

The Importation of
Belgian and Dutch Leeks, Romanian Garlic and Swiss Shallots
Into the United States

A Qualitative Pest Risk Assessment

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A. Introduction

This pest risk assessment (PRA) was conducted by the United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine (USDA, APHIS, PPQ) on three species of *Allium* from certain countries in Europe. The results are expressed qualitatively (high or low), rather than quantitatively (probabilities or frequencies). The risk assessment methodology can be found in: *Pathway-Initiated Pest Risk Assessment: Guidelines for Qualitative Assessments* (USDA, 1995), available from the Agency Contact identified on the front of this Assessment. Regulatory authority for plant pest/plant products is derived from the Plant Quarantine Act (1912), the Plant Pest Act (1957) and the Noxious Weed Act (1974). The methods/terminology used to initiate, conduct and report this PRA are consistent with guidelines provided by FAO (1995) and NAPPO (1995).

B. Risk Assessment

1. Initiating Event: Proposed Action

This commodity-based, pathway-initiated, PRA was conducted to assess the risks associated with garlic (*Allium sativum*) from Romania, leeks (*A. porrum*) from Belgium and The Netherlands and shallots (*A. cepa*) from Switzerland. The regulating authority for fruit and vegetable importation is 7 CFR 319.56.

2. Assessment of Weediness Potential of *Allium* spp.

Table 1: Process for Determining Weediness Potential of Commodity

Commodities: *Allium cepa* (onion/shallot), *A. porrum* (leek; = *A. ampeloprasum* var. *porrum* (L) Gay) and *A. sativum* L. (garlic).

Phase 1: *Allium cepa*, *A. porrum* and *A. sativum* are widely cultivated in the United States.

Phase 2: Is the species listed in:

*YES *Geographical Atlas of World Weeds* (Holm, et al 1979)

NO *World's Worst Weeds* (Holm, et al 1977)

NO Report of the Technical Committee to Evaluate Noxious Weeds; Exotic Weeds for Federal Noxious Weed Act (Gunn and Ritchie, 1982)

NO *Economically Important Foreign Weeds* (Reed, 1977)

NO Weed Science Society of America list (WSSA, 1989)

NO Is there any literature reference indicating weediness (e.g., AGRICOLA, CAB, Biological Abstracts, AGRIS; search on "species name" combined with "weed").

Phase 3: Conclusion: *Holm, et al (1979) listed *A. cepa* as a common weed in Yugoslavia, and *A. ampeloprasum* as a common weed in Iran, Portugal and a weed of unknown importance in Turkey. Holm, et al (1979) listed *A. sativum* as a weed of unknown importance in Jamaica. However, these plant species are widely grown in the United States and do not pose significant risks as weeds.

3. Previous Risk Assessments, Current Status and Pest Interceptions

Decision History for *Allium* spp. from Europe

- 1992 - Refuse entry of *Allium porrum* (above ground parts) from Belgium.
 1988 - Refuse entry of *Allium sativum* (above ground parts) from Italy.
 1988 - Refuse entry of *Allium sativum* (above ground parts) from Spain.
 1988 - Refuse entry of *Allium schoenoprasum* from the Netherlands.
 1963 - Permit entry, without tops of *Allium cepa* and *A. sativum* from the Netherlands.
 1924 - Permit entry of *Allium cepa*, from Belgium, into northern ports.
 1924 - Permit entry of *Allium cepa*, from the Netherlands, into northern ports

