] The social scientist summed up the potential loss in social cohesion that could be caused by the commercialization of genetically engineered wheat by stating:

> Weakly cohesive communities are more likely to suffer when economic fortunes decline, and are much less capable of mobilising the social capital needed to sustain themselves, and to innovate. As a result, weakly cohesive agricultural communities represent a decline in the quality of living in rural communities, and threaten the security of our nation's food supply.[85]

The USDA must address these impacts in analyzing any petition to deregulate genetically engineered wheat.

Furthermore, the commercial introduction of genetically engineered wheat may have an impact of the spiritual practices of many. Wheat is probably the world's most widely eaten food. It has sustained the development of civilization from Egypt and Mesopotamia to the world of today. "When it comes to powerful Biblical imagery, few words can match the status of wheat -- the grain that first must fall to the ground and die before being reborn as the Bread of Life."[86] The Catholic Congregation for the Doctrine of the Faith in Rome in particular has a stringent wheat-only position for Communion wafers.[87] Followers of such religious traditions are likely to be opposed to the genetic alteration of their most sacred food.

Accordingly, the NEPA requires federal agencies to consider the social effects of every major federal action, which includes decisions involving the field testing and commercialization of genetically engineered wheat. The agency's failure to consider social and religious implications of introducing genetically engineered wheat into the environment and/or food market constitute a violation of the NEPA.

(7). Economic Impacts

The United States is a major wheat producing country, with output exceeded only by China, the European Union, and sometimes India. In 1999, wheat ranked third (behind corn and soybeans) among U.S. field crops in both planted acreage and gross farm receipts.[88] The U.S. is the world's leading wheat

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[84] *Id.*

[85] *Id.*

[86] Patrick O'Neill, *Only wheat will do, church insists.(disease makes Communion a problem),* NATIONAL CATHOLIC REPORTER, Feb 9, 2001, available at **http://www.findarticles.com/cf_0/m1141/15_37/70926886/print.jhtml**; *See also* Dan Looker, *A message for the season, and the end of a millennium: food has been vital to all civilizations, and to some it is considered holy*; *farmers, the producers of food should also be respected,* Successful Farming (Dec. 1999), *available at* **http://www.findarticles.com/cf_0/m1204/13_97/58449522/print.jhtml**.

[87] *Id.*

[88] USDA/ERS, *Wheat: Background,* Briefing Rooms: Wheat, U.S. Department of Agriculture, *available at* http://www.ers.usda.gov/briefing/wheat/background.htm **(last visited Feb. 26, 2002).**

exporter.[89] Wheat amounts to approximately 7.5% of all U.S. agricultural export value.[90] As the USDA itself has stated, "Development of genetically modified, herbicide tolerant wheat varieties promises significant benefits to spring wheat growers, but may also introduce some uncertainty in marketing."[91] This new market uncertainty will be a direct impact associated with any agency action deregulating genetically engineered, herbicide tolerant wheat varieties and must be analyzed prior to taking such action. Indeed, the CEQ regulations implementing NEPA state that such impacts must be analyzed.[92] Specifically, the CEQ regulations state:

> When an environmental impact statement is prepared and economic or social and natural or physical environmental impacts are related, then the environmental impact statement will discuss all of these effects on the human environment. 40 C.F.R. § 1508.14

Federal courts have also upheld that NEPA requires, where economic analysis forms the basis of choosing among alternatives, that the analysis not be misleading, biased or incomplete. Seattle Audubon Society v. Lyons, 871 F. Supp. 1291, 1324 (W.D. WA 1994). As one court has noted, "In some instances environmental costs may outweigh economic and technical benefits and in other instances they may not. But NEPA mandates a rather finely tuned systematic balancing analysis in each instance." Sierra Club v. Sigler, 695 F.2d 957, 978 (5th Cir. 1983).

Therefore, petitioners request that USDA/APHIS fully analyze in an environmental impact statement the socio-economic impacts that will be directly associated with any agency decision to deregulated varieties of genetically engineered wheat. Some of these economic issues, but not all such issues, are addressed below.

(A). Loss of Exports

The commercial introduction of genetically engineered wheat varieties will have a dramatic economic impact on the viability of U.S. wheat exports. Recent economic modeling in Canada indicates that the introduction of genetically engineered wheat is likely to lead to the loss of ten at risk export markets and lead to a annual net loss of about $185 million in export revenue for Canadian Western Red Spring wheat.[93] Similar results are expected to occur if the U.S. commercializes genetically engineered wheat. Concerning the U.S., one agricultural economist has noted, "There is the potential for lost access to

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[89] USDA/ERS *Wheat: Trade,* Briefing Rooms: Wheat, U.S. Department of Agriculture, *available at* http://www.ers.usda.gov/briefing/wheat/trade.htm **(last visited Feb. 26, 2002).**

[90] *Id.*

[91] USDA/ERS, *Wheat: Background, supra* note 73.

[92] CEQ issued its regulations implementing NEPA in response to President Carter's Executive Order 11991 (1977). *See* Andrus v. Sierra Club, 442 U.S. 347, 357 (1979). The Executive Order directed federal agencies to "comply with the regulations issued by the Council." *See id., quoting* Executive Order No. 11991. The E.P.A. has adopted the C.E.Q. NEPA regulations. 40 C.F.R. § 6.100, *et seq.*(July 1, 1996); The Supreme Court has held that the regulations are entitled to substantial deference by the courts. Andrus v. Sierra Club at 358; *See, also*, Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 372 (1989).

[93] Grant M. Kuntz, *Transgenic Wheat: Potential Price Impacts for Canada's Wheat Export Market,* Agricultural Economics, (Fall 2001), at 83, *available at* **http://www.usask.ca/agriculture/agec/working.htm** (Last visited May 23, 2002).

some markets and profits. This downside is magnified if the U.S. grain handling system in unable to maintain segregation of GM and non-GM varieties of the same commodity. The smallest detection levels of GM materials can cause an entire shipment to be rejected by an end user. A loss of confidence in the ability of the United States to segregate GM and non-GM wheat could shut all U.S. producers out of many overseas mak ets."[94] As demonstrated by the events surrounding StarLink corn, ProdiGene, and GT200 canola, the current U.S. grain handling system is unlikely to be prepared to sufficiently segregate genetically engineered and non-genetically engineered wheat to the point at which foreign importers will have confidence in the integrity of such shipments. Accordingly, in allowing the commercialization of genetically engineered wheat varieties, USDA will have acted in manner significantly harming the U.S. wheat export market and the state economies dependent on such exports.

