



## **Noxious Weed Seeds in Spices – Information Resources**

### **Introduction**

U.S. federal law prohibits the importation, intentional or unintentional, of noxious weeds and their seeds into the U.S. to protect U.S. agriculture and the environment. Economic losses to U.S. agriculture attributed to the presence of noxious weeds are estimated in the billions of dollars each year. Noxious weeds are defined in the Federal Noxious Weed Act of 1974 as:

(A)ny living stage (including but not limited to, seeds and reproductive parts) of any parasitic or other plant of any kind ... which is of foreign origin, is new to or not widely prevalent in the United States, and can be directly or indirectly injure crops, other useful plants, livestock or poultry or other interests of agriculture, including irrigation, or navigation or the fish or wildlife resources of the United States or public health.

The Act was amended in 1990 assigning primary responsibility for implementing the requirements of the Act to the U.S. Department of Agriculture (USDA). USDA in turn assigned responsibility within the agency for implementing the requirements of the Act to the Animal and Plant Health Inspection Service (APHIS) and specifically the Plant Protection and Quarantine (PPQ) division of APHIS. The Act also mandated that other federal agencies designate offices within those agencies to assist USDA in preventing the spread of noxious weeds – these agencies included the Bureau of Land Management, the National Park Service, and the U.S. Forest Service. In 2000, the Act was superseded by the Plant Protection Act but the definitions and basic requirements Noxious Weed Act of 1974 remained in place.

The USDA regulations implementing the statutory requirements on noxious weeds are promulgated at [7 CFR Part 360](#). These regulations describe definitions, the designation of plant species as noxious weeds, the list of federal noxious weeds, limitations on the transport of noxious weeds and their seeds, and other relevant information and regulations.

ASTA's Board of Directors initiated a program to provide assistance to members to address issues associated with the presence of noxious weed seeds in spices – this program is now complete. This final report provides resources for

members and describes how additional methods to “devitalize” noxious weed seeds may be pursued for inclusion in the [United States Department of Agriculture Treatment Manual](#).

## **Background**

### **APHIS Policy**

The Federal Noxious Weed Policy, as implemented and managed by APHIS, has the goal of preventing the introduction and spread of noxious weeds in the U.S. The mission statement for the APHIS noxious weed program states, APHIS will use science-based methods to prevent the introduction of parasitic-plant pests and Federal noxious weeds (including those already regulated and candidates for regulation) into the United States. APHIS will exclude, detect and eradicate newly introduced weeds that pose the highest risk to U.S. agriculture or the environment.

In ASTA’s discussions with APHIS staff, they emphasized that the statute governing their noxious weed activities (The Plant Protection Act of 2000 superseding the Federal Noxious Weed Act of 1974) is a “zero-tolerance” statute that gives them little flexibility. They noted that new noxious weed seed devitalization methods must show complete efficacy. They also stressed the importance of complying with APHIS rules on the transport and handling of noxious weed plants and seeds, and how these rules may make certain devitalization studies difficult.

### **Federal Noxious Weeds**

Federal law requires APHIS to develop and maintain a list of noxious weeds subject to regulation and control under the Plant Protection Act. The seeds of these “federal noxious weeds” are subject to tight control in terms of transport for any purpose whether for commerce or for study. The current list of federal noxious weeds can be found at [7 CFR Sec. 360.200](#) and on the [USDA website](#). The list includes several noxious weeds that have been a focus of APHIS enforcement efforts for spices, most prominently onionweed (*Asphodelus sp.*) and dodder (*Cuscuta sp.*) which, according to APHIS, have resulted in the most common cause for enforcement for imported spices.

About twenty other noxious weed seeds were identified by APHIS as also resulting in enforcement actions for spices. APHIS does not identify causes for enforcement by specific geographic origin but does note that many shipments of spices found to contain noxious weed seeds originated in India, Pakistan, Turkey, Egypt, and China, among a number of other countries. APHIS has noted that the following spices have been identified most often for enforcement action because they were found to contain noxious weed seeds: cumin, oregano, rosemary, and

sage. Other spices that have been the subject of enforcement action include mint, thyme, dill, coriander, basil, fenugreek, poppy seed, anise, caraway, celery seed, and fennel. Typically, enforcement action consists of interception and detention with the possibility of reconditioning through approved treatments for devitalization of the seeds.

### Existing Treatment Options

Noxious weeds are very hardy species and their seeds are generally difficult to devitalize because of significant natural defense mechanisms such as hard seed coats, tolerance for dehydration, and other factors. Because noxious weed seeds are difficult to devitalize, it is advisable where possible to implement agricultural practices where spices are cultivated to reduce the presence of noxious weed species and therefore the possible presence of their seeds in spices to be exported to the U.S. Post-harvest cleaning processes in places where spices are grown should be employed to reduce the presence of noxious weed seeds.

