IMPLEMENTATION REVIEW AND SUPPORT SYSTEM

Food and Agriculture Organization of the United Nations

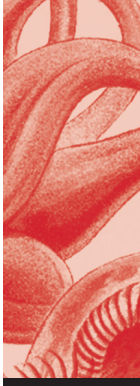
International Plant Protection Convention

04
2012

ENG

The Internet trade (e-Commerce) in Plants

Potential Phytosanitary Risks



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Publication notes:
Version 1.0 Published April 2012.

Contents

Abbreviations and acronyms

AIMS	Agriculture Internet Monitoring System
AQIS	Australian Quarantine and Inspection Service
APHIS	Animal and Plant Health Inspection Service (USAID
CABI	Centre For Agriculture And Biosciences International
FAO	Food and Agriculture Organization of the United Naitons
IPGRI	International Plant Genetic Resources Institute (Biodiversity International)
IPPC	International Plant Protection Convention
ISPM	International standards for phytosanitary measures
NCSU	North Carolina State University
NPPO	National Plant Protection Organization
NSF	National Science Foundation
PEQ	Post-entry quarantine
PRA	Pest risk analysis
SPS	Sanitary and Phytosanitary

Introduction

The formal trade of plants and plant products has been the traditional target for phytosanitary measures by national plant protection organizations (NPPO). This is because of the volumes and identifiable transportation pathways of traded commodities. These transportation pathways include overland freight, air-freight and ocean freight that have frameworks for regulation by customs authorities for revenue collection and NPPOs for phytosanitary risks. The frameworks are primarily geared to manage bulk shipment of consignments of commodities moving through these traditional transportation pathways. However, in the current globalized world, the Internet has become a convenient means of product promotion, sale and distribution for a range of products including those for which phytosanitary measures should be applied or, at the minimum, should be scrutinized using pest risk analysis (PRA). E-commerce is becoming increasingly common and presents another pathway by which many small and often uneasily recognizable consignments of plants and plant products move across international borders into countries and across continents.

These plants and plant products are marketed on many web-commerce sites in either conventional forms (e.g. packets of seeds or whole plants or plant parts), or as novelties in the form of products containing viable seeds (e.g. seed-infused greeting cards, bookmarks, apparel, etc.). The Internet provides convenience to a shopper, along with instant satisfaction, for the purchase of a variety of products. However, this convenience comes with potential phytosanitary risks as rapid door-to-door delivery by courier services often by-passes traditional screening by NPPOs. Few NPPOs factor this pathway into their risk analyses as there is, as yet, no effective mechanism for detecting products with phytosanitary risks. They are often sold in small quantities and are being imported into and then distributed within their country.

This paper presents preliminary findings of a desk study that explored the range of products being offered for sale over the Internet and attempts to highlight some potential phytosanitary risks that may be overlooked by NPPOs. The study is by no means exhaustive. However, it considers approaches that have been tried by Australia and the United States to bring to the fore some of the considerations that NPPOs, and the entire global phytosanitary community, may need to seriously take into account in planning how to handle this increasingly important pathway and its implications for phytosanitary protection.

Methodology

The study was conducted by the IPPC Secretariat during the period of January – February 2012. A selection was made of various categories of plants and plant products comprising plants for planting, novelties and handicrafts. Consideration was also given to invertebrate, arthropod and other life-forms, often referred to as livestock (e.g. aquarium livestock) in the pet trade that could be used in aquatic ecosystems, aquaria and for insect rearing. The subcategories of each selection used in the study included seeds, bulbs, corms, tubers, cuttings, rootstocks in the case of plants for planting; novelty items and/or ecological products with seed or other plants and plant products; handicrafts such as wood carvings, woven products, masks, figures, sculpture, baskets, stools; insects as pets, which may be potential plant pests and aquatic plants that may also be pests.

Online searches were made in a more or less simplified version of the earlier more detailed studies done for Western Australia (Rymer, Personal Communication) and the Agricultural Internet Monitoring System (AIMS) done jointly by the United States Development Agency (USDA)–Animal and Plant Health Inspection Service (APHIS) and the Department of Agriculture, Western Australia (Rymer, Personal Communication; Emery and Watt, 2009). The searches were made by entering the key words and word combinations that would be applicable when seeking the targeted products offered for sale (Table 1) in common search engines to get to websites that promote the target products for sale. The search was conducted only in English. Monitoring the internet sales of plants and plant products in other languages would reveal more products with potential phytosanitary risks as there are a number of non-English web commerce sites.

These searches were not exhaustive because of the excessively large number of hits for products of interest. Where a search yielded sites with products of interest, a small number were reviewed recording, when possible, names (common as well as scientific), quantities, unit costs, locations and shipping coverage. Table 3 contains a small sample of products representing the range of articles of interest. In some instances further searches were made using the Centre for Agriculture and Biosciences International (CABI) Crop Protection Compendium (available at: http://www.cabi.org/cpc/) to determine pests that might ordinarily be associated with the articles of interest. However, no attempt was made to conduct a PRA as this would be the responsibility of the NPPO of the country importing the article.