A closer look at the top ten export markets for bulk wheat from the United States and their current regulatory framework on genetically engineered foods indicates that huge segments of the wheat export market will likely be lost because of the introduction of genetically engineered wheat.[95] Based upon USDA statistics, in 2001 the top ten export markets accounted for $ 2,712,875,000 of the $3,737,102,000 total bulk wheat export market, or 72.6% of total US wheat exports. Of these top ten markets at least six of these countries have genetically engineered food regulations in place or in process. As a result, the market viability in these countries for all wheat exported from the U.S. if it approves GMO wheat will be seriously diminished.

Importing Country	**2001 Import ($1000)**	**Status of Regulation on GMOs**
Japan	439,182	Requires Mandatory Labeling
Egypt	388,313	Declared no GMO wheat imports
Mexico	267,955	Labeling Under Development
Philippines	229,161	Labeling Legislation Being Debated
Nigeria	217,337	
Republic of Korea	173,092	Requires Mandatory Labeling
Taiwan	160,742	Mandatory Labeling Takes Effect 2003
Italy	134,065	Requires Mandatory Labeling
Jordan	86,734	
Peru	76,294	

[94] Eric DeVuyst et al., *Modeling International Trade Impacts of Genetically Modified Wheat Introductions,* Agribusiness & Applied Economics Report No. 463, Center for Agricultural Policy and Trade Studies, Department of Agribusiness and Applied Economics, Agricultural Experiment Station, North Dakota State University (Oct. 2001).

[95] Derived from USDA, ERS, FATUS Export Aggregations (June 18, 2002) available at http://www.fas.usda.gov/ustrdscripts/USReport.exe. Regulatory information derived from USDA, FAS Global Agricultural Information Network reports; Greenpeace, *Governments World-wide Require Regulation and Labeling of GE Foods,* International Genetic Engineering Campaign (January 2002) *at* http://www.greenpeace.org/~geneng; and *Summary of International Regulation of Biotech Plants and Foods,* Grocery Manufacturers of America, (Prepared by Keller and Heckman, Washington, D.C.) 2001.

Total Top Ten Import	2,172,875	

Even more specifically, the markets for hard red spring wheat, the variety of genetically engineered wheat for which deregulation lis being be sought, will also be seriously harmed. The top ten country importers of hard red spring wheat are the market for 166,498,000 bushels of the 221,809,000 bushels of the exported HRS.[96] This represents over 75% of all HRS exports. Of these top ten countries at least six already have mandatory labeling laws for genetically engineered products and will likely refuse import of U.S. hard red spring wheat if GE wheat is approved for commercial use. Representatives from the largest importer, Japan, have already stated that they will purchase non-genetically engineered wheat from U.S. competitors if the U.S. cannot guaranteed non-genetically engineered wheat.[97]

Importing Country	**1000 bushels**	**Status of Regulations on GMOs**
Japan	48,198	Requires Mandatory Labeling
Philippines	37,106	Labeling Legislation in Debate
Taiwan	21,389	Mandatory Labeling Takes Effect 2003
Italy	15,485	Requires Mandatory Labeling
Republic of Korea	12,408	Requires Mandatory Labeling
Spain	8,318	Requires Mandatory Labeling
Dominican Republic	6,956	
Venezuela	5,714	
Belgium	5,650	Requires Mandatory Labeling
Thailand	5,274	Requires Mandatory Labeling
Total Top Ten Import	166,498	

Other indicators are clear that deregulation of genetically engineered wheat will cause profound effects on the ability of U.S. farmers to export any wheat. The U.S. Wheat Associates have stated, "'If you grow GMO wheat, we will not want to buy it.' That's what we're hearing from our customers."[98] A University of Minnesota wheat breeder working on the new genetically engineered spring wheat recently questioned its marketability stating: "I don't know that anybody wants to be first with this, and have to

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[96] Data derived from *Wheat Situation and Outlook Yearbook,* Market and Trade Economics Division, Economic Research Service/U.S. Department of Agriculture, WHS-2001 (Mar. 2001) at 63-4 (hereinafter *"Wheat Yearbook"*). Regulatory information derived from USDA, FAS Global Agricultural Information Network reports; Greenpeace, *Governments World-wide Require Regulation and Labeling of GE Foods,* International Genetic Engineering Campaign (January 2002) *at* http://www.greenpeace.org/~geneng; and *Summary of International Regulation of Biotech Plants and Foods,* Grocery Manufacturers of America, (Prepared by Keller and Heckman, Washington, D.C.) 2001.

[97] Devuyst, *supra* note 94, at 13.

[98] *Gene-altered U.S. Wheat Coming to Market by 2003,* CNN.Com Food News (Aug. 17 2000), *available at* http://cnn.com/2000/FOOD/news/08/17/food.gene.wheat.reut/ (last visited Aug. 18, 2000).

test the waters."[99] Overall, "It is quickly becoming impossible to guarantee the marketability of genetically modified food products, and this is effecting farmer's bottom line," has stated Gary Goldberg, Chief Executive Officer of the American Corn Growers Association (ACGA).[100] Goldberg has concluded, "Markets for our farmers, both foreign and domestic are falling by the wayside."[101]

Additionally, the commercialization of genetically engineered wheat will make U.S. wheat less competitive with Canadian exports. Canada has not decided yet whether it will approve the commercialization of transgenic wheat within its borders. Because the U.S. and Canada compete in the international wheat market, it is expected that the United State's decision hinges on what Canada will do.[102] Bill Wilson, Professor of Agricultural Economics at North Dakota State University has strategically laid out the outcomes of decisions by both countries:

- If neither country adopts biotech wheat when it becomes commercially available, neither will have a payoff or net benefit.

- If both countries adopt biotech wheat at the same time, both countries will likely gain by first-tier payoffs or benefits (such as higher grain yields, less herbicide use, and better crop management) and through prospective second-tier benefits, such as better milling wheat or better quality bakery products.

