

Ornamental Grasses and Sedges as New Crops

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INTRODUCTION

Ornamental grasses and sedges have a long history. Are they a new crop? Yes, both old and new at the same time. And a crop that has had a dramatic impact on the appearance of our developed landscape, on the work of landscape architects and planting designers, on nursery producers and landscape managers, and on researchers! Millions and millions of units of grasses and sedges are currently being produced and installed annually.

What is the current state of ornamental grasses and sedges as crops now? What is going on concerning crop development? What issues or problems have arisen? What does the future likely hold?

HISTORICAL

The use of ornamental grasses as a component of a naturalistic, vaguely tropical appearing garden style was prominent in the Victorian era of the late 1800s (Hobhouse 1992). A period of disuse followed into the middle of the 20th century during which time little use was made of grasses in landscape planting and little mention was made of grasses, other than turfgrasses, in the popular literature (Rockwell 1945). A period of re-discovery followed with admonitions toward wider landscape use, especially as a component of a low maintenance landscape (Wyman 1971). The present situation in the US is one of ornamental grasses and sedges, along with herbaceous perennials generally, enjoying a sizable and continuing expansion of interest and use.

The unofficial “modern period” began with Kurt Bluemel’s nursery and design work in Maryland. Other important players were James Van Sweden and Wolfgang Oehme whose design and installation work spread interest in ornamental grasses up the East Coast. Similar circumstances occurred elsewhere such as the work, both design and plant production, of John Greenlee in the West.

A Cornell Extension bulletin (Meyer and Mower 1973) presaged the terrific growth in popularity of grasses throughout the 1980s and 1990s. As a measure of the interest in and accessibility of ornamental grasses and sedges, the Cornell bulletin listed six sources for plants and contained descriptions of 31 taxa. A decade later, *The Avant Gardener* was able to list 15 plant sources (Loewer 1984) and eight years after that, Greenlee (1992) tallied 31 mail-order sources for grasses, not even including those focused on native grasses. The major taxa described in his text number in excess of 225 (including a few genera such as *Equisetum* and *Typha* in addition to grasses and sedges). Today, even the largest wholesale growers of primarily woody plants, such as Monrovia Nursery (Azusa, California) and Hines Horticultural (Irvine, California, but with production operations across the US) have entered into ornamental grass and sedge production.

NEW ORNAMENTAL GRASSES AND SEDGES

Ornamental grass and sedge crop development is centered in the commercial nursery industry. Selections made from chance variants found among existing taxa are either seed or vegetatively propagated. Specialty nurseries such as Bluemel’s (Baldwin, Maryland), Greenlee’s (Pomona, California) and generalized perennial growers such as Harlan Hamernik’s Bluebird Nursery (Clarkson, Nebraska) play leading roles. An example of a recently named cultivar of this type is Bluebird’s variegated tufted hairgrass, *Deschampsia caespitosa* (L.) P. Beauvois ‘Northern Lights’ (Fig. 1). This cultivar is more dwarf than the species with red tinged foliage. Another is a Bluemel selection, *Miscanthus sinensis* Andersson ‘Adagio’ (Fig. 2). It is fine textured and compact.

Plant collecting from the wild by the perennial nursery industry is a key approach to development of new types. Harlan Hamernik and Tony Avent of Plant Delights Nursery in North Carolina are current examples of the dedicated plantsmen who travel extensively to collect material new to commerce. However, such introductions are not strictly a recent phenomenon since world-wide collecting is an ongoing process. Again, grasses and sedges are both old and new! As evidence of the “old,” we can point to the collection in 1966 by Dick Lighty of the Mt. Cuba Center of seed from Korean feather reed grass, *Calamagrostis brachytricha* Steudel.

The “new” is manifested in the recent strong movement of this taxon into the nursery trade.

While some of the more intriguing travels take collectors to foreign locations, plant collecting continues to be valuable in North America. Blue love grass, *Eragrostis elliotii* S. Wats., collected by Tony Avent from a dry hillside in Georgia is a recent example of such “local exploration.” Sometimes things even happen by chance. A few years ago, Ken Vogel, an agronomist and forage breeder at the University of Nebraska collected germplasm of three native grass species, big bluestem (*Andropogon gerardii* Vitman.), switchgrass (*Panicum virgatum* L.), and indiagrass [*Sorghastrum nutans* (L.) Nash.], from throughout their central US ranges. He and his cooperators evaluated populations grown from that seed for forage value, then made the material available for ornamental consideration. Several selections from that material are under current evaluation at Purdue University for possible introduction.