Results and discussion

Types of products

The searches yielded a significant number of websites that offer for sale and distribution (global or localized) plants and plant products, in conventional form or in configurations as novelty items as well as life-forms for use as pets or purported beneficial purposes such as biological control. A summary of some of the products is presented in Table 5. Plants for planting, particularly seeds sold directly as seed packets are the most commonly advertised articles, e.g. turf grasses for lawn planting, 'unnamed'; wildflowers, herbs and spices as well some vegetables. These are followed by vegetative planting materials (bulbs, corms and tubers) of ornamental plants. Seed- infused paper materials, e.g. bookmarks, greeting cards, gift wrappings are also widely promoted for online sale. Other novelty items of interest include 'plantable' products such as footwear, in one instance, and packaging materials containing seeds or propagules of fungi. As regards conventional plants for planting, most of the websites offered seeds or vegetative propagation materials such as bulbs, tubers and corms in conventional forms. Seeds also seem to be sold widely as novelties. Numerous products are advertised on sites that promote sale and distribution of novelty items with seeds using such catch phrases as 'plantable bookmarks' or 'seed-infused biodegradable paper' and 'Basil seeded coasters'.

Articles made of lumber in the form of crafts, furniture and planks are offered for sale on several websites. For these, except in a few cases, the details of the plant species from which the articles were made were not easily discernible from the details presented in the advertisements. One such species is Acer rubrum, the lumber may be infested with Alniphagus spp., Ambrosiodmus spp. and Amphicranus spp.

Consignment quantities

Except for turf grasses, seeds are generally offered for sale in packets with small numbers of seeds, usually less than 50. The vegetative planting materials, and other categories of commodities included in this study, are usually offered for sale in small quantities. Some of the advertisements for these products are illustrated in the annexed photos.

Sale and distribution of living organisms for 'alleged' beneficial purposes, such as biological control in aquaria is also common on websites. A site was found offering for sale and worldwide distribution the snail Nerita sp. for the control of algae in aquaria. It is interesting to note that Nerita sp. is a voracious consumer of a range of algal species but we make no assertions for its possible behaviour when introduced into new environments particularly outside the confines of an aquarium. Websites were also selling species of aquatic plants recognized as pests (Table 5) in aquatic ecosystems (IRSS Publication, 2012).

Some species of butterflies used as pets were also found for online sale and distribution worldwide. Notable examples of these are the painted lady butterfly (Cynthia cardui) and pupae of the Monarch butterfly (Danaus plexippus). The larval stages of the former are known to feed on the foliage of a number of plants including some economically important crops (Table 4) and may be important pests in environments where they are exotic. Many of the insects being offered as pets on their respective websites have phytophagous larval stages with the potential to feed on a range of economic plants. In new environments, they could become economically important agricultural or environmental pests.

Besides insects, other arthropods, as well as soils and related propagation media, should also be targeted in initiatives addressing the phytosanitary risks of e-commerce. The latter are important both as contaminants of other commodities, as well as traded commodities in their own right because of their high risk as pathways for spread of pests.

Shipping coverage

Only a few websites indicated in their advertisements the source countries and or locations from which they ship their products with even fewer providing information that they do not ship to certain countries.

Warnings on shipping requirements

In the case of some of the plants for planting, a few of the websites indicated that they would not ship to certain countries or advised prospective buyers to ascertain requirements of countries of intended import before placing orders (Table 6a and 6b). However, the majority of the advertisements do not indicate such restrictions or any special requirements for importation into specific countries. For websites providing such cautions, in most cases, the messages were written in a way that may not necessarily communicate to their customers that the purpose is to comply with phytosanitary laws or regulations of the concerned countries.

Related initiatives

In a more detailed study by Western Australia Agriculture Authorities (Rymer, Personal Communication), Internet trade was investigated with respect to Australian quarantine laws and phytosanitary regulations. Initiation of this particular study was informed by an excellent understanding of some of the courier-delivered items that had been intercepted by the Australian Quarantine and Inspection Service (AQIS). Hence, the study was able to go into the detail of categorizing the risks associated with some of the products promoted. The study revealed that out of 128 sites, approximately 30 percent supplied products classified by Australia as either illegal or of concern and also revealed that most of the products available were for worldwide distribution with only a small number indicating the supply area and/or restrictions required by countries of import. Our study, though it did not go into as much detail, also found that very few of the sites offering the targeted products for sale, indicate the locations of their products or that they do not deliver to specified countries/regions.

An initiative by Australia and USDA-APHIS/NCSU-NSF-Centre for Integrated Pest Management (Suiter and Sfereza, 2007; Emery and Watt, 2009) demonstrated that the Agriculture Internet Monitoring System (AIMS) has some capacity to automatically search for websites infringing quarantine laws. Such websites could be intercepted and alerted of the illegality of their activities as an effort to enforce some regulatory actions on e-commerce. AIMS provided an opportunity for NPPOs to appreciate the possibility of regulating trade of regulated articles over the Internet.