- If Canada adopts biotech wheat and the US doesn't, the US wold likely gain market share.

- If the US adopts biotech wheat and Canada does not, then Canada would likely benefit.[103]

Wilson concludes, "I suspect there's nothing that the Canadians would like more than for us to liberally adopt genetically modified wheat without the ability to segregate them in the marketplace."[104]

Should the United States lose its export markets for hard red spring wheat, the economic effects will have dramatic affects on several states in the Northern Plains. In 2000, North Dakota produced 313.8 million bushels of wheat[105] all hard red spring wheat.[106] Similarly, Montana produced 154.3 million bushels in 2002 of which 99% is hard red spring wheat.[107] Thus, the commercialization of genetically

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[99] *Id.*

[100] *See*Press Release, American Corn Growers Association, U.S. Farmers Losing Domestic Markets While Japan Sets New Restrictions For GMO Corn Imports, April 30, 2000, *available at* **www.connectotel.com/gmfood/ac300400.txt**.

[101] *Id.*

[102] *See*Tracy Sayler, *U.S. Canada Face Biotech Wheat Showdown,* ISB News Report (June 2001), *available at* http://www.isb.vt.edu/news/2001/jun01.pdf (last visited June 25, 2002).

[103] *Id.*

[104] *Id.*

[105] *Wheat Yearbook, supra* note 96, at 41.

[106] *Id.* at 44.

[107] *Id.* at 41, 44.

engineered hard red spring wheat varieties is likely to cause significant economic damage to states, such as North Dakota and Montana, that may lose export markets for their entire wheat production systems. Accordingly, the USDA/APHIS must analyze such impacts in an EIS prior to the granting of deregulated status to any genetically engineered wheat variety.

(B). Effects on Organic Wheat Market

In the 1990's, organic agriculture was one of the fastest growing segments of U.S. agriculture with total organic cropland production doubling between 1992 and 1997 to approximately 850,000 acres.[108] Organic product sales through all outlets in the U.S. have increased 20-25 percent annually between 1990 and 2000, and reached $7.8 billion in 2000.[109] Organic food sales generally account for 1 to 2 percent of total food sales in the U.S. and other major markets for organic products.[110] Annual growth rates for the organic market are forecast at 20 percent or more for the next five to ten years.[111]

Organic wheat production continues to be part of this trend. In 1997 certified wheat acreage was up 31 percent from 1995.[112] And organic commodities such as wheat continue to carry significant price premiums. Hard red spring wheat organic prices were at least 50 percent higher when compared to its conventional counter parts.[113] The introduction of genetically modified varieties of wheat severely threatens organic wheat producers continued enjoyment of the market place premium. Many observers believe that current gene-containment strategies will not work in the field.[114] Indeed, it is reasonably foreseeable that the deregulation of genetically engineered wheat varieties will lead to co-mingling of seed and harvest crops to the extent that identity preservation of non-genetically engineered organic wheat will be extremely unlikely. Numerous roots of contamination of organic crops by genetcially engineered organisms are likely. As stated in a recent Nature Biotechnology edition:

> Current gene-containment strategies cannot work reliably in the field. Seed companies will continue to mix varieties. Although "buffer zones" may theoretically control pollen dispersal (and gene spread), in practice farmers will be unable (or unwilling) to follow planting rules. Can we reasonably expect farmers to [clean] (sic) their agricultural equipment meticulously enough to remove all GM seed?[115]

Indeed, the European Union recently finished an analysis stating even if very low de facto threshold limits (such as lowest detection limits) are set for GM crops in organic production, organic production

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[108] Catherine Greene and Thomas Dobbs, "Organic Wheat Production in the United States: Expanding Markets and Supplies, contained in *Wheat Yearbook, supra* note 96, at 31.

[109] *Id.* at 31-32.

[110] *Id.*

[111] *Id.*

[112] *Id.*

[113] *Id.*

[114] *Going With the Flow*, 20:6 NATURE BIOTECHNOLOGY 527 (June 2002), *available at* http://biotech.nature.com (last visited June 24, 2002).

[115] *Id.*

of GMO-free crops would not be feasible in a region with genetically engineered crops.[116]

Therefore, there at least two major economic impacts on organic growers that the USDA must included in any NEPA analysis prior to the deregulation of genetically engineered wheat varieties. First, the USDA must analyze the economic impact of a permanent adventitious contamination of the organic wheat supply with GE varieties. This should include the economic impacts caused by loss of marketplace premiums.

Second, the USDA must analyze the likelihood of organic growers losing their organic certification should such contamination be detected on farm or harvest. To date, the USDA has failed to adequately include such analyses when undertaking environmental assessments accompanying deregulation petition reviews. In a minor attempt to rectify this omission, the USDA has made cursory and unsupported statements concerning the impacts on organic farmers. For example, the USDA has stated that: "(a) nontransgenic [varieties] will likely still be sold and will be readily available to those that wish to plant it."[117] Such a statement is purely speculative in nature. APHIS has yet to provide evidence that it has taken a "hard look" at the status of the seed market as it relates to organic farming. No analytical information has been present, *inter alia*, concerning: (1) the ability of non-transgenic seed producers to avoid transgenic contamination of their foundation seed; (2) the ability of seed sellers to ensure that seed being sold can be guaranteed to be non-transgenic seed; and (3) the willingness of corporations such as Monsanto to produce and sell non-transgenic varieties that are currently under their patent control. Absent such analysis and information, the USDA cannot now deregulated genetically engineered wheat.

Additionally, the agency has claimed there will be no impacts on organic farmers because the National Organic Program final rule only requires farmers to demonstrate they do not use genetically engineered seeds. This analysis is incomplete and devoid of any analysis about the current organic marketplace. During the implementation of the Organic Food Production Act the USDA made it clear that the agency views the organic rule as a marketing standard based upon consumer expectations. This approach was stated in its treatment of "excluded methods" (i.e. genetic engineering). The USDA has stated:

> Products created with modern biotechnology techniques have been tested, approved by the appropriate regulatory agencies, and can be used safely in general agricultural production. At the same time, consumers have made clear their opposition to use of these techniques in organic food production. <u>This rule is a marketing standard, not a safety standard. Since use of genetic engineering in the production of organic foods runs counter to consumer expectations, foods produced through excluded methods will not be permitted to carry the organic label</u>. 65

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[116] Anne Katrin Bock et al., *Scenarios for Co-existence of Genetically Modified Conventional and Organic Crops in European Agriculture,* Institute for Prospective Technological Studies, Joint Research Centre, European Commission (Jan. 2002) at 2, *available at* http://www.jrc.ec/projects/co_existence/ (last visited June 25, 2002).