Pest Interceptions on *Allium* from Europe - FY 85-95

PEST	ORIGIN	HOST
<hr/>		
DIPTERA		
Agromyzidae, species of	Netherlands	Allium ampeloprasum (Leaf)
Agromyzidae, species of	Netherlands	Allium sp. (Flower)
<hr/>		
HETEROPTERA		
Miridae, species of	Netherlands	Allium sp. (Flower)
<hr/>		
HOMOPTERA		
Aphididae		
Aphididae, species of	Netherlands	Allium sp. (Flower)
Macrosiphum sp.	Netherlands	Allium sp. (Flower)
<hr/>		
LEPIDOPTERA		
Acrolepiidae		
Acrolepiopsis assetella	Europe (Country)	Allium porrum (Leaf)
Acrolepiopsis assetella	Netherlands(?)	Allium sp. (Leaf)
Acrolepiopsis assetella	Netherlands	Allium ampeloprasum (Leaf)
Acrolepiopsis assetella	Netherlands	Allium ampeloprasum (Stem)
Acrolepiopsis assetella	Netherlands	Allium sp.
Acrolepiopsis sp.	Netherlands	Allium sp. (Flower)
Cossidae		
Dyspessa ulula	Netherlands	Allium sativum (Bulb)
Geometridae		
Geometridae, species of	Netherlands	Allium sp. (Flower)
Noctuidae		
Noctuidae, species of	Netherlands(?)	Allium sp. (Flower)
Noctuidae, species of	Netherlands	Allium sp. (Flower)
Noctuidae, species of	Netherlands	Allium sp. (Leaf)
Noctuidae, species of	Netherlands	Allium sp.
Helicoverpa armigera	Netherlands	Allium sp.
Helicoverpa sp.	Netherlands(?)	Allium sp. (Flower)
Helicoverpa sp.	Netherlands	Allium sp. (Flower)
Helicoverpa sp.	Netherlands	Allium sp. (Stem)
Heliothis sp.	Netherlands(?)	Allium sp. (Flower)
Heliothis sp.	Netherlands(?)	Allium sp. (Stem)
Heliothis sp.	Netherlands	Allium sp. (Flower)

Tortricidae

Tortricidae, species of	Netherlands	Allium sp. (Flower)
Tortricinae, species of	Netherlands	Allium sp. (Flower)

THYSANOPTERA**Thripidae**

Thripidae, species of	Netherlands	Allium sp. (Flower)
Frankliniella intonsa	Netherlands	Allium sp. (Flower)
Frankliniella schultzei	Netherlands	Allium sp.
Melanthrips gracilicornis	Netherlands	Allium sp. (Flower)
Thrips sp.	Netherlands	Allium sp. (Flower)
Thrips major	Netherlands	Allium sp. (Flower)
Thrips palmi	Netherlands(?)	Allium sp. (Flower)
Thrips palmi	Netherlands	Allium sp. (Flower)

GASTROPODA

Pulmonata		
Monacha sp.	Netherlands	Allium sp. (Flower)

FUNGI

Hyphomycetes		
Circinotrichum poonense	Netherlands	Allium ampeloprasum (Leaf)

4. Pest List: Pests Associated with *Allium* spp. In Europe.Table 2: Pests Associated with *Allium* spp.

INSECTA			
Pest	Distribution ¹	Code ²	References
<i>Acrolepiopsis</i> sp. (Lepidoptera: Acrolepiidae)	NE	z _i	PPQ Interception
<i>Acrolepiopsis assectella</i> (Zeller) (Lepidoptera: Acrolepiidae)	EU	z _i	Carter, 1984; CIE, Map No. 405, 1980; Hill, 1987; PPQ Interception
<i>Agriotes lineatus</i> L. (Coleoptera: Elateridae)	EU	e	EPPO Database; Hill, 1987; PNKTO No. 5.
Agromyzidae sp. (Diptera: Agromyzidae)	NE	z _i	PPQ Interception
<i>Agrotis segetum</i> (Denis & Schiffermuller) (Lepidoptera: Noctuidae)	EU	e	CIE, Map No. 490, 1987; Hill, 1987; Zhang, 1994
Aphididae sp. (Homoptera: Aphididae)	NE	z _e	PPQ Interception
<i>Autographa gamma</i> (L) (Lepidoptera: Noctuidae)	NE, RO, SW	e	PNKTO No. 75.

Table 2: Pests Associated with *Allium* spp.