The cited studies recommended compilation of a webpage to identify potential mail order clients browsing the web in order to inform them of applicable phytosanitary regulations and possible actions in case of breaches as well as monitoring information exchanged on regulated articles. AIMS provides a good example of a practical action that can be taken and demonstrates the potential for NPPOs to be able to address internet trade.

Within the scope of the phytosanitary area, Internet trade in plants provides potential pathways for the importation of regulated articles and for the spread of pests not covered by existing pest risk analysis schemes used by most countries. Options for action that can be taken against internet/e-commerce sites of concern need to be explored further. It should be recognized that the websites identified in this and similar studies are likely to be a small fraction of those that could be supplying products with potential to spread pests. It is possible that some of the articles promoted through e-commerce have already contributed to the spread of some pests of economic importance in agriculture and aquatic habitats. Websites promoting the sale and worldwide distribution of regulated articles, without the required phytosanitary certification, essentially cause buyers to breach the phytosanitary legislation of the countries they are exporting to. Hence there is a need to develop enforceable regulatory actions that target the vendors of these articles. Countries need to become more aware of developments relating to Internet trade in plants and regulated articles in order to assist with the development of suitable regulatory actions. Internet trade should, therefore, be an area of focus for NPPOs in endeavours to engage diverse stakeholders in raising awareness regarding phytosanitary risks and the scope of applicable control measures. Consideration should be given to extending this study by requesting NPPOs to investigate Internet trade and gather data for further analysis in order to guide subsequent actions.

Recommendations

- NPPOs need to establish mechanisms/procedures to monitor the Internet in particular within the context of conducting pest risk analyses (PRAs), as well as for general surveillance, to identify potential products of concern that may be imported via this pathway.
- Consider the establishment of a monitoring system hosted by the IPPC Secretariat to alert contracting parties of products with potential phytosanitary risks being traded on e-commerce sites. Such a system should include provision for communication and data sharing with other NPPOs.
- NPPOs to work closely with in-country e-commerce vendors to ensure adequate information and warnings are provided to both the vendors and their customers. This could involve standardization of labelling, development of standard written warnings, the provision of links to both the relevant NPPO contact point as well as seeking their cooperation to reduce risks (e.g. removal of the products from websites).
- Contact Internet trade groups and on-line forums in order to raise awareness of phytosanitary requirements and risks and to seek their co-operation. (Modified from recommendations of the Twenty-second TC-RPPO)
- The IPPC should prepare a recommendation for an International standards for phytosanitary measures (ISPM) on the advertising/marketing/distribution/sale of plants, plant products through e-commerce pathways including linking these with e-certification.
- Raise awareness of the risks, e.g. through social networking sites, International Plant Protection (IPP), NPPOs/Regional Plant Protection Organizations (RPPOs), etc. (modified from recommendations of the Twenty-second TC-RPPO).
- Enhance NPPO import verification systems including closer scrutiny of packages entering the country, e.g. using X-ray, establishment of specific fines and penalties in cases of non-compliance, co-operation with customs courier-service providers, and restricting the points of entry of the traded products to facilitate inspection. (Modified from recommendations of the 22nd TC-RPPO).

Selected references

Suiter, K. & Sfereza, S. 2007. Monitoring the sale and trafficking of invasive vertebrate species using automated Internet search and surveillance tools. Proceedings of an international Symposium on Managing Vertebrate Invasive Species. Pp. 90 – 93

Emery, R. & Watt, P. 2009. Final report on software development and support for invasive species Internet monitoring. Submitted to the Cooperative Research Centre for National Plant Biosecurity, Australia.

IRSS Publication. 2012. Aquatic plants: uses and risks.

Table 1: Search words used to identify websites offering products of interest for online sale

Furniture wood	Aquatic plants online	Buy Coriander seed online
Seed infused bookmarks	Buy plants online	Buy seeds online
Wild flower seed infused products	Buy corms rhizomes tubers online	Forget-me-not seed packet online
Seed infused products	Online shop for flower bulbs	Ultra lawn patch
Plantable products	Purchase corms bulbs planting online	Wild flower seeds
Herb seed infused	*Ceratophyllum demersum*	Buy bells of Ireland seeds online
Seed infused gift	*Eichhornia*	Buy flower seeds online
Plantable gifts	*Alternathera*	Buy tomato seeds online
Novelties with fresh plants	Carnivorous plants	Wild flower seed infused products
Purchase corms bulbs planting online	Pond plants	*Eleocharis*
Live butterflies online	Terrarium plants	*Ceratophyllum demersum*
Ecofriendly products seed	Ecofriendly products plants	Ecofriendly packaging
Live butterflies	Reed canary grass seed	Livestock aquarium

