

**Importation of Kiwi (*Actinidia chinensis*)
from Argentina
into the United States**

Qualitative, Pathway-Initiated Pest Risk Assessment

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A. Introduction

Pest risk analysis as defined by the Food and Agriculture Organization (FAO) of the United Nations includes pest risk assessment and pest risk management. This document addresses only the pest risk assessment (PRA). This PRA was prepared by APHIS, USDA to estimate the risk of introducing plant pests associated with importation of kiwi fruits (*Actinidia chinensis*) from **Argentina** into the United States. The estimates of risk are expressed qualitatively (“high”, “medium” or “low”), rather than in numerical terms such as probabilities or frequencies. The detailed method of risk assessment can be found in the document: Pathway-Initiated Pest Risk Assessment: Guidelines for Qualitative Assessments (USDA, 1995) (available from the Internet at <http://www.aphis.usda.gov/ppq/bats/bant> or from the agency contact listed on front page of this document). Authority for APHIS to regulate plant pests/plant products is derived from the Plant Quarantine Act of 1912, the Plant Pest Act of 1957, the Noxious Weed Act of 1974 and the Code of Federal Regulations, Title 7, Part 319, Subpart 56 (7 CFR 319.56 - Fruits and Vegetables). The methods and terminology used to initiate, conduct, and report this PRA are consistent with guidelines provided by FAO (1996) and North America Plant Protection Organization (NAPPO) (1996)..

B. Risk Assessment

1. Initiating Event: Proposed Action

This is a pathway-initiated pest risk assessment. The PRA is in response to a request for USDA for authorization to permit the importation of fresh kiwi fruits from Argentina which presents a potential plant pest risk. Quarantine 56 (7 CFR 319.56) provides a general regulatory authority for importation of fruits and vegetables.

2. Assessment of Weediness Potential of *Actinidia chinensis*

The results of the weediness screening for *Actinidia* (Table 1) did not prompt a pest-initiated risk assessment.

Table 1: Process for Determining Weediness Potential of Commodity	
Commodity: Actinidiaceae, <i>Actinidia</i> Lindl, a genus of about 30 Indomalasian, East Asiatic climbers.	
Phase 1:	Consider whether the genus is new to or not widely prevalent in the United States (exclude plants grown under USDA permit in approved containment facilities)? One species, <i>Actinidia arguta</i> (Sieb. & Zucc.)Planch. ex Miq., tara vine, is reported as introduced in Massachusetts.
Phase 2:	Answer Yes or No to the following questions: Are species within the genus reported as weeds in: <u>NO</u> <i>Geographical Atlas of World Weeds</i> (Holm et al., 1979) <u>NO</u> <i>World's Worst Weeds</i> (Holm et al., 1977) or <i>World Weeds: Natural Histories and Distribution</i> . (Holm et al, 1997) <u>NO</u> <i>Report of the Technical Committee to Evaluate Noxious Weeds; Exotic Weeds for Federal Noxious Weed Act</i> (Gunn & Ritchie, 1982) <u>NO</u> <i>Economically Important Foreign Weeds</i> (Reed, 1977) <u>NO</u> Weed Science Society of America list (WSSA, 1989) <u>NO</u> Is there any literature reference indicating weediness (e.g., AGRICOLA, CAB, Biological Abstracts, AGRIS; search on "genus name" combined with "weed").
Phase 3:	Conclusion:
IF:	1. The genus/species is widely prevalent in the United States and the answer to all of the questions is no... <u>Proceed with the pest risk assessment.</u>

3. Previous Risk Assessments, Decision History and Pest

Interceptions for *Actinidia chinensis*

1992- Permit entry with inspection and treatment for *Anastrepha* spp. from medfly free areas and with inspection and treatment for *Ceratitis capitata* and *Anastrepha* spp. in medfly infested areas of Mexico.

1984- Permit entry with inspection from USDA approved medfly free areas from Chile.

No pest interceptions have been recorded on kiwi from Argentina (USDA,1998).

4. Pest list: Plant pests associated with *Actinidia* spp. From Argentina

Table 2 shows our pest list for *Actinidia* spp. from Argentina . We generated the list after review of the information sources listed in USDA (1995). The pest list includes potential pests associated with the plant species (as opposed to only the plant part to be shipped). The pest list includes limited information on the distribution of each pest, pest-commodity association, and regulatory history.