INSECTA			
<i>Brachycerus algirus</i> (F.) (Coleoptera: Curculionidae)	RO	e	EPPO Database
<i>Caliothrips indicus</i> (Bag.) (Thysanoptera: Thripidae)	EU	e	Hill, 1987
<i>Chromatomyia horticola</i> (Goureau) (Diptera: Agromyzidae)	EU	z _i	Spencer, 1973, 1990
<i>Cnephiasia</i> spp. (Lepidoptera: Tortricidae)	EU	e	Hill, 1987
<i>Delia antiqua</i> (Meigen) (Diptera: Anthomyiidae)	cosmopolitan	c	EPPO Database; Hill, 1987
<i>Delia hirticrura</i> (Fons.) (Diptera: Anthomyiidae)	Mediterranean area	e	EPPO Database; Abul-Nasr, 1974; El-Kifl, <i>et al.</i> , 1975
<i>Delia platura</i> (Meigen) (Diptera: Anthomyiidae)	cosmopolitan	c	EPPO Database; Hill, 1987
<i>Dyspessa ulula</i> (Borkhausen) (Lepidoptera: Cossidae)	C., E. & S. EU	z _i	Carter, 1984; PPQ Interception; Zhang, 1994
<i>Frankliniella intonsa</i> (Trybom) (Thysanoptera: Thripidae)	NE	z _e	PPQ Interception
<i>Frankliniella occidentalis</i> Pergande (Thysanoptera: Thripidae)	BE, NE, SW, US	c	Smith <i>et al.</i> , 1992
<i>Frankliniella schultzei</i> (Trybom) (Thysanoptera: Thripidae)	NE	z _e	PPQ Interception
Geometridae sp. (Lepidoptera: Geometridae)	NE	z _e	PPQ Interception
<i>Helicoverpa</i> sp. (Lepidoptera: Noctuidae)	NE	z _e	PPQ Interception
<i>Helicoverpa armigera</i> (Hubner) (Lepidoptera: Noctuidae)	C. & S. EU	e	Zhang, 1994
<i>Heliothis</i> sp. (Lepidoptera: Noctuidae)	NE	z _e	PPQ Interception
<i>Lipaphis erysimi</i> (Kaltenbach) (Homoptera: Aphididae)	cosmopolitan	c	Blackman and Eastop, 1984; Hill, 1987
<i>Liriomyza cepae</i> Hering (Diptera: Agromyzidae)	W. EU, NE	z _i	van Frankenhuyzen, 1977; Spencer, 1973, 1990
<i>Liriomyza huidobrensis</i> (Blanchard) (Diptera: Agromyzidae)	BE, CA, HI, NE	z _i	Smith <i>et al.</i> , 1992; Spencer, 1973

Table 2: Pests Associated with *Allium* spp.

INSECTA			
<i>Liriomyza nietzkei</i> Spencer (Diptera: Agromyzidae)	BE?, SW	z_i	Freuler, et al., 1980; Martinez, 1982; Spencer, 1973, 1990; Suss, 1974
<i>Liriomyza trifolii</i> (Burgess) (Diptera: Agromyzidae)	NE, RO, SW, US	c	Hill, 1987; Spencer, 1990; Smith et al., 1992
<i>Macrosiphum</i> sp. (Homoptera: Aphididae)	NE	z_e	PPQ Interception
<i>Mamestra brassicae</i> (L.) (Lepidoptera: Noctuidae)	EU	z_e , z_i	Hill, 1987; PNKTO No. 74; Zhang, 1994
<i>Melanthrips gracilicornis</i> Maltbaek (Thysanoptera: Thripidae)	NE	z_e	PPQ Interception
<i>Melolontha melolontha</i> (L.) (Coleoptera: Scarabaeidae)	BE	e	CIE, Map No. 193, 1965; Hill, 1987; INKTO No. 1
Miridae sp. (Heteroptera: Miridae)	NE	z_e	PPQ Interception
<i>Mythimna unipuncta</i> (Haworth) (Lepidoptera: Noctuidae)	S. EU, US(OR)	z_e	Hill, 1987; Zhang, 1994
<i>Myzus ascalonicus</i> (Don.) (Homoptera: Aphididae)	EU, US	c	Blackman and Eastop, 1984; Hill, 1987
<i>Myzus persicae</i> (Sulzer) (Homoptera: Aphididae)	cosmopolitan	c	Blackman and Eastop, 1984; Hill, 1987
<i>Noctua pronuba</i> (L.) (Lepidoptera: Noctuidae)	EU, NE U.S.	e	Hill, 1987; USDA NAPIS Database
Noctuidae sp. (Lepidoptera: Noctuidae)	NE	z_e	PPQ Interception
<i>Pieris brassicae</i> (L.) (Lepidoptera: Pieridae)	BE, NE, RO, SW	e	FAO Database; PNKTO No. 47.
<i>Spodoptera exigua</i> (Hubner) (Lepidoptera: Noctuidae)	Mediterranean area, S. EU, US(AR, CA)	c	Hill, 1987; Zhang, 1994
<i>Spodoptera littoralis</i> (Boisduval) (Lepidoptera: Noctuidae)	C. & S. EU, Mediterranean area	e	Hill, 1987; Zhang, 1994
Thripidae sp. (Thysanoptera: Thripidae)	NE	z_e	PPQ Interception
<i>Thrips</i> sp. (Thysanoptera: Thripidae)	NE	z_e	PPQ Interception