Table 2: Plants and plant products including seeds and seed infused paper materials advertised in various websites for sale over the internet and names of some of the pests of those plant products that could potentially be spread through the pathway

Article category	Type	Trade name	Scientific name	Pest potentially associated
Plants for planting	Bulb	Mixed Asiatic Lily flower bulbs	Undetermined	Lily symptomless virus, Narcissus latent virus, *Ditylenchus dipsaci, Rhodococcus fascians,* Artichoke Italian latent virus, Onion latent virus, Onion yellow dwarf virus
		African lily, Lily of the Nile	*Agapanthus orientalis*	*Pseudomonas marginalis* pv. *marginalis* (lettuce marginal leaf blight)
		Begonia	*Begonia* spp	*Xanthomonas axonopodis* pv. *begoniae* (bacterial wilt of begonias), *Aphelenchoides fragariae* (strawberry crimp nematode), *Aphelenchoides ritzemabosi* (Chrysanthemum foliar eelworm), *Rhodococcus fascians* (fasciation: leafy gall), Carnation mottle virus (mottle of carnation)
		Gladiolus	*Gladiolus* spp.	Strawberry latent ringspot virus (latent ring spot of strawberry), Narcissus latent virus, Artichoke Italian latent virus
		Cinnamon Fern	*Osmunda cinnamonea*	*Phytophthora cinnamomi* (stripe canker (of cinnamon)
		Caesar' s Brother	*Iris siberica*	Iris yellow spot virus (iris yellow spot), Narcissus latent virus, *Ditylenchus destructor* (potato tuber nematode), Chrysanthemum stem necrosis virus, *Xanthomonas* sp. (Syn. *Xanthomonas cassavae* (cassava leaf spot)

Article category	Type	Trade name	Scientific name	Pest potentially associated
		Daffodil	*Narcissus* spp.	Narcissus latent virus, Strawberry latent ringspot virus, *Ditylenchus dipsaci*, Lily mottle virus, Arabis mosaic virus, Onion yellow dwarf virus
	corm	Ranunculus	*Ranunculus* spp	Aster yellows phytoplasma group, Clover phylloidy phytoplasma, Tomato spotted wilt virus, Arabis mosaic virus
	seed	Fig Buttercup, marsh marigold, pilewort	*Ficaria verna* or *Ranunculus ficaria*	Potentially invasive weed
		Spanish broom	*Phalaris arundinacea*	Blast of millet (*Pyricularia setariae*)
		Coriander (syn. cilantro)	*Coriandrum sativum*	Clover yellow vein virus
		Living Chrysanthemum	*Helipterum* sp.	Chrysanthemum stunt viroid, *Rhodococcus fascians*, Potato spindle tuber viroid, Tobacco streak virus, *Pseudomonas corrugata*
		Bells of Ireland	*Molucella laevis*	Zucchini yellow mosaic potyvirus
		Forget-me-not	*Myosotis* spp.	Raspberry ringspot virus
		Ultra lawn patch (grass seed, fertilizer & mulch)	Undetermined	Undetermined
		Wild flower seed mix	Undetermined	Undetermined
		Bird and butterfly wild flower seed mixture consisting of more than 20 species	Undetermined	Undetermined
		Lupin	*Lupinus chamissonis*	*Acremonium maydis* (black bundle disease)
		Amturf 45332 Sun/Shade Ultra Lawn Patch 5-Pound Bag	Undetermined	Undetermined
Plants for planting (aquatic type)	Plants	No trade name	*Myriophyllum* spp such as *M. heterophyllum* and *M. mattogrossense*	*Myriophyllum spicatum*, *M. aquaticum*, *M. heterophyllum* and *M. mattogrossense* are known to be invasive
		No trade name	*Pistia stratiotes*	*Pistia stratiotes* is known to be an invasive species
		No trade name	*Salvinia minima*	Some species of the *Salvinia* genus are known to be invasive
		No trade name	*Acorus variegates*, *Lobelia cardinalis*, *Syngonium podophyllum*, and *Spathiphyllum tasson*	Terrarium plants
Novelty	Items with seed	Organic Green Tea Sets, Seed Infused Gift Wrap	Undetermined	Undetermined
		Seed Infused Bookmarks, Plant	Undetermined	Undetermined