Table 2: Pests associated with <i>Actinidia chinensis</i> from Argentina			
Scientific name	Dist. ¹	Codes ²	References
ARTHROPODS			
<i>Anastrepha fraterculus</i> (Wiedemann) (Diptera:Tephritidae)	AR	n,z	Hickel and Schuck, 1993; White, 1992
<i>Aonidiella aurantii</i> (Maskell) (Homoptera:Diaspididae)	AR,US	c,o	Argentina,1994; I-Hsiung et al., 1995; Nakahara, 1982
<i>Aspidiotus nerii</i> Bouche (Homoptera:Diaspididae)	AR,US	c,o	CPC, 1997;Nakahara, 1982; Prado,1991
<i>Ceratitis capitata</i> (Wiedemann) (Diptera:Tephritidae)	AR	n,z	EPPO, 1998;White, 1992
<i>Ceroplastes sinensis</i> Del Guercio (Homoptera:Coccidae)	AR	n	Ferro, 1976; CIE, 1980
<i>Choristoneura rosaceana</i> Harris (Lepidoptera:Tortricidae)	AR,US	o	UC-IPM, 1995; Zhang, 1994
<i>Cydia pomonella</i> Linnaeus (Lepidoptera:Tortricidae)	AR,US	c,o	I-Hsiung et al., 1995; Hodges et al, 1983
<i>Frankliniella australis</i> Morgan (Thysanoptera:Thripidae)	AR	a	Nakahara, 1997; Prado,1991

Table 2: Pests associated with <i>Actinidia chinensis</i> from Argentina			
Scientific name	Dist. ¹	Codes ²	References
<i>Heliethrips haemorrhoidalis</i> (Bouche) (Thysanoptera:Thripidae)	AR,US	c,o	CPC,1997; Rizzo, 1977
<i>Hemiberlesia rapax</i> (Comstock) (Homoptera:Diaspididae)	AR,US	c,o	CPC,1997; Nakahara,1982; Prado,1991
<i>Macrosiphum euphorbiae</i> (Thomas) (Homoptera:Aphididae)	AR,US	c,o	Prado,1991; Rizzo, 1977; CIE, 1954
<i>Margarodes vitis</i> (Phillipi) (Homoptera:Margarodidae)	AR	a	EPPO, 1998; Prado,1991
<i>Myzus persicae</i> (Sulzer) (Homoptera:Aphididae)	AR,US	c,o	CPC,1997; Metcalf and Metcalf,1993;Prado,1991;
<i>Naupactus xanthographus</i> (Germar) (Coleoptera:Curculionidae)	AR	n	Blackwelder, 1944; Prado,1991;Rizzo, 1977;
<i>Parthenolecanium persicae</i> (F.) (Homoptera:Coccidae)	AR,US	c,o	CIE, 1979; Prado,1991;
<i>Quadraspidiotus perniciosus</i> (Comstock) (Homoptera:Diaspididae)	AR,US	c,o	EPPO, 1998; FAO, 1993; IIE, 1986
<i>Saissetia oleae</i> (Bernard) (Homoptera:Coccidae)	AR,US	c,o	Prado,1991; UC-IPM, 1995
<i>Tetranychus urticae</i> Koch (Acari:Tetranychidae)	AR,US	c,o	CPC, 1997 ; Prado,1991
<i>Toxoptera aurantii</i> (Boyer de Fonscolombe) (Aphididae: Homoptera)	AR,US	c,o	Blackman and Eastop, 1985; CIE, 1961
<i>Trialeurodes vaporariorum</i> (Westwood) (Homoptera:Aleyrodidae)	AR,US	c,o	Mound and Halsey, 1978; Prado,1991;
PATHOGENS			
BACTERIA			
<i>Agrobacterium tumefaciens</i> (Smith & Town.) Conn	AR,US	c,o	Bradbury, 1986; CMI, 1980; UC-IPM, 1995
<i>Pseudomonas syringae</i> pv. <i>syringae</i> van Hall	AR,US	c,o	CMI, 1988; UC-IPM, 1995
FUNGI			