Table 2: Pests Associated with *Allium* spp.

INSECTA			
<i>Thrips angusticeps</i> Uzel (Thysanoptera: Thripidae)	EU	e	Hill, 1987
<i>Thrips major</i> Uzel (Thysanoptera: Thripidae)	NE	z _e	PPQ Interception
<i>Thrips palmi</i> Karny (Thysanoptera: Thripidae)	NE, US(FL, HI)	z _e	PPQ Interception
<i>Thrips tabaci</i> Lindemann (Thysanoptera: Thripidae)	EU, US	c	Hill, 1987
Tortricidae sp. (Lepidoptera: Tortricidae)	NE	z _e	PPQ Interception
ACARINA			
<i>Aceria tulipae</i> (Eriophyidae)	cosmopolitan	c	Hill, 1987
<i>Rhyzoglyphus</i> spp. (Acaridae)	cosmopolitan	c	Hill, 1987
GASTROPODA			
<i>Monacha</i> sp.	NE	z _e	PPQ Interception
NEMATODA			
<i>Aphelenchoides fragariae</i> (Ritzema Bos) Christie (Aphelenchoididae)	BE, SW, US	c	FAO Database, 1994; French, 1989; Havens, 1986; Maas, 1984
<i>Ditylenchus destructor</i> Thorne (Anguinidae)	BE, NE, RO, SW, US	c	Havens, 1986; EPPO, 1978; Smith <i>et al.</i> , 1992
<i>Ditylenchus dipsaci</i> Kuhn (Anguinidae)	BE, NE, RO, SW, US	c	Havens, 1986; Smith <i>et al.</i> , 1992; Vallotton 1981; Cindea, 1980; Kaai and Koert, 1971
PATHOGENS			
<i>Alternaria porri</i> (Ellis) Cif. (Fungi Imperfecti: Hyphomycetes)	NE, RO, US	c	CMI 1985, Map 350; Farr <i>et al.</i> , 1989; Schepers and Meier, 1992; Schwartz and Mohan, 1995
<i>Botrytis aclada</i> Fresen. (Syn - <i>B. allii</i> Munn.) (Fungi Imperfecti: Hyphomycetes)	NE, US	c	Farr <i>et al.</i> , 1989; Kohl <i>et al.</i> 1991; Krijthe, 1973

Table 2: Pests Associated with *Allium* spp.