Article category	Type	Trade name	Scientific name	Pest potentially associated
		Pot, Lil' Bloomer		
		Seed Infused Coasters -wildflower seeds	Undetermined	Undetermined
		Seed Infused Door-hangers	Undetermined	Undetermined
		Seed Infused Coasters, Basil Seeds	Undetermined	Undetermined
		Herb Seed Infused Confetti, Individual Header Bags	Undetermined	Undetermined
		Organic Green Tea Sets, Seed Infused Gift Wrap	Undetermined	Undetermined
		Plantable paper (No scientific name given); embedded with seeds that grow as the paper planted in a pot of soil composts away - flowers, herbs or vegetables	Undetermined	Undetermined
		Heart Plantable Memorial Cards plant and forget-me-not flowers will grow in memory of your loved one; No scientific name given	Undetermined	Undetermined
		Scientific name not stated for seeds in Paper-whites in Terra Cotta Gift Kit	Undetermined	Undetermined
Handicraft *	Wood	Red Maple (Syn. Swamp, Water or Soft Maple)	*Acer rubrum*	Wild Wormy Ambrosia Maple Wood Beetle (*Ambrosiodmus* spp.; *Alniphagus* spp.; *Amphicranus* spp.)
Pets	Insects	Monarch pupae	*Danaus plexippus*	Undetermined
		Painted lady butterfly	*Cynthia cardui*	Host plants and other plants affected include *Althaea* (hollyhocks), *Borago officinalis* (Borage), *Chrysanthemum* (daisy); *Cirsium arvense* (creeping thistle), *Cynara cardunculus* var. *scolymus* (globe artichoke), *Glycine max* (soyabean), *Gossypium* spp. (cotton), *Helianthus annuus* (sunflower), *Lactuca sativa* (lettuce), *Malva* spp. (mallow), *Phaseolus vulgaris* (common bean

*Striped Craft Furniture Planks Lumber is a natural product, and as such, there may be insects or other forms of life on or in it

Table 3: Some of the products for which advertisements indicated distributions and/ or countries/ regions excluded in the distribution.

Host	Location of seed*	Destination	Exclusions	Pests potentially associated
Green bean seed (*Phaseolus vulgaris*)	Indicated by country/state/ province/city	Indicated by country	Near East, Oceania, Southeast Asia, South America, Russian Federation, Moldova, Ukraine	*C. lindemuthianum*, Bean pod mottle virus Broad bean wilt virus (lamium mild mosaic) *Curtobacterium flaccumfaciens* pv. *flaccumfaciens* (bacterial tan spot), *Phaeoisariopsis griseola* (angular bean leaf spot)
Purple tomato seed (*Lycopersicon esculentum*)	Indicated by country/state/ province/city	Worldwide	Not indicated	*Alternaria japonica* (pod spot of radish) *Phomopsis longicolla* (pod and stem blight *Pseudomonas syringae pv. syringae* (bacterial canker or blast (stone and pome fruits))
Basil herb seed *Ocimum basilicum*	Indicated by country/state/ province/city	Indicated by country	Near East, Oceania, Southeast Asia, South America, Russian Federation, Moldova, Ukraine	*Sclerotinia sclerotiorum* (cottony soft rot)
Dwarf blueberry seed (*Vaccinium corymbosum*)	Indicated by country/state/ province/city	Worldwide	Not indicated	*Pseudomonas syringae* pv. *syringae* (bacterial canker or blast (stone and pome fruits)
Coriander seed (*Coriandrum sativum*)	Indicated by country/state/ province/city	Worldwide	Not indicated	Clover yellow vein virus *Macrophomina phaseolina*
Cape gooseberry seed (*Physalis peruviana*)	Indicated by country/state/ province/city	Worldwide	Not indicated	*Corticium rolfsii*
Wheat grass (*Agropyron* sp.)	Indicated by country/state/ province/city	Worldwide	Not indicated	*Ustilago hordei f.sp. avenae* (covered smut of barley) *Tilletia tritici* (wheat bunt) *Urocystis agropyri* (flag smut of wheat)
Living Chrysanthemum (*Helipterum* spp)	Indicated by country/state/ province/city	Indicated by country	Not indicated	Chrysanthemum stunt viroid (measles of chrysanthemum), *Rhodococcus fascians* (fasciation: leafy gall), *Pseudomonas corrugata* (pith necrosis of tomato); Potato spindle tuber viroid (spindle tuber of potato), Tobacco streak virus (stunt of asparagus)
China Aster Seeds (*Callistephus chinensis*)	Indicated by country/state/ province/city	Worldwide	Not indicated	*Conyza canadensis* (Canadian fleabane) *Solidago canadensis* (Canadian goldenrod) Tobacco rattle virus (spraing of potato)
White Angels' ORCHID	Indicated by country/state/ province/city	Worldwide	Not indicated	*Thanatephorus cucumeris* (many names, depending on host)
Asparagus (*Asparagus officinalis*)	Indicated by country/state/ province/city	Worldwide	Not indicated	Tobacco streak virus (stunt of asparagus) *Acremonium strictum* (acremonium wilt) Blackeye cowpea mosaic virus (BICMV) Cowpea Moroccan aphid-borne mosaic virus (cowpea aphid-borne mosaic virus)