[117] Petition from Monsanto Company to Animal and Plant Health Inspection Service, U.S. Department of Agriculture, *USDA/APHIS Decision on Monsanto Company Request (01-324-01p), Seeking an Extension of Determination of Nonregulated Status for Glyphossate Tolerant Canola, Event GT200 Enivronmental Assessment,* (Feb. 2002) at 4.

Fed. Reg. 13534-35 (March 13, 2000) (emphasis added).

Therefore, it is not clear whether the marketplace in organic will accept any "adventitious presence" of genetically engineered wheat or other crops. Indeed, many manufacturers and farmers undertake significant efforts (and financial burdens) to ensure that their seed or products do not use varieties contaminated with "adventitious presence." If the USDA is going to make such an assertion, it needs to analyze whether the marketplace and market-based standards will actually tolerate "adventitious presence" and the impact that such a tolerance will have on organic agricultural producers, processors, and consumers.

USDA must also analyze the impacts that genetically engineered wheat will have on domestic organic wheat producers abilities to export to other markets. Exports account for about 5% ot total US organic sales.[118] Top markets include the United Kingdom receiving more $30 million in 1999.[119] About a quarter of export sales to the UK were for grains including wheat.[120] Export studies indicate that demand for organic grains such as wheat will rise in Europe. A similar position is found in Japan where organic export volume was estimated at $40 - 60M in 1999 and included wheat, durum, and wheat flour.

The economic impacts on organic producers will be particularly hard felt in Montana and North Dakota. The two states were the top organic wheat producers in 1997 with 32,000 and 24,000 certified acres of organic wheat production respectively.[121] Indeed, it is possible that as a result of USDA action granting deregulated status to any genetically engineered wheat variety the organic wheat producing sectors in the Northern Plains will be permanently lost.

(C). Effects on Seed Prices.

At present, farmers generally have three options for acquiring seeds: (1) to obtain quality seed each season from public institutions, seed companies or dealers; (2) to save part of their own harvest as seed; and (3) to trade part of their harvest for seed from grain dealers. The commercialization of genetically engineered wheat varieties subject to utility patent protection will have a tremendous economic impact on wheat farmers across the country. Currently, much of the hard red spring wheat seed is home-grown. All varieties of genetically engineered wheat will be subject to utility patent protection and likely displace this home-grown, non-genetically engineered varieties from the market place. It is estimated that on top of traditional seed prices Monsanto will charge a technology use agreement fee of at least $15 per acre for non-genetically engineered varieties.[122] The economic impacts on seed pricing associated with the deregulation of genetically engineered wheat, therefore, must be analyzed before any deregulatory action.

As previously noted, patented wheat varieties pollen can also infect neighboring farmers planted with unpatented varieties. An example of such cross pollination has occurred with the StarLink™ genetically

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[118] *Wheat Yearbook, supra* note 81, at 32.
[119] *Id.*
[120] *Id.*
[121] *Id.*
[122] Holzman, *supra* note 47, at 32.

engineered corn variety patented by the company Aventis.[123] StarLink™, which does not have regulatory approval for human consumption, has contaminated corn fields across the country that were not planted with the variety and caused significant economic harm to many farmers.[124] The ultimate result of StarLink™-like cross pollination can be direct economic liability to a farmer who attempts to save his or her wheat seed and, as a result, may become an involuntary infringer on a patent if the genetic content of his seed has changed as result of this biological pollution. Thus, USDA allowance of genetically engineered wheat may fundamentally alter the farmer's traditional right to save seed, resulting in increased seed prices and create ways in which seed companies can dictate the legal rights of farmers through increasingly coercive seed purchasing agreements and/or patent infringement actions. Clearly, USDA must address such impacts prior to any deregulation of genetically engineered wheat varieties.

Therefore, the petitioners request the agency to take the following action:

> (1). Institute a moratorium on the commercial introduction, dissemination, interstate movement or conveyance of genetically engineered wheat, including but not limited to all genetically engineered wheat varieties and food products containing any ingredients or material derived for genetically engineered wheat varieties, until the USDA, as mandated under §102 of NEPA, fully evaluates the environmental, human health and socio-economic impacts caused by the commercialization of genetically engineered wheat. Such action and analysis should include completion of an environmental impact statement analyzing the effects on the human environment resulting from any USDA actions deregulating (or other action allowing commercial distribution, sale and planting) genetically engineered wheat varieties.

III. Federal Migratory Bird Treaty Act

Migratory birds are of great ecological and economic value to this country and to other countries.[125] They contribute to biological diversity and bring tremendous enjoyment to millions of Americans who study, watch, feed or hunt these birds throughout the United States and other countries.[126] Recognizing this natural resource, in 1918, Congress passed the Migratory Bird Treaty Act ("MBTA") to implement the "International Convention for the Protection of Migratory Birds" between the United States and Great Britain (acting for Canada). 16 U.S.C. §701, et seq., with the goal of protecting all migratory birds within the jurisdiction of the United States.[127] In general, section 703 of the Act prohibits the taking and killing of any migratory bird "at any time, by any means or in any manner . . . to kill . . . any

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[123] *See*U.S. Patent No. 5,861,543 (issued Jan. 19, 1999).

[124] *See generally*, Brian O'Reilly, *Reaping A Biotech Blunder,* FORTUNE, Feb. 19, 2001, *available at* http://www.fortune.com/indexw.jhtmlchannel=artcol.jhtml8doc_id=200212.

[125] Exec. Order No. 13,186, 66 Fed. Reg. 3,853 (Jan. 17, 2001).