INSECTA			
<i>Botrytis cinerea</i> Pers.:Fr. (Fungi Imperfecti: Hyphomycetes)	NE, US	c	Kohl et al., 1995; Farr et al.,, 1989
<i>Botryotinia porri</i> (van Beyma Thoe Kingma) Whetzel (Anamorph - <i>Botrytis porri</i> Buchw.) (Ascomycetes: Discomycetes)	EU	c	FAO Database, 1994; Schwartz and Mohan, 1995
<i>Botryotinia squamosa</i> Vein.-Bourg. (Anamorph: <i>Botrytis squamosa</i> J. C. Walker) (Ascomycetes: Discomycetes)	BE, NE, US	c	CMI 1977, Map 164; FAO 1994; Farr et al.,, 1989, Schwartz and Mohan, 1995;
<i>Circinotrichum poonense</i> Pirozynski (Fungi Imperfecti: Hyphomycetes)	NE	b, k, n	PPQ Interception; Ellis, 1971
<i>Cladosporium allii</i> (Ellis & G. Martin) P. M. Kirk & J. G. Gompton (Fungi Imperfecti: Hyphomycetes)	SW, US	c	Farr, et al., 1989; Neury and Corbaz, 1990
<i>Embellisia allii</i> (Campanile) E. Simmons (Syn.: <i>Helminthosporium allii</i> Campanile) (Fungi Imperfecti: Hyphomycetes)	RO, US	c	Farr et al., 1989; CSIOS, 1987
<i>Erwinia chrysanthemi</i> Burkholder, McFadden & Dimock	NE, RO, US	c	CMI 1977, #553; EPPO Data Sheet, 1980; Havens, 1986; Smith et al., 1992
<i>Fusarium culmorum</i> (Wm. G. Sm.) Sacc (Fungi Imperfecti: Hyphomycetes)	BE, NE, RO, SW, US	c	CMI 1984, Map 440; Farr et al.,, 1989; Govt. Agric. Res. Ctr., 1975; Roelands and Alofs, 1979;
Leek chlorotic streak virus	BE, NE	z_e , z_i	Verhoyen, 1973; Backus and Kleuskens, 1975; Bos et al., 1978a; Van Dijk, 1993
<i>Leptotrichila porri</i> (Ascomycetes: Discomycetes)	NE	z_e , z_i	Heymans and Liekens, 1972
<i>Melampsora allii-fragilis</i> Kleb. (Basidiomycetes: Uredinales)	RO	z_e , z_i	Watson, 1971
<i>Melampsora allii-salicis albae</i> Kleb. (Basidiomycetes: Uredinales)	BE	z_e , z_i	Watson, 1971
<i>Melampsora allii-populina</i> Kleb. (Basidiomycetes: Uredinales)	BE, SW	z_e , z_i	Watson, 1971
<i>Mycosphaerella schoenprasi</i> (Rab.) Wint. (Ascomycetes:Loculoascomycetes)	EU	z_e , z_i	Watson, 1971

Table 2: Pests Associated with *Allium* spp.

INSECTA			
Onion yellow dwarf potyvirus	NE, RO, SW, US	c	CMI 1986, Map 46; FAO Database 1994; Van Dijk, 1993
<i>Peronospora destructor</i> (Berk.) Casp. in Berk. (Oomycetes: Peronosporales)	RO, SW, US	c	CMI 1975, #456; CMI 1990, Map 76 ; Farr <i>et al.</i> , 1989; Schwartz and Mohan, 1995
<i>Phytophthora cactorum</i> (Lebert & Cohn) J. Schrot.	BE, NE, SW, RO, US	c	Corbaz and Bolay, 1991; CMI 1984, Map 280; Farr <i>et al.</i> , 1989
<i>Phytophthora porri</i> Foister (Oomycetes: Peronosporales)	BE, NE, SW	z_e , z_i	CMI 1990, Map 204, CMI 1978, #595; FAO database, 1994; Watson, 1971; Vanparys, <i>et al.</i> , 1993
<i>Pleospora herbarum</i> (Pers.:Fr.) Rabenh. (Ascomycetes: Loculoascomycetes)	NE, US	c	Farr <i>et al.</i> , 1989; Instituut voor Plantenziektenkundig Onderzoek, 1972.
<i>Puccinia allii</i> F. Rudolphi (Syn.: <i>P. porri</i> G. Wint.) (Basidiomycetes: Uredinales)	BE, NE, RO, SW, US	c	CMI 1984, Map 400; CMI 1965, # 52; Farr <i>et al.</i> , 1989; Govt. Agric. Res. Ctr., 1975; Schwartz and Mohan, 1995; Vanparys, <i>et al.</i> , 1993
<i>Rhabdospora allicola</i> (Baum) (Syn.: <i>Septoria allicola</i>) (Fungi Imperfecti: Coelomycetes)	EU	K	Watson, 1971
Shallot latent virus	BE, NE	z_e , z_i	Bos, <i>et al.</i> , 1978b; Verhoyen and Horvat, 1981
<i>Sclerotium cepivorum</i> Berk. (Fungi Imperfecti: Agonomycetes)	NE, RO, SW, US	c	CMI 1990, Map 331, CMI 1976, # 512; Farr <i>et al.</i> , 1989; Schwartz and Mohan, 1995
<i>Septoria ranojericii</i> Bub.var. <i>allii-obliqua</i> Savul & Sandu (Fungi Imperfecti: Coelomycetes)	RO	K	Hunt and Lohr, 1944
Tomato black ring nepovirus	NE, RO	z_e , z_i	Smith <i>et al.</i> , 1992
<i>Urocystis magica</i> Pass in Theum. (Syn.: <i>U. cepulae</i> Frost) (Basidiomycetes: Ustilaginales)	BE, NE, RO, SW, US	c	CMI 1984, Map 12; CMI 1971, #298; Farr, <i>et al.</i> 1989; Schwartz and Mohan, 1995;