Host	Location of seed*	Destination	Exclusions	Pests potentially associated
				Elm mottle virus *Rhodococcus fascians* (fasciation: leafy gall)
Star hibiscus	Indicated by country/state/province/city	Worldwide	Not indicated	
Japanese timber giant bamboo - madake plant rhizomes	Indicated by country/state/province/city	Worldwide	Not indicated	*Fallopia japonica* (Japanese knotweed) *Paratrichodorus porosus*!!!!!
Mixed Asiatic lily flower bulbs	Indicated by country/state/province/city	Worldwide	Australia	Lily symptomless virus; Narcissus latent virus *Aphelenchoides fragariae* (strawberry crimp nematode) *Ditylenchus dipsaci* (stem and bulb nematode) *Rhodococcus fascians* (fasciation: leafy gall) Artichoke Italian latent virus; Carnation latent virus Onion yellow dwarf virus (onion yellow dwarf)
Festuca glauca seed	Indicated by country/state/province/city	Worldwide	Not indicated	*Anguina agrostis* (nematode, bentgrass)
Reed canary grass (*Phalaris arundinacea)* seed	Indicated by country/state/province/city	Worldwide	Not indicated	Pyricularia setariae (blast of millet)
Vanilla planifolia cuttings	Not indicated	Worldwide	Not indicated	Watermelon mosaic potyvirus

*The names of locations of the products are omitted in the information presented in this table

Table 5: Species of aquatic organisms documented as environmental pests in the IRSS study 11 of which are offered for sale by some websites.

Botanical name	Common name	Available for online purchase
Alternanthera philoxeroides	Alligatorweed	Yes
Caulerpa taxifolia	Caulerpa seaweed	Yes
Ceratophyllum demersum	Coontail	Yes
Didymosphenia geminata	Didymo	Yes
Eichhornia crassipes	Water hyacinth	Yes
Hydrilla verticillata	Hydrilla	Yes
Leersia hexandra	Rice grass	Yes
Myriophyllum aquaticum	Parrotfeather	Yes
Myriophyllum spicatum	Eurasian watermilfoil	Yes
Phragmites australis	Common reed	Yes
Pistia stratiodes	Water lettuce	Yes
Salvinia auriculata	Salvinia	No
Salvinia molesta	Giant salvinia	No
Spartinia anglica	Cord-grass	No
Undaria pinnatifida	Wakeme seaweed	No

Table 6a: A few cautionary messages in the advertisements for some products for worldwide distribution

Product Name	Cautionary Message
Monarch Pupae (*Danaus plexippus*)	We are unable to directly ship Monarch Butterfly EGGS, CATERPILLARS, or PUPAE West of the Rockie Mountains due to APHIS regulations and our permit restrictions. While we usually have partner Breeders in CA to assist they occasionally experience shortages. We will arrange the shipment of Adult Butterflies when available and directly ship all other items.
Insect Lore Butterfly Garden	Eligible European Destinations (Belgium, Denmark, Luxembourg, Netherlands, Andorra, Finland, Gibraltar, Greece, Iceland, Ireland, Italy, Liechtenstein, Norway, Portugal, San Marino, Spain, Sweden, Vatican city and Poland.)
Caulerpa spp.	We distribute worldwide except California, USA
Purple tomato (*Lycopersicon esculentum*)	Distribution area excludes: Guernsey, Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde Islands, Central African Republic, Chad, Comoros, Congo, Democratic Republic of the, Congo, Republic of the,
Basil Herb Seed *Ocimum basilicum*	Excludes Near East, Oceania, Southeast Asia, South America, Russian Federation, Moldova, Ukraine
Mixed Asiatic lily flower bulbs	We distribute worldwide except Australia

Table 6b: Examples of some of the notices to clientele given on e-commerce websites for some of the advertised products

Example	Message
Where can I ship my order?	We are happy to ship to anywhere around the world, but if you are not in theUnited States, please contact us before you place an order since some of our services are not available to all countries. Please note that we do not ship to any PO Boxes.
Please note:	Lumber is a natural product, and as such, there may be insects or other forms of life on or in it.
International Orders: Countries we've shipped to:	The plantable seed papers, invitations and stationery of [name withheld] are shipped around the world. See below for a list of countries that we have shipped our seed paper products to. We can ship to any destination in North America and the European Union. Please note that countries outside of these locations may require you to apply for an entry permit. We are not able to ship seed paper to Australia or New Zealand. Countries outside of North America charge duty and taxes, typically upon delivery. Please check with your country's customs office for more information, and feel free to contact us if you would like a shipping quotation or to find out if we can ship our seed paper products to you.
International shipments:	For live plants, the customer needs to check with their local government authorities and ascertain what requirements are necessary for shipping live plants to their respective countries. In some cases, Phytosanitary Certificates are required...these cost US$150 dollars and must be ordered at the time of placing the order with us. NOTE: If a customer chooses to place an order without a Phytosanitary Certificate, there is a risk that shipment will not be allowed to enter the respective country, and or the shipment could be seized and destroyed. If this situation occurs, the loss of the plant shipment will be incurred by the customer. (Please understand that different countries have different regulations and requirements for importing live plants. Therefore it is impossible for us to know all the requirements. You must contact your government before ordering.)
(Antique reclaimed woods): Kiln drying	Dimensional Lumber also has the option of being kiln dried. Kiln drying is highly recommended for all wood products. Kiln Drying Process: Kiln Temperatures reach a maximum of 140 Degrees Fahrenheit while the wood is drying. The kiln drying process usually lasts five to ten days for antique reclaimed woods, depending on moisture content and dimensions. Possible defects without kiln-drying: Shrinkage/movement of wood product; Warping, Cupping, Bowing, Splitting Insect infestation (possible in reclaimed timber unless kiln dried and heat treated) - Powder post beetles, Termites, Spiders and various other pests.
Rough cut lumber	Note: International customers are responsible for paying customs charges and any other applicable fees or taxes required.
International	I cannot guarantee international shipments as I have no control over the foreign shippers.
Delivery and P&P Information	All items on this site are for delivery to countries worldwide, except USA, Canada, the Virgin Isles, Puerto Rico and Guam. For delivery to the USA, Canada, the Virgin Isles, Puerto Rico and Guam, please visit. .....com We regret that, due to local customs restrictions, we are not able to send any items to the following countries: Afghanistan, Algeria, Angola, Australia, Colombia, Egypt, Kenya, Kuwait, Libya, Moldova, Morocco, New Zealand, Nigeria or South Africa.