[126] *Id.*

[127] *See* State of Missouri v. Holland, 252 U.S. 416, 435 ("[T]he United States and great Britain agreed to take the necessary measures to insure the preservation of migratory birds.').

migratory bird . . ."[128] The MBTA prohibits the USDA from taking actions that kill or take migratory birds without a permit from the Department of the Interior.[129]

The use of genetically engineered wheat and, in particular, glyphosate-tolerant wheat varieties are likely to impact on the habitat of many migratory birds. An increased use of glyphosate on wheat fields and surrounding habitat will alter the ecology of treated areas. In most cases, the plant species diversity will decrease, and along with it, the numbers of insects and birds utilizing these areas of habitat.[130]

Under Executive Order 13816, all federal agencies are also required to take into consideration the impacts of action on migratory birds prior to undertaking federal actions and other activities.[131] Specifically, federal agencies must prevent or abate the detrimental alteration of the environment for the benefit of migratory birds.[132] Each federal agency is directed to ensure that environmental analysis for Federal agency actions evaluate the effects of that action on migratory birds, with an emphasis on species of concern.[133] The E.O. also requires agencies to assess whether their actions result in the unintentional taking of migratory birds and to control the establishment of exotic plants that may be harmful to migratory bird resources.[134] Accordingly, in considering the notification of any field trials, the issuance of any permit, and the granting of any petition for deregulated status of genetically engineered, herbicide tolerant wheat varieties, the USDA must analyze the impacts on migratory birds associated with the commercialization of genetically engineered wheat.

In undertaking its assessment, USDA should pay particular attention to several migratory birds species that are reported to inhabit wheat field and/or consume wheat seeds. The following species are of particular concern and are listed as protected by the Migratory Bird Treaty Act:[135]

> (1) Burrowing owl (*Athene cunicularia*). The burrowing owl's habitat includes open grasslands, farmland and wheat fields;[136]
>
> (2) Lark sparrow (*Chrondestes grammacus*). The lark sparrow inhabits grassy pastures and its scientific name means "grain eater with striped head;"[137]

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[128] 16 U.S.C. § 703.

[129] Humane Society of the United States v. Glickman, 217 F.3d 882 (D.C. Cir. 2000).

[130] *See generally*, DJ. Santtilo et al., *Response of songbirds to glyphosate-induced habitat changes on clear-cut,* 53:1 JOURNAL OF WILDLIFE MANAGEMENT, 64 (1989); J. F. Connor et al., *Winter Utilization by Moose of Glyphosate-Treated Cutovers.*26 ALCES 91 (1990).

[131] Executive Order 13618, 66 Fed. Reg. 3853 (Jan. 17, 2001).

[132] *Id.* §3(e)(3)

[133] *Id.* §3(e)(6)

[134] *Id.* at §§ 3(e)(9) & (10)

[135] 50 C.F.R. § 10.13 (2000).

[136] *See Burrowing Owl,* Ill. Birds, Ill. Natural History Survey and Ill. Department of Natural Resources, *at* http:// **www.inhs.uiuc.edu/chf/pub/ifwis/birds/burrowing-owl.html** (last vistied Jan. 18, 2002).

[137] Scott Gomes, *A Closer Look: The Lark Sparrow,* Northern Prarie Wildlife Research Center, U.S. Geological Survey (June, 1997), *at* http://www.npwrc.usgs.gov/resource/1998/closlook/larkspar/larkspar.htm (last visited Jan. 22, 2002).

(3) Loggerhead shrike (*Lanius ludovicianus*);.

(4) Mountain Plover (*Charadrius montanus*); *and*

(5) Upland Sandpiper (*Bartramia longicauda*). The Upland Sandpiper lives in grasslands (i.e. pastures, hayfield) and may consume weed seeds and waste wheat.[138]

In addition, several other migratory birds species that inhabit grasslands, including the cassin's sparrow (*Aimophila aestivalis*), dickcissel (*Spiza americana*), eastern meadowlark (*Sturnella magna*) and western meadowlark (*Sturnella neglecta*), may also be impacted by the testing, use, deregulation and/or commercialization of genetically engineered wheat varieties.

Therefore, the petitioners request the agency take the following actions:

(1) Pursuant to E.O. 13186, the USDA should work in collaboration with Fish and Wildlife Service to ensure that all environmental analyses concerning the introduction, testing, dissemination and/or commercialization of genetically engineered, herbicide tolerant wheat varieties, including but not limited to those required under the National Environmental Policy Act, evaluate the effects of the use of genetically engineered wheat varieties on migratory bird populations.

IV. Plant Protection Act

The Federal Noxious Weed Act (FNWA) was enacted in 1974 to prevent the introduction into the United States of noxious weeds from, inter alia, foreign countries. Pennington Enterprises, Inc. v. U.S., 1992 U.S. Dist. LEXIS 21959 (D.D.C. March 31, 1992). The FNWA vested broad and varied authority in the Secretary of Agriculture to control the spread of noxious weeds. *Id.* In 2000, the FNWA was amended and combined into the Plant Protection Act.

(1). Genetically Engineered Wheat Varieties Are Noxious Weeds

Under the Plant Protection Act, the term "noxious weed" means any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health or the environment."[139] Upon completion of a thorough NEPA analysis, the USDA should find that genetically engineered, herbicide tolerant wheat varieties threaten to enhance the weediness of jointed goat grass and become an invasive weed itself.[140] These characteristics indicate that genetically engineered, herbicide resistant wheat meets the definition of a

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[138] *See Upland Sandpiper,* Ill. Birds, Ill. Natural History Survey and Ill. Department of Natural Resources, *at* http://www.inhs.uiuc.edu/chf/pub/ifwis/birds/upland-sandpiper.html (last visted Jan. 18, 2002).

[139] 7 U.S.C. §7702(10)

[140] Monsanto itself has already classified wheat as weed. *Use Roundup to Control These Weeds*, Monsanto, *available at* http://www.roundup.com/weeds/allweeds.html (last visited July 16, 2002).

noxious weed. Accordingly, any action by the USDA allowing for the interstate transport of this noxious weed without permit and the granting of deregulated status to any genetically engineered wheat variety would be arbitrary, capricious, an abuse of discretion and otherwise not in accordance with the law.

(a). Creation of Enhanced Weediness in Competitive Weeds

Commercialization of genetically engineered plants will allow transgene coding for traits to be transferred to wild or weedy populations of these plants and their close relatives.[141] Accordingly, the introduction of genetically engineered wheat varieties will directly and indirectly cause damage to wheat crops and injure U.S. agriculture by enhancing the weediness of annual grass weeds competitive with wheat varieties. Genes designed to give genetically engineered wheat crops a competitive advantage, particularly herbicide tolerance and pest resistance properties, may be passed to wild relatives of wheat leading to enhanced weediness in U.S. wheat crops.