Table 2: Pests Associated with *Allium* spp.

INSECTA			
<i>Uromyces ambiguus</i> (DC.) Lev. (Basidiomycetes: Uredinales)	EU	z_e , z_i	Watson, 1971
<i>Uromyces japonicus</i> Berk. & Curt. (Basidiomycetes: Uredinales)	EU	z_e , z_i	Watson, 1971

¹Distribution: AR - Arkansas; BE - Belgium; CA - California; EU - Europe; HI - Hawaii; NE - Netherlands; RO - Romania; SW - Switzerland; US - United States; NE U.S. - Northeastern United States

²Codes:

- b - Not likely to be a primary plant pest.
- c - Listed in non-reportable dictionary as non-actionable.
- e - Although pest attacks commodity, it would not be expected to remain with the commodity (plant part) during processing
- k - Not specifically listed for host, but reported from other hosts in same plant genus/family.
- n - Listed in the USDA catalogue of intercepted pests as actionable.
- z_i - Internal feeder: Pest is known to attack or infect commodity and it would be reasonable to expect the pest may remain with the commodity during processing and shipping.
- z_e - External feeder: Pest is known to commonly attack or infect commodity and it would be reasonable to expect the pest may remain with the commodity during processing and shipping.

5. List of Quarantine Pests

Arthropods

- Acrolepiopsis assectella* (Zeller) (Lepidoptera: Acrolepiidae)
- Agriotes lineatus* L. (Coleoptera: Elateridae)
- Agrotis segetum* (Denis & Schiffermuller) (Lepidoptera: Noctuidae)
- Autographa gamma* (L) (Lepidoptera: Noctuidae)
- Brachycerus algirus* (F.) (Coleoptera: Curculionidae)
- Caliothrips indicus* (Bag.) (Thysanoptera:)
- Chromatomyia horticola* (Goureau) (Diptera: Agromyzidae)
- Delia hirticura* (Fons.) (Diptera: Anthomyiidae)
- Dyspessa ulula* (Borkhausen) (Lepidoptera: Cossidae)
- Frankliniella intonsa* (Trybom) (Thysanoptera: Thripidae)
- Frankliniella schultzei* (Trybom) (Thysanoptera: Thripidae)
- Helicoverpa armigera* (Hubner) (Lepidoptera: Noctuidae)
- Liriomyza cepae* Hering (Diptera: Agromyzidae)
- Liriomyza huidobrensis* (Blanchard) (Diptera: Agromyzidae)
- Liriomyza nietzkei* Spencer (Diptera: Agromyzidae)
- Mamestra brassicae* (L.) (Lepidoptera: Noctuidae)
- Melanthrips gracilicornis* Maltbaek (Thysanoptera: Aeolohripidae)

Melolontha melolontha (L.) (Coleoptera: Scarabaeidae)
Mythimna unipuncta (Haworth) (Lepidoptera: Noctuidae)
Noctua pronuba (L.) (Lepidoptera: Noctuidae)
Pieris brassicae (L.) (Lepidoptera: Pieridae)
Spodoptera littoralis (Boisduval) (Lepidoptera: Noctuidae)
Thrips angusticeps Uzel (Thysanoptera: Thripidae)
Thrips major Uzel (Thysanoptera: Thripidae)
Thrips palmi Karny (Thysanoptera: Thripidae)

Plant Pathogens

Circinotrichum poonense Pirozynski
Leek chlorotic streak virus
Leptotrichila porri
Melampsora allii-fragilis Kleb.
Melampsora allii-salicis albae Kleb.
Melampsora allii-populina Kleb.
Mycosphaerella schoenoprasii (Rab.) Wint.
Phytophthora porri Foister
Shallot latent virus
Tomato black ring nepovirus
Uromyces ambiguus (DC.) Lev.
Uromyces japonicus Berk. & Curt.