Table 2: Pests associated with <i>Actinidia chinensis</i> from Argentina			
Scientific name	Dist. ¹	Codes ²	References
<i>Botrytis cinerea</i> Pers.:Fr. (Fungi Imperfecti:Hyphomycetes)	AR,US	c,o	CPC, 1997; Farr et al, 1989; UC-IPM, 1995
<i>Lasiodiplodia theobromae</i> (Pat.) Griffiths & Maubl. (Fungi Imperfecti : Coelomycetes)	AR,US	c,o	Argentina, 1994;CMI, 1976; Farr et al, 1989
<i>Macrophomina phaseolina</i> (Tassi) Goid (Fungi Imperfecti: Coelomycetes)	AR,US	c,o	CPC,1997; Farr et al, 1989
<i>Phytophthora citrophthora</i> (R.E. Sm. & E.H. Sm.) Leonian (Oomycetes, Peronosporales)	AR,US	c,o	Argentina, 1994; Farr et al. 1989
<i>Phytophthora cryptogea</i> Pethybridge & Lafferty (Oomycetes, Peronosporales)	AR,US	o	CMI, 1985; Farr et al, 1989; FAO, 1993
<i>Phytophthora megasperma</i> f. sp. <i>glycinea</i> T.L. Kuan & Erwin (Oomycetes, Peronosporales)	AR,US	o	CPC,1997; EPPO, 1998; Farr et al, 1989
<i>Rosellinia necatrix</i> Prill. (Ascomycetes)	AR,US	o	CPC,1997;CMI,1972; Farr et al, 1989
<i>Sclerotinia sclerotiorum</i> (Lib.) de Bary (Discomycetes, Helotiales)	AR,US	c,o	CPC,1997; CMI, 1976; Farr et al, 1989
<i>Verticillium dahliae</i> Kleb. (Fungi Imperfecti:Hyphomycetes)	AR,US	c,o	CPC, 1997; Farr et al, 1989

¹Geographical distribution is denoted as follows: AR- Argentina, US- United States

²Codes:

- a - Pest mainly associated with plant part other than commodity
- 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
- n - Listed in the USDA catalogue of intercepted pests as actionable.
- o - Organism does not meet the geographical and regulatory definition for a quarantine pest.
- z - 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

5. List of Quarantine Pests

The list of quarantine pests for commercial shipments of *Actinidia chinensis*. from Argentina is provided in Table 3. Should any of these pests be intercepted on commercial (or any other) shipments of *Actinidia chinensis*, quarantine action may be taken.

Table 3. Quarantine Pests - <i>Actinidia chinensis</i> from Argentina
Arthropods
<i>Anastrepha fraterculus</i> (Wiedemann) (Diptera:Tephritidae)
<i>Ceratitis capitata</i> (Wiedemann) (Diptera:Tephritidae)
<i>Ceroplastes rusci</i> (Linnaeus) (Homoptera:Coccidae)
<i>Ceroplastes sinensis</i> Del Guercio (Homoptera:Coccidae)
<i>Frankliniella cestrum</i> Moulton (Thysanoptera:Thripidae)
<i>Margarodes vitis</i> (Phillipi) (Homoptera:Margarodidae)
<i>Naupactus xanthographus</i> (Germar) (Coleoptera:Curculionidae)

6. Quarantine Pests Likely to Follow Pathway

We analyzed in detail only those quarantine pests that can reasonably be expected to follow the pathway, *i.e.*, be included in commercial shipments of *Actinidia chinensis* (see USDA, 1995 for selection criteria). Only quarantine pests selected for further analysis are subjected to steps 7-9 below.

Table 4. Quarantine Pests Selected for Further Analysis with - <i>Actinidia chinensis</i> from Argentina
Arthropods
<i>Anastrepha fraterculus</i> (Wiedemann) (Diptera:Tephritidae)
<i>Ceratitis capitata</i> (Wiedemann) (Diptera:Tephritidae)

7. Economic Importance: Consequences of Introduction

9. Conclusion: Pest Risk Potential (PRP) and Phytosanitary Measures

The overall risk posed by a particular pest depends on both the consequences and likelihood of introduction (USDA, 1995). PRP is the combination of the consequences and likelihood of introductions risk rating (Tables 5 and 6). Our rating of the overall PRP for each quarantine pest selected for further analysis is shown in Table 7. (USDA, 1995).

Table 7: Pest Risk Potential	
Pest	Pest Risk Potential (PRP)
<i>Anastrepha fraterculus</i>	high
<i>Ceratitis capitata</i>	high

Plant pests rated as high for PRP may require specific phytosanitary measures. However detailed examination and choice of appropriate sanitary and phytosanitary measures to mitigate pest risk for particular pests are addressed as part of the pest risk management phase and are not discussed here.

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