The reproductive biology of wheat demonstrates that genetic drift of genetically engineered wheat and hybridization with weedy relatives should be a major concern. While wind-borne cross fertilization by wheat varieties depends heavily on physical factors, it can occur at rates up to 3.7 and 9.7 per cent under favorable conditions of warm, dry weather.[142] In laboratory experiments with moderate wind speed, wheat pollen travels about 60 meters distance at a height of one meter.[143] Others have found that wheat pollen has been detected at 400m from its original source.[144] In field experiments, male sterile wheat plants that were 30 meters from the pollen donor plants contained 10 per cent seed setting.[145] The quantity of pollen produced by a wheat anther is low, approximately 2700 pollen grains per sac. However, an average of 80 per cent of pollen from an anther which protrudes from the spikelet is dispersed into the air, which is enough to achieve cross-fertilization.[146]

One serious concern with the introduction of genetically engineered wheat is the cross-fertilization of it with the wild relative jointed goatgrass (*Aegilops cylindrica*). According to the National Jointed Goatgrass Research Project:

> Jointed goatgrass is an introduced winter annual grass weed which is now found in most of the lower 48 states and is especially common and troublesome in Colorado, Kansas, Nebraska, Oklahoma, Wyoming, Utah, Washington, Oregon, and Idaho. Jointed goatgrass is impossible to control

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[141] A. Snow et al., *Commercialization of Transgenic Plants: Potential Ecological Risks*, 47:2 BIOSCIENCE, 86 (Feb. 1997).

[142] *See Consensus Document, supra* note 29, at 18.

[143] *See Id.* citing D'Souza, Untersuchungen uber die Eignung des Weizens als Pollenspender bei der Fremdbefruchtung, verglichen mit Roggen, Triticale und Secalotricum, 63 Zeitschift fur Pflanzenzuchtung 246 (1970).

[144] Stuart Smyth, et al, *Liabilities and Economics of Transgenic Crops*, 20 NATURE 540, at Table 1 (June 2002).

[145] *See Consensus Document, supra* note 29, citing J.A. Wilson, *Problems in hybrid wheat breeding,* 17 Euphytica 13 (1968).

[146] *Id.*

> selectively in wheat with current cultural, mechanical, and chemical methods because it is related genetically to wheat, and because seed can survive in the soil for up to 5 years. Jointed goatgrass has increased rapidly in the past 20 years because of current farming practices such as the use of less competitive, semi-dwarf wheat, shorter crop rotations, increased fertilizer use, and reduced frequency and depth of tillage. Once introduced into a region, jointed goatgrass is spread from field to field by planting jointed goatgrass-contaminated wheat seed, by jointed goatgrass seeds blowing off untarped grain trucks, and by seed transport on farm machinery, especially combines.
>
> In the western U.S., jointed goatgrass now infests 5,000,000 acres of winter wheat plus 2,500,000 acres of fallow land and is spreading unchecked at the rate of 50,000 acres or more per year. Jointed goatgrass competes vigorously with winter wheat. Because it tillers profusely, as few as 5 jointed goatgrass plants per square foot can reduce wheat yields by 25% and yield losses of 50% are common. Jointed goatgrass seed in harvested wheat reduces net grain weight, increases dockage costs, and can reduce grain value by as much as $1 per bushel. The presence of a single jointed goatgrass plant in a field or a jointed goatgrass seed in a wheat seedlot will prevent certification of the field or the seedlot. Jointed goatgrass costs farmers $45,000,000 annually in direct yield losses and reduced grain value. Furthermore, when jointed goatgrass infests wheat fields, it impedes the adoption of conservation farming practices, increases tillage and herbicide use, forces farmers to grow less profitable crops, reduces farmland values, and threatens the marketability of U.S. wheat for export and the long-term sustainability of agriculture in the western U.S. These indirect costs of jointed goatgrass exceed $90,000,000 annually, and total losses exceed $145,000,000 annually.[147]

Jointed goatgrass shares the D genome with wheat which allows hybridization between the species in the field.[148] Contrary to prior assumptions, these hybrids are *not* sterile. Two studies, one in 1996 and

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[147] *Jointed Goatgrass: A Threat to U.S. Wheat Production,* National Jointed Goatgrass Research Project, *at* **http://jgg.unl.edu/index.htm** (last visited Jan. 8, 2002).

[148] *See Ecological Effects of Pest Resistance Genes in Managed Ecosystems,* workshop proceedings (Information Systems for Biotechnology, Blacksburg, VA) January 31-February 3 1999 at 94 (hereinafter "*Ecological Effects*"), citing R.S. Zemetra et al., *Potential for gene transfer between wheat (triticum aestivum) and jointed goatgrass (Aegilops cylindrica),* 46 Weed Science 3131 (1998).

another in 1998,[149] found viable seed of hybrids in the field.[150] These studies concluded that:

> Hybrids were not self-fertile. Rather, hybrid plants exhibited a low level of female fertility (approximately 2%) that allowed for natural backcrossing to occur in the field (Zemetra et al. 1998). Greenhouse experiments indicated that percent seed set was similar with wheat or jointed goatgrass as the pollen parent, but that *seed set and self-fertility in second generation backcrosses favored jointed goatgrass as the recurrent parent.* Based on these results, only two crosses in the field after hybrid formation appear to be sufficient to recover partial self-fertility with jointed goatgrass as the recurrent parent (Zemetra et al. 1998). *Thus, if the wheat that produced the hybrid carried a pest resistance gene on the D genome, it would be possible for the pest resistance trait to transfer jointed goatgrass after only two backcross generation.* (emphasis added)[151]

In addition to jointed goatgrass, there have been reports of intergenetic hybridization between spring wheat and four crested wheatgrasses: *Agropyron mongolicum, A. A. cristatum, A. desertorum, and A. michnoi.*[152] While most hybrid plants died of hybrid necrosis, a few plants were successfully established. It is unknown whether hybrids and backcross progeny between wheat and crested wheatgrass occur naturally in the wild.[153] Wheatgrass species are indigenous to Eurasia but are now widely grown as economically important forage on arid rangelands in the United States and Canada.[154]

Beyond transgenic wheat's ability to inbreed with jointed goatgrass and possibly with crested wheatgrass, recent studies on the rate of seed dispersal indicate that the creation of herbicide-tolerant weeds competitive with wheat should be of major concern. According to field scale simulation modeling, high

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[149] Note that these studies were released *after* the USDA's Finding Of No Significant Impact for transgenic wheat field studies and *after* its decision to streamline the permit process for transgenic wheat field studies by no longer requiring EAs.