Once noxious weed seeds have been identified in imported material, the options for treatment and reconditioning are limited. Physical devitalization through grinding is effective and irradiation has been proven effective for birdseed (*Niger spp*). There are currently two options for the treatment and reconditioning of imported spices found by APHIS to contain federal noxious weed seeds.

1. The most common method for treatment and reconditioning of commodities, including spices, that have been found to contain noxious weed seeds is grinding to a mesh size that has been demonstrated to devitalize noxious weed seeds. This method is specific to individual noxious weed seeds and is described in Tables 2-13, 2-14 and 2-15 of the [USDA document, Seeds Not for Planting Manual](#). The concern with grinding is that some mesh sizes are so small that they reduce the economic value and organoleptic characteristics of some spices.
2. Steam and heat methods are included in the [USDA Treatment Manual](#) for *Cuscuta spp.* (Dodder) in Section T412-b-1 of the Manual. The concern with the steam and heat methods is that the temperature that must be employed (212 degrees F) is high enough to damage some spices thereby reducing their economic value and organoleptic characteristics.

### The ASTA Program

ASTA's program to provide assistance to members to address issues associated with the presence of noxious weed seeds in spices was designed to provide resources for members to address these issues, and to describe how additional methods to "devitalize" noxious weed seeds may be pursued for inclusion in the USDA Treatment Manual. The ASTA Board of Directors explored various options to address the concerns of U.S. regulators related to the possible presence of noxious weed seeds in imported spices and identified the chief goals for the program as: (1) To work with the Plant Protection and Quarantine division (PPQ) of the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of

Agriculture (USDA) to identify information resources for ASTA members to assist in their compliance activities; and (2) To identify an expert for ASTA members to work with to develop testing protocols for additional devitalization methods that would be acceptable for inclusion in the USDA Treatment Manual.

### 1. Important Information Resources

A number of information resources are available to assist ASTA members in addressing issues associated with the possible presence of noxious weed seeds in imported spices. The most helpful resources include:

#### [The USDA noxious weed seed regulations](#)

These regulations implement the requirements of The Plant Protection Act of 2000 and describe definitions, the designation of plant species as noxious weeds, the list of federal noxious weeds, limitations on the transport of noxious weeds and their seeds, and other relevant information and regulations.

#### [USDA Treatment Manual](#)

This extensive document describes procedures and treatment schedules to prevent the movement of agricultural pests, including noxious weeds, into or within the U.S. Steam and heat methods for the devitalization of *Cuscuta spp.* (Dodder) seeds are found in the Manual.

#### [USDA Seeds Not for Planting Manual](#)

This document describes the background, procedures and other information for regulating whole seeds when they are imported for purposes other than planting or growing and for protecting U.S. agriculture from pests, including noxious weeds. [Tables 2-13, 2-14 and 2-15](#) describe grinding methods for reconditioning commodities, including spices, that have been found to contain noxious weed seeds.

#### [Current list of federal noxious weeds](#)

This [list](#) can be found on the USDA website and is updated by the agency from time to time.

#### [Seed contaminants of imported spices](#)

This slide presentation from USDA APHIS PPQ is helpful in identifying noxious weed seeds that may be found in imported spices.

### 2. Inclusion of New Devitalization Methods in the USDA Treatment Manual

The ASTA Board determined that to encourage additions of new devitalization methods to the USDA Treatment Manual it would retain the services of a noxious weed and invasive species expert, first to advise ASTA on developing a noxious weed program, and second to serve as a resource for ASTA members who wish to work with APHIS on the inclusion of new methods in the Treatment Manual. ASTA retained the services of George Beck, Ph.D. of Colorado State University. Dr. Beck has discussed with APHIS protocols for studies to validate new devitalization methods that would comply with [APHIS' extensive and detailed guidelines for such](#)

[studies](#). APHIS has indicated their willingness to collaborate with ASTA members on the validation of new devitalization methods. New devitalization methods for noxious weed seeds in spices that have been discussed with APHIS include ethylene oxide and irradiation when used alone and in conjunction with microbial reduction processes, the application of steam and heat at temperatures that would maintain spice quality, and freezing processes.

Dr. Beck is available to discuss with ASTA members matters associated with noxious weed seeds in spices, and to provide guidance on the development of appropriate protocols for studies to validate new devitalization methods. To encourage the development of protocols and the conduct of appropriate studies to validate new devitalization methods, ASTA will sponsor initial discussions by ASTA member companies with Dr. Beck.

**For More Information**

Please contact ASTA General Counsel John Hallagan if you would like to discuss these matters, or if you would like to explore options for new noxious weed seed devitalization methods (202.331.2333; [Hondobear@aol.com](mailto:Hondobear@aol.com)).