

Special Points of Interest

- ...the recent anthrax scares and the U.S. Postal Service's response threatening shipments of plant tissue [and] the potential importation bans on exotic plant species ... have the potential of creating a floricultural jihad.
- With 2002 being the Year of the Rose, exploring the diversity & versatility of miniature roses can be an exciting way to celebrate.
- *Gaura* translates as "gorgeous" or "superb" and is commonly sold with the same common name.

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International floriculture issues

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Commercial floriculture is represented by a myriad of cultures and nationalities across the globe, making this industry the most vibrant and colorful in agriculture! Almost every country has a floriculture industry that contributes to the local, national and/or international economies. In this time of tension between the Islamic, Jewish, and Christian worlds we must celebrate the fact that our industry is a melting pot of all cultures.

Flowers have always had the universal ability to speak "silently without tongues" and express our emotions in times of happiness, celebration, and grief (Perry, 1972). Millions of growers and gardeners worldwide are cultivating flowers to brighten homes and landscapes with flowers from all corners of the planet. It is appropriate that we thank our Islamic partners for their many gifts to floriculture. For

instance, how many floricultural crops can you name that have their derivations in Islamic countries? Here are some examples to get you started...

◆ **Crocus species** are found throughout the Mediterranean countries. The spring-flowering species, i.e. *Crocus flavus*, *C. chrysanthus*, and *C. vernus*, are popular floriculture potted plants and garden perennials. *C. sativus*, the source of saffron, is native to Asia Minor and is an historic dye, food source (food coloring and flavoring), as well as a medicine and disinfectant.

◆ **Cyclamen** are native to NW Iran and all Mediterranean countries with a coastline, except for Spain and Egypt. They are also found in Switzerland, Austria, Bulgaria, Greece, Italy,

Bosnia, and Serbia. Who isn't acquainted with *Cyclamen persicum*, the popular potted plant that heralds spring in our cold climate? While most are not winter hardy in Minnesota, it is possible to keep cyclamen plants alive for years as houseplants. In Britain, for instance, *Cyclamen hederifolium* plants have been cultivated to be more than 100 years old (Perry, 1972)! At that age, the large corms send out hundreds of flowers.

◆ *Eremurus stenophyllus* and *E. robustus*, **Foxtail Lilies**, are stately cut flowers and perennials native to the steppes of western and central Asia. In Afghanistan, the leaves of some foxtail lily species are eaten as a vegetable. Foxtail lilies are a relatively new cutflower and are popular perennials in warmer

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climates.

◆ *Fritillaria imperialis*, the **Crown Imperial**, is one of the oldest cultivated bulbs. Crown Imperials are native to northern India, Iraq, Afghanistan, and the Himalayas. While not hardy in Minnesota, other dwarf *Fritillaria* species can be grown in protected areas.

◆ **Iris** - *Iris danfordiae* hails from Turkey, while *I. reticulata* is from Iraq (part of ancient Persia) and Caucasus. Both are popular floriculture crops. *I. unguicularis* is from Algeria and its winter flowers are indispensable in Mediterranean floriculture.

◆ *Lilium candidum*, the **Madonna lily**, grows from the Balkans, Turkey, Greece, to Mount Hermon in Lebanon and northern Israel. It has played an important historic role in Christian liturgy through the centuries.

◆ **Narcissus** or **Daffodil** - miniature *Narcissus tazetta* was used for funeral wreaths by the ancient Egyptians. Many narcissus species are native to the Mediterranean region and parts of Europe.

◆ *Perovskia atriplicifolia* is

a favorite winter-hardy perennial from Afghanistan, Tibet, and extending into Russia. Commonly known as Russian Sage, it is frequently used in mixed herbaceous borders with its silvery-gray foliage and soft-blue flowers that resemble Nepeta.

◆ **Tulips**, *Tulipa gesneriana*, have been prized for centuries as garden plants and, more recently, as potted plants and cut flowers. They were first brought to Europe in 1554 by the Austrian Ambassador to the Sultan of Turkey who had seen them growing in gardens at Constantinople. Many wild species are popular, in addition to the multitude of cultivated and hybridized forms.

Islamic extremists have called for a holy war or Jihad on western society and, in particular, the United States. While the Jihad poses little direct threat to many of us as breeder/producers, distributors, propagators, plug producers, pre-finishers, finishers, wholesalers, or retailers, there are other forces in operation that — indirectly — have the potential of creating a floricultural jihad.

Two of the current threats worthy of our

attention are as follows.

First, the recent anthrax scares and the U.S. Postal Service's response threatens shipments of plant tissue (seeds, cuttings, tissue cultures, plugs, liners, etc.). Irradiation of the U.S. mail at levels of >10 kGy (Gy=Grays, or 1 Joule of energy/kg of irradiated matter) will kill any seed or plant tissue shipments (N'Gadi, 2001). Lower levels of radiation, while not necessarily lethal, could inflict mutations on the plant material. The irradiation also causes a rise in temperature (+5°C) of the irradiated material (N'Gadi, 2001).