6. Quarantine Pests Selected For Further Analysis

Table 3: Quarantine Pests Selected For Further Analysis

<i>Acrolepiopsis assectella</i> (Zeller) (Lepidoptera: Acrolepiidae)
<i>Chromatomyia horticola</i> (Goureau) (Diptera: Agromyzidae)
<i>Dyspessa ulula</i> (Borkhausen) (Lepidoptera: Cossidae)
<i>Liriomyza cepae</i> Hering (Diptera: Agromyzidae)
<i>Liriomyza huidobrensis</i> (Blanchard) (Diptera: Agromyzidae)
<i>Liriomyza nietzkei</i> Spencer (Diptera: Agromyzidae)
Leek chlorotic streak virus
<i>Leptotrichila porri</i>
<i>Melampsora allii-salicis albae</i> Kleb.
<i>Melampsora allii-populina</i> Kleb.
<i>Mycosphaerella schoenoprasii</i> (Rab.) Wint.
<i>Phytophthora porri</i> Foister
Shallot latent virus
Tomato black ring nepovirus
<i>Uromyces ambiguus</i> (DC.) Lev.
<i>Uromyces japonicus</i> Berk. & Curt.

Other organisms in this Assessment, not chosen for further scrutiny, may be potentially detrimental to the agricultural production systems of the United States. However, there were a variety of reasons for not subjecting them to further analysis: they are associated mainly with plant parts other than commodity; they may be associated with the commodity, however, it was not considered reasonable to expect these pests to remain with the commodity during processing; they have been intercepted, as biological contaminants, by PPQ Officers during inspections of these commodities and would not be expected to be found in every shipment.

7. Economic Importance: Consequences of Introduction

Pests rated for potential economic importance are evaluated against five biological factors (Risk Elements, Res)(USDA, 1995). The cumulative score for the REs is the Risk Rating. This Risk Rating is considered to be a biological indicator of the potential destructiveness of the rated pests.

Table 4: Risk Rating - Consequences of Introduction						
Pest	Climate/ Host Interaction	Host Range	Dispersal Potential	Economic Impact	Environ- mental Impact	Risk Rating
<i>Acrolepiopsis assectella</i>	High	Low	Medium	Medium	Low	Medium
<i>Chromatomyia horticola</i>	High	High	Medium	Medium	Low	Medium
<i>Dyspessa ulula</i>	High	Low	Medium	Medium	Low	Medium
<i>Liriomyza cepae</i>	High	Low	Medium	Medium	Low	Medium
<i>Liriomyza huidobrensis</i>	High	High	Medium	Medium	Low	Medium
<i>Liriomyza nietzkei</i>	High	Low	Medium	Medium	Low	Medium
Leek chlorotic streak virus	High	Medium	Medium	Medium	Low	Medium
<i>Leptotrichila porri</i>	High	Low	Medium	Medium	Medium	Medium
<i>Melampsora allii-salicis albae</i>	High	Medium	Medium	Medium	Low	Medium
<i>Melampsora allii-populina</i>	High	Medium	Medium	Medium	Low	Medium
<i>Mycosphaerella schoenoprasii</i>	High	Medium	Medium	Medium	Low	Medium
<i>Phytophthora porri</i>	High	High	Medium	Medium	Medium	High

Table 4: Risk Rating - Consequences of Introduction

Pest	Climate/ Host Interaction	Host Range	Dispersal Potential	Economic Impact	Environ- mental Impact	Risk Rating
Shallot latent virus	High	Medium	Medium	Low	Low	Medium
Tomato black ring nepovirus	High	High	Medium	High	Medium	High
Uromyces ambiguus	High	Medium	Medium	Medium	Low	Medium
Uromyces japonicus	High	Medium	Medium	Medium	Low	Medium

8. Likelihood of Introduction

The likelihood of introduction for a pest is rated relative to six factors - The quantity of the commodity imported annually (RE 6) and the survival of the pests and their access to suitable habitats and hosts (RE 7)(USDA, 1995).