Others	We are unable to directly ship Monarch Butterfly EGGS, CATERPILLARS, or PUPAE West of the Rockie Mountains due to Aphis regulations and our permit restrictions. While we usually have partner Breeders in CA to assist they occasionally experience shortages. We will arrange the shipment of Adult Butterflies when available and directly ship all other items.
	Plants may not be available to be shipped to all locations depending on permit restrictions and customs requirements.
	Shipment of live caterpillars is possible only to destinations within the continental
	USA and Alaska. We cannot ship butterfly larvae to Hawaii
	Due to custom restrictions on importing seeds we are unfortunately unable to ship worldwide. There is a list of countries to choose from when you checkout - If your country is not on this list then we currently cannot ship to this country. Please email us for further information or checkout our stock list page as we may have a local retailer that can help.
	Right now delivery is limited to countries within Europe (see the list below). We hope to be able to branch out soon, but introducing non-native seeds into countries is a tough nut to crack. We're working on it though! Hopefully by 2012 we will be able to place our footprint further around the globe.

Annexes

Annex 1: Illustration of some of the productspromoted for online sale showing the packaging and some of the advertisers' messages

<table>
<tr><th colspan="2">PLANTS AND PLANT PRODUCTS CONFIGURED IN CONVENTIONAL FORM</th></tr>
<tr><td>SEED PACKETS (mid to large size)

Ultra Lawn Patch 5-Pound Bag
 

Product Features
• Safe for kids and pets
• Combines premium seed, natural fertilizer, and mulch
• Brings fast growth, thick coverage, and durability
• All-natural, biodegradable product
• Spreads easier and absorbs moisture faster than any</td><td>SEED PACKETS (multiple species)
 
Perennial Annual & Biennial Wildflower Seed</td></tr>
<tr><td>SEED PACKETS (multiple species)
 
</td><td>SEED PACKETS (single species)
 
</td></tr>
</table>

OTHER PLANTS PARTS FOR GARDENING PURPOSES

BANANA - Musa Acuminata cv. Dwarf 10 seeds

101+ MOSO BAMBOO SEEDS Phyllostachys pubescens hardy
Returns: Accepted within 14 days

Moso Bamboo+Phyllostachys pubescens 1000+seeds Huge Big tree seeds
Returns: Accepted within 14 days

1 PHYLLOSTACHYS AUREA BAMBOO PLANT RHIZOME 12"Lx1/2"W -GOLDEN/FISHING POLE
Returns: Accepted within 14 days

PLANT PRODUCTS (Specialty Products)

Rough cut lumber

PLANT PRODUCTS MARKETED FOR THE PET TRADE

Certified Organic VNS Hard Winter Wheat Seeds
These seeds are chemical free and are the best for you cats health.

PLANTS AND PLANT PRODUCTS CONFIGURED AS NOVELTY ITEMS
(Containing propagative materials)

Eco-Friendly Promo Planters, 4 - Pack

Product Features:

- Price includes one color imprint on each planter
- Optional Full Color Process Imprinting is available at an additional charge
- Material: Rice Hull & Corn Husk
- Includes four planters with Soil Disk & Seed Packets
- Planter Color Options: Blue, Orange, Green, Red, Tan
- Assorted planter colors available free of charge.
- Available Seed Options: Flowers-Forget-Me-Nots, Pansies, Impatients, Poppies. Herbs - Basil, Chives, Parsley, Thyme.
- Package Design Options: Stock, Gift Bow, Earth Friendly, Retro Blue, Retro Orange
- Bulk packaged