[150] *See Ecological Effects, supra* note 151, at 94; citing Mallory-Smith CA et al., *Gene transfer between wheat and Aegilops cylindrica,* Proceedings of the Second International Weed Control Congress, Department of Weed Control and Pesticide Ecology, Copenhagen, Den., (1996) at 441-445; S. Seefeldt et al., *Production of herbicide resistant jointed goatgrass (Aegilops cylindrica) x wheat (Triticum aestivum) hybrids in the field by natural hybridization*, 46 WEED SCIENCE 632-634 (1998).

[151] *Ecological Effects, supra* note 148, at 94.

[152] *See Id.*; citing Q. Chen et al., *Production and cytogenetical studies of hybrids between Triticum aestivum L. Thell. And Agropyron cristatum (L.) Gaertn. C. R. Acad*, 308:3 SCI. SER. 411-416 (1989); Q. Chen, J. Jahier & Y. Cauderon, *Intergeneric hybrids between Triticum eastivum and three crested wheatgrasses: Agropyron mongolicum, A. michnoi, and A. desertorum*, 33 GENOME 663-667 (1990).

[153] *See Id.* at 95.

[154] *See Id.* at 94; citing S. Dewey, *Historical and current taxonomic perspectives of Agropyron, Elymus and related genera,* 23 CROP SCIENCE 637 (1983).

rates of dispersal greatly increase weed populations.[155] Further, the biological simplification of our current agroecosystem allows a weed with an escaped transgene to gain significantly higher fitness across a large area: "In theory, the resulting spatial homogeneity of favorable habitat . . . and the absence of a need for local adaptation of colonizing populations promote rapid range expansion by colonizing organisms."[156] This explains why pesticide resistant weeds have expanded over hundreds of kilometers of roadsides in less than one decade.[157] In sum, "the ecology of weed dispersal and population regulation in current agroecosystems and agricultural landscapes appear to permit large and rapid range expansions of adapted weeds."[158] It is significant that jointed goatgrass has already shown its ability to become abundant over large regions of the western U.S.[159] It substantially expanded its range in Utah during a period of eight years due to cropping system changes that promoted its growth. As a result, a landscape perspective will be critical for the proper assessment of prospects for transgene escape in genetically engineered wheat.[160]

The consequences of passing competitive advantage transgenic traits to weeds are potentially grave and represent direct and indirect threats to U.S. agriculture. For example, if a weed is tolerant to herbicides, it will become more of a threat to the crops with which it competes. Already, the introduction of genetically engineered canola has led to weeds resistant to three herbicides, including Roundup Ready®, in fields in northern Alberta Canada.[161] The USDA should heed the warnings from the experiences of genetically engineered canola. The majority of transgenic wheat field studies are being conducted for resistance to Monsanto's Roundup herbicide and Roundup Ready® wheat is expected to be the first genetically engineered wheat proposed for commercialization. Without continued regulatory oversight genetic exchange between herbicide tolerant transgenic wheat crops and wild relatives is likely and will create serious, new noxious weed problems. These novel weed problems are likely to also have a serious impact on wheat producers. Economic studies have found that increased weed infestation resulting from herbicide tolerant gene transfer would significantly increase production costs for herbicide tolerant crop users.[162]

(b). Increased Weediness of Volunteer Wheat.

In addition to the weed problems associated with hybridization with jointed goatgrass, genetically engineered wheat itself will become a noxious weed with serious implications for the future health of U.S. agriculture. Among many scientists and agronomists, the control of volunteer genetically engineered, herbicide tolerant wheat is the single biggest issue of concern associated with its

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[155] *Id.* at 31; citing J.N. Perry and J.L. Gonzales-Andujar, *A metapopulation neighborhood model of an annual plant with a seedbank*, 81 Journal of Ecology 453 (1993).

[156] *Id.*; citing Tomiuk & Loeschcke, *Conditions for the establishment and persistence of populations of transgenic organisms,* Transgenic Organisms 117-133 (K Wohrmann & J Tomiuk eds., Basel, Switzerland 1993).

[157] *See Id.*

[158] *See Id.*

[159] *Id.*

[160] *Id.* at 32.

[161] *See* Caplan, *supra* note 40, at 12; citing Mary MacArthur, *Triple-resistant canola weeds found in Alta*, THE WESTERN PRODUCER, February 10, 2000.

[162] *See* Holzman, *supra* note 56, at 17.

commercialization.[163] Many believe this problem will outweigh any potential benefits in agronomic performance and weed control.[164] Already volunteer wheat is a source of severe problems including the spread of plant diseases, such Wheat Streak Mosiac Virus, Take-all, Leaf Rust and Stem Rust, Wheat/Barley Yellow Dwarf Virus and High Plains Virus.[165] Volunteer wheat plants also serve as hosts for pest threats and disease vectors such as Wheat curl mite, Hessian fly, and Russian wheat aphid.[166] Further, volunteer wheat is highly competitive with seedling alfalfa.[167] The spread and drift of volunteer, commercially used, genetically engineered glyphosate tolerant varieties will exacerbate the impacts posed by these disease, pest and weed threats by making elimination and control of volunteer wheat much more difficult. Controlling such volunteer glyphosate tolerant varieties will require the use of alternative and possibly more expensive herbicides. This will be a particular a problem in any crop rotations in which the rotation is year one glyphosate resistant wheat followed by glyphosate resistant canola, as studies have shown that volunteer wheat emergence is significantly higher in a high herbicide/zero-tillage system.[168]