Table 5: Risk Rating - Likelihood of Introduction

Pest	Quantity of commodity imported annually	Likelihood survive postharvest treatment	Likelihood survive shipment	Likelihood not detected at port of entry	Likelihood moved to suitable habitat	Likelihood find suitable host
Acrolepiopsis assectella	Medium	High	High	Medium	Medium	Medium
Chromatomyia hotricola	Medium	High	High	Medium	Medium	Medium
Dyspessa ulula	Medium	High	High	Low	Medium	Medium
Liriomyza cepae	Medium	High	High	Medium	Medium	Medium
Liriomyza huidobrensis	Medium	High	High	Medium	Medium	Medium
Liriomyza nietzkei	Medium	High	High	Medium	Medium	Medium
Leek chlorotic streak virus	Medium	High	High	Medium	Medium	Medium

Table 5: Risk Rating - Likelihood of Introduction

Pest	Quantity of commodity imported annually	Likelihood survive postharvest treatment	Likelihood survive shipment	Likelihood not detected at port of entry	Likelihood moved to suitable habitat	Likelihood find suitable host
<i>Leptotrichila porri</i>	Medium	High	High	Medium	Medium	Medium
<i>Melampsora allii-salicis</i>	Medium	High	High	Medium	Medium	Medium
<i>Melampsora allii-populina</i>	Medium	High	High	Medium	Medium	Medium
<i>Mycosphaerella schoenoprasii</i>	Medium	High	High	Medium	Medium	Medium
<i>Phytophthora porri</i>	Medium	High	High	Medium	Medium	Medium
Shallot latent virus	Medium	High	High	High	Medium	Medium
Tomato black ring nepovirus	Medium	High	High	High	Medium	Medium
<i>Uromyces ambiguus</i>	Medium	High	High	Medium	Medium	Medium
<i>Uromyces japonicus</i>	Medium	High	High	Medium	Medium	Medium

9. Pest Risk Potential

The summation of the Consequences and Likelihood of Introductions (Tables 4 and 5) yields the Pest Risk Potential (PRP)(USDA, 1995). Pests rated with Low PRPs will (usually) require only Port of Entry inspection to maintain phytosanitary security. However, pests with Medium to High PRPs will typically require phytosanitary measures more stringent than those provided, solely, by Port of Entry inspections.

Table 5: Pest Risk Potential	
Pest	Pest Risk Potential
<i>Acrolepiopsis assectella</i>	Medium
<i>Chromatomyia hotricola</i>	Medium
<i>Dyspessa ulula</i>	Medium
<i>Liriomyza cepae</i>	Medium
<i>Liriomyza huidobrensis</i>	Medium
<i>Liriomyza nietzkei</i>	Medium
Leek chlorotic streak virus	Medium
<i>Leptotrichila porri</i>	Medium
<i>Melampsora allii-salicis albae</i>	Medium
<i>Melampsora allii-populina</i>	Medium
<i>Mycosphaerella schoenprasi</i>	Medium
<i>Phytophthora porri</i>	Medium

Table 5: Pest Risk Potential

Pest	Pest Risk Potential
Shallot latent virus	Medium
Tomato black ring neopvirus	High
Uromyces ambiguus	Medium
Uromyces japonicus	Medium

10. Phytosanitary Measures

As the pests rated in this Assessment received Medium PRPs, specific mitigation measures will be warranted. However, the choice of appropriate sanitary and phytosanitary measures to mitigate the risks associated with European species of *Allium* is undertaken as part of Risk Management, and is not addressed, *per se*, in this document. *Circinotrichum* species are listed as occurring on fallen leaves and dead twigs. For this reason, it may be necessary to specify the commodity be free of plant debris for importation purposes. *Melampsora allii-fragilis* is listed as associated with garlic leaves. For this reason it may be necessary to specify the commodity be free of leaves. Additionally, should there be a change in the quarantine status of *Liriomyza huidobrensis*, this Risk Assessment will be amended to reflect that change.

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