Currently, the U.S. Postal Service is irradiating certain types of incoming mail in the zip code range of 202-205, using 150 kW linear electron accelerators (ASTA, 2002; U.S. Postal Service, 2001). If you are sending or receiving shipments in these zip codes, you are advised to use alternative shipping, U.S.P.S. Express mail (with meter strips or corporate accounts), priority mail (with meter strips or permit indicia), registered mail, or private companies such as FedEx, UPS, DHL, and Airborne. Several in the industry have expressed concern, however, that if all shipping avenues used

irradiation to prevent the dissemination of biological agents, it would catapult us back to shipping methods of a century ago.

Several questions are worthy of consideration concerning irradiation. What safeguards can be implemented to prevent any future threats to our shipping industry? We could mobilize the Society of American Florists (SAF) to lobby Congress, the Office of Homeland Security, the U.S. Postal Service, FedEx, UPS, DHL, and Airborne about alternatives to irradiating floriculture shipments. MNLA could lobby the Minnesota legislature on the same issue.

If future biological agent threats or all shipments were to be irradiated, how would our industry continue with commerce? How would your company respond? Are there shipping containers (envelopes, packages) that would prevent irradiation from damaging a shipment, while being economically viable? Clearly, lead-lined envelopes would not be cost-effective to ship a small seed order for a packet company. The opportunity exists for innovative engineers to create shipping containers that could solve this for the industry. An important exercise would be for your

company to examine your shipping routes and carriers. Have your managers and employees answer the question: *How would shipping restrictions or irradiation to kill biological agents affect your business and what can you do about it?* Everyone needs to be actively engaged in constructive thinking and visionary action.

Second, another threat to the floriculture industry is the potential importation bans on exotic plant species due to their potential risk of becoming invasive or noxious weeds in commercial agriculture (including floriculture). Restrictive legislation could be enacted at the state and/or national levels that would severely hamper our international commerce. Horticulture and, particularly floriculture, has the most to lose from such a proposition.

Floriculture is responsible for the collection, breeding, domestication, and commercialization of the largest number of new species per year in all of the agriculture sectors (Anderson, 2001). More than 100 new crop species have been introduced in the past decade and this rate is unlikely to decline (Anderson, 2001). New crop development is the

hallmark of the seed and vegetative breeder/producer companies. Flower seed and vegetative breeder/producer companies are scouring the globe for new taxa to domesticate and introduce. Weedy species are easily adaptable to cultivation and require little domestication, although if a species is determined to be too aggressive, most companies will not introduce it. Every year, many new taxa – particularly vegetative products – are introduced that were unknown five or ten years ago. Look at the new offerings this year at the California Pack Trials (April 6-13, 2002) and decide for yourself. [Note: Visit the Ball Publishing Co. website to learn more about Pack Trials]. Our industry thrives on novelty items and niche marketing of new and unusual products.

Most of our “exotic” or non-native crops have never become weedy or invasive after decades or centuries of cultivation world-wide, e.g. garden chrysanthemums, impatiens, petunias. Classic examples of floricultural crops that either have or may become invasive in Minnesota include purple loosestrife (*Lythrum salicaria*), butter and eggs (*Linaria*

Miniatures are a diverse group of roses that share one distinguishing feature – they are dwarfed in size. Their reduced stature allows them to be suitable for the potted plant and bedding plant markets, where consumers find them welcome additions to container gardening and the landscape.

Invasiveness is a big issue for this millennium. We need to be aware of the facts and take appropriate action.

vulgaris), sunflower (*Helianthus annuus*), kochia (*Kochia scoparia*), tall buttercup (*Ranunculus acris*), tansy (*Tanacetum vulgare*), and oxeye daisy (*Leucanthemum vulgare*) (MDA, 1995). Sunflower is one of our native species that is a noxious weed.

Several new crops (*Agastache rugosa*, *Anagallis arvensis*, *Cymbalaria muralis*, *Gaura lindheimeri*, *Hesperis matronalis*, *Verbena bonariensis*) are already becoming invasive here and elsewhere.

Restrictive legislation, prohibiting the propagation, sale, and shipment of invasive species is one of the proposed methods of eliminating new crops. In addition, the importation of seeds of new species also is in jeopardy. For more information on this subject, visit the websites for the Invasive Species Council <http://www.invasivespecies.gov/> and Invasive Plants of the U.S. <http://plants.usda.gov/>

What are some practical things we can do to keep your staff and customers informed on the topic? Labeling and P.O.P signage can point out to your customers which products are not invasive. Some companies are promoting their products as noninvasive and healthy for the environment.

Avoid products that are, or may be, invasive and suggest alternative annuals or perennials to those that have invasive tendencies, e.g. replace purple loosestrife with liatris. Stay informed by participating in grower and industry organizations, write your legislators to promote the continued growth of the industry and the institution of feasible regulatory mechanisms.

Here at the University of Minnesota, we are promoting research in the area of invasive species. For instance, a new center – the Invasion Biology Research Consortium – has been established to promote discussions on the topic (IBRC, 2001). Our flowering breeding program is studying the possibility of selecting against invasiveness prior to product release.

Invasiveness is a big issue for this millennium. We need to be aware of the facts and take appropriate action. Let's operate wisely, with visionary foresight and contingency planning to avoid being caught by a floricultural jihad.



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