Currently, volunteer wheat represents a principle means of survival for a number of wheat diseases, including Wheat Streak Mosiac Virus, between harvest and planting. In the case of WSMV, volunteer wheat serves as a "green bridge," or host, for the wheat curl mite, the primary vector for the disease.[169] WSMV causes stunting and yellow streak on the leaves of wheat plants and leads to severe annual harvest losses.[170] As a result of these impacts, agricultural extension recommends destruction and strict control of volunteer wheat through conventional tillage or the use of herbicides, including chemical burn down herbicides such as glyphosate products.[171]

While wheat is mostly self-pollinating, its seeds can travel far distances from dispersal by wind, weather event, post-harvest handling and transportation and even pollinators and other animals. As a result, one extension service has noted, "volunteer wheat is a fact of life in wheat production."[172] Weed survey

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[163] *See*Mike Grenier, *A Discussion Paper on Agronomic Assessment of Roundup Ready® Wheat*, (Canadian Wheat Board, June 28, 2002) at 7 *available at* http://www.cwb.ca/publicat/roundup_ready/rrw.pdf (last visited July 14, 2002).

[164] *Id.*

[165] *See*Robert L. Bowden, et al., *Be a Good Neighbor: Control Your Volunteer Wheat, MF-1004,* Kansas State University Agricultural Experiment Station and Cooperative Extension Service (Aug. 1991), *available at* **http://www.oznet.ksu.edu/library/crps12/samples/mf1004.asp** (last visited Jan. 16, 2002); *See also* 18:16 Pest Alert 1, Colorado State University Cooperative Extension, (Oct. 22, 2001), *available at* **http://www.colostate.edu/programs/pestalert/vol18/1816.pdf** (last visited Jan. 16, 2002).

[166] *Id.*

[167] *See*Jim Strizke, *Volunteer Wheat,* Oklahoma State University Cooperative Extension*, available at* **http://www.agr.okstate.edu/alfalfa/weeds/wingrass/wheat.htm** (last visited January 16, 2002).

[168] *See*B.L. Gradin et al., *Weed Seedling Emergence in Three Integrated Pest Management Systems*, Agriculture and Agri-Food Canada (2001).

[169] *See*Marcia P. McMullen, *Wheat Streak Mosaic, PP-646 (Revised)*, NDSU Extension Service, *at* **http://www.ext.nodak.edu/extpubs/plantsci/smgrains/pp646w.htm** (last vistied Jan. 16, 2002).

[170] *See*Bowden, *supra* note 165, at 1 (stating, "On average, Kansas farmers lose 10 million bushels per year to the disease. Many fields are completely destroyed.").

[171] *Id.*

[172] *Id.*

studies have found that volunteer wheat can persist for up to five years.[173] Commercial release of genetically engineered wheat will be inevitably lead to appearance and spread of difficult to control, volunteer genetically engineered wheat. This is especially of concern for the introduction of herbicide tolerant wheat like Roundup Ready®. (Such control difficulties have already been experienced with volunteer herbicide tolerant canola in Canada[174]). The reduction in volunteer wheat control that will be caused by the commercial introduction of genetically engineered wheat, therefore, increasing the risks associated with volunteer wheat-borne diseases such as WSMV.

In sum, the introduction of genetically engineered wheat will directly harm U.S. agriculture through exacerbation of plant disease and pest threats and indirectly cause damage to wheat and other crops through the creation of herbicide resistant competitive weeds such as jointed goatgrass. As such, genetically engineered wheat meets the statutory definition of "noxious weed" and the agency should act accordingly.

Therefore, the petitioners request the agency to take the following actions:

> (1) Deny any and all petitions seeking deregulated status for genetically engineered, herbicide tolerant wheat varieties;
>
> (2) Designate all forms of genetically engineered, herbicide tolerant wheat, including all forms of glyphosate-resistant genetically engineered wheat, as noxious weeds by adding them to the list of noxious weeds contained at 7 C.F.R. 360.200; and
>
> (3) Under the authority provided the Secretary of Agriculture at 7 U.S.C. § 7712(a), prohibit the introduction of all genetically engineered, herbicide tolerant wheat varieties and any and all interstate movement of such products to prevent the dissemination of this noxious weed in the United States.

CONCLUSION

WHEREFORE the reasons contained herein, the petitioners respectfully request that the Commissioner undertake the following actions:

I. Institute a moratorium on the commercial introduction, dissemination, interstate movement or conveyance of genetically engineered wheat, including but not limited to all genetically engineered, herbicide tolerant wheat varieties and food products containing any ingredients or material derived for genetically engineered wheat varieties until the USDA , as mandated under §102 of NEPA, fully evaluates the environmental, human health and socio-economic impacts caused by the commercialization of genetically engineered wheat. Such action and analysis should include completion of an environmental impact statement analyzing the

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[173] *See* Grenier, *supra* note 168, at 8.

[174] Alison Smith, More Worries About Genetically Modified Canola, CBC News and Current Affairs, June 21, 2001.

effects on the human environment resulting from any USDA actions deregulating (or other action allowing commercial distribution, sale and planting) genetically engineered wheat varieties.

II. Institute a moratorium on the commercial introduction, dissemination, interstate movement or conveyance of genetically engineered, herbicide resistant wheat, including but not limited to all genetically engineered wheat varieties and food products containing any ingredients or material derived for genetically engineered wheat varieties until the USDA reviews the impacts of such activities on migratory birds pursuant to the Migratory Bird Treaty Act and Executive Order 13186.

III. Upon completion of requests I-II and using the authority provided 7 U.S.C. § 7712(a), the Secretary should: (1). deny all petitions seeking deregulated status for genetically engineered, herbicide resistant wheat varieties; (2) designate all forms of genetically engineered, herbicide resistant wheat, as noxious weeds by adding them to the list of noxious weeds contained at 7 C.F.R. 360.200; and (3) prohibit the introduction of all genetically engineered, herbicide wheat varieties and any and all interstate movement of such products to prevent the dissemination of this noxious weed in the United States.

As established in at 7 U.S.C. §§ 7711(c)(3), 7712(f)(3) and 7 CF.R. § 1.28, petitioners request that the agency provide an answer to this citizen petition within a reasonable time. Failure to respond within a reasonable time will be construed as constructive denial of the requests contained here and may subject the agency to litigation for, *inter alia*, unreasonable delay.

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