Plantable post cards with garden integrated

city II postcarden | city postcarden

image from postcarden.com

Double-Sided Plantable Bookmark
Full color printing on seed paper
From $0.96

2012 Standard Plantable Eco Calendar
2 colors available
From $6.00

Large Plantable Gift Bag With 3.5" Gusset - Seed Paper (5.75"X11.5")
$4.85 - $5.50

Plantable Wine Gift Bag With 3.5" Gusset - Seed Paper (15"X3.5")
$4.85 - $5.50

image from eco-swag.com

Seed Infused Invitations

Double-Sided Plantable Business Cards
Full color printing on seed paper
From $0.54

Plantable Earth Day Corporate Flat Card
Add your own logo and message
From $0.64

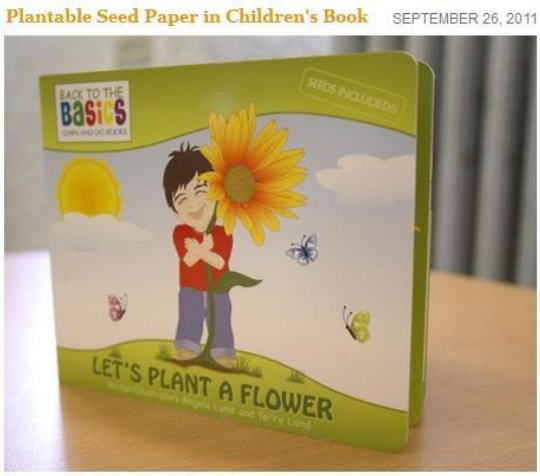
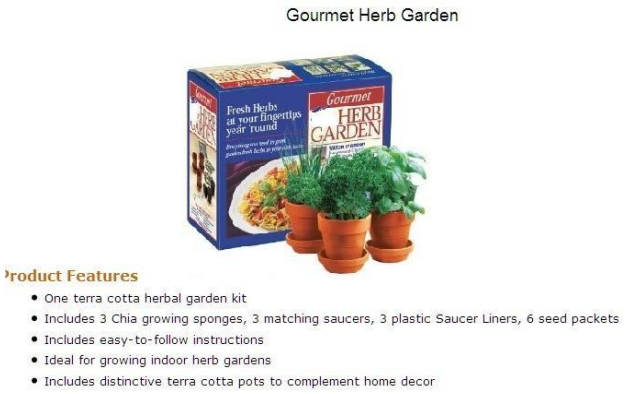
Custom Printed Seed Infused Bookmarks

Personalized Seed Packets

Seed Infused Business Cards

Custom Seed Infused Greeting & Note Cards

Assorted Seed Infused Products

Continued…Plants and Plant Products Configured as Novelty Items	
 Seed Infused Holiday Products	 Custom Plantable Shapes
BOOKS (Seed infused)  Plantable Seed Paper in Children's Book SEPTEMBER 26, 2011 image from botanicalworks.com	PACKAGING MATERIAL (Seed of fungi infused)  *Image from the Life Box*
HOME DECORATIVE PRODUCTS  Gourmet Herb Garden Product Features • One terra cotta herbal garden kit • Includes 3 Chia growing sponges, 3 matching saucers, 3 plastic Saucer Liners, 6 seed packets • Includes easy-to-follow instructions • Ideal for growing indoor herb gardens • Includes distinctive terra cotta pots to complement home decor	FOOTWEAR (Seed infused)  OAT Shoes that bloom www.oatshoes.com The Virgin Collection II has arrived!! New softer lining, bouncier soles, sturdier heel support and overall much neater stitching. Get 'em now! Click on the images to view and order. image from oatshoes.com

ARTICLES FOR THE PET TRADE	
HOBBYIST (Insect rearing kits with live insects)  	LIVESTOCK FOR THE AQUARIUM TRADE  *Nerita spp.* (Algae eating snail)
Plants for insect rearing  	

AQUATIC PLANTS IN THE AQUARIUM TRADE	
 Myriophyllum aquaticum  **Telanthera Rosefolia (Alternanthera reineckii)**	 Water Hyacinth- Eichhornia-AVAILABLE AUG 1st
 **REED, GOLDEN (Phragmites australis aurea)**	 Hornwort - Ceratophyllum demersum

IPPC

The International Plant Protection Convention (IPPC) is an international plant health agreement that aims to protect cultivated and wild plants by preventing the introduction and spread of pests. International travel and trade are greater than ever before. As people and commodities move around the world, organisms that present risks to plants travel with them.

Organization

- The number of contracting party signatories to the Convention exceeds 181.
- Each contracting party has a National Plant Protection Organization (NPPO) and an Official IPPC contact point.
- 10 Regional Plant Protection Organizations (RPPOs) have been established to coordinate NPPOs in various regions of the world.
- IPPC liaises with relevant international organizations to help build regional and national capacities.
- The Secretariat is provided by the Food and Agriculture Organization of the United Nations (FAO-UN).

International Plant Protection Convention (IPPC)

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Co-funded by European Union