“Collecting” from breeders and plantsmen in other countries who have highly selected, and sometimes well-known in their county, material that is unknown to the US market is also important. Nurserymen in Japan and Germany are noteworthy here. An example in this category is Morning Light Miscanthus, *Miscanthus sinensis* Andersson, ‘Morning Light’. This is a fine-leaf, late-flowering form similar to the cultivar ‘Gracillimus’, but with silvery-variegated leaves. It was provided by Masato Yokoi in 1976 to US National Arboretum staff visiting him in Japan.

GRASSES IN THE LANDSCAPE

Management

Along with the ever wider use of grasses and sedges have come challenges. Management and production methods, pathogens, and invasive potential are all areas that have gained greater prominence as use of grasses has expanded.

Ornamental grasses have been generally regarded as problem free; the ultimate in low maintenance (exceeded only, perhaps, by the male ginkgo or maidenhair tree, *Ginkgo biloba* L.)! Perhaps this situation was destined to change as large numbers of individuals were produced and planted. Grasses are beginning to exhibit occasional diseases (O’Neill and Farr 1996). Plant diseases are beginning to be more pronounced, especially in production and mass planting situations. Insect pests are beginning to be more obvious. Plant management in the landscape has become an important issue as grounds managers are faced with maintaining often extensive plantings of grasses.

Landscape managers faced a need for management tools when they began to be called upon to manage large, monocultural expanses of ornamental grasses in “New American Garden” landscapes. Weeds are of special concern and some researchers have contributed work related to landscape weed management (Hubbard and Whitwell 1991) and others to weed control in nursery production situations (Neal and Senesac 1991).



Fig. 1. Bluebird’s variegated tufted hairgrass, *Deschampsia caespitosa* (L.) P. Beauvois ‘Northern Lights’.



Fig. 2. Bluemel selection, the dwarf *Miscanthus sinensis* Andersson ‘Adagio’.

Other aspects of production, such as growth regulation (Whipker et al. 1999), propagule size (Brand 1999), and the effect of light intensities (Cole and Cole 2000) have been investigated.

Invasive Potential

The invasive potential of ornamental grasses into natural areas is an ongoing issue; one that is gaining importance as concern from the naturalist/ecologist community deepens. Executive Order 13112 issued by President Clinton in February, 1999, gave federal backing to the concern over invasive biological organisms (see: www.invasivespecies.gov/laws/execorder.shtml). Clearly, the problem as it applies to ornamental grasses already exists. For example, pampas grass *Cortaderia selloana* (Schultes & Schultes f.) Ascherson & Grabner is already recognized as a pest in California (Bell and Wilen 2001). Volunteer seedlings of *Miscanthus sinensis* have begun to appear in natural areas in Indiana (M. Homoya, pers. commun.). Japanese blood grass [*Imperata cylindrica* (L.) P. Beauvois.] has been banned in many states due to its presumed invasive quality, but there is continued ignorance and disagreement as to what forms of this taxon are in the trade versus what forms are truly aggressively invasive.

Invasiveness of otherwise meritorious horticultural material is not an easy question to solve. Greenlee (1992) calls invasiveness “a vital consideration” but following a description of some possible positive and negative scenarios, concludes by simply reminding the “responsible gardener, [to be] aware of potentially invasive grasses.” Darke (1999) expands on that thought to encourage gardeners to actively “seek ways to enjoy grasses ... while protecting the remaining integrity of regional ecologies.” Development of sterile cultivars is cited as one possible avenue to accomplish this goal.

THE FUTURE

Given this current state of ornamental grasses and sedges as crops, where are they headed? Or, perhaps, where should we help direct them?

I believe they are clearly headed to more widespread use in the landscape. Public awareness and acceptance continues to spread. The unique and varied visual quality coupled with the low maintenance demand makes them too good to pass up. This is especially true for sedges and a few shade tolerant grasses, given the huge demand in the residential landscape sector for shade tolerant material.

A related plant group, the bamboos (Bambuseae), also provide shade tolerant types as well as a plentiful number the full-sun adapted taxa. They too, are likely to increase in landscape utilization. Their generally aggressive vegetative habit (or, at least that reputation) is a significant limitation. However, with increased awareness of existing less-rampant types, and if crop development results in more “well-behaved” forms, bamboo usage can be expected to proliferate in the future.

It is also very likely that plant exploration and cultivar development in the nursery industry will continue and result in a steady stream of interesting and useful taxa. That function should mostly remain in the private sector. There is always potential for academic and research institutions to contribute to that process when a specific need is identified that is not being met by the private sector. However, such public institutional involvement should primarily focus on crop development efforts within taxonomic groups that lack demonstrated commercial utility and are, thus, not of current interest to the private sector.

A related question is whether there will continue to be expansion of production capacity, especially in the large-scale production nurseries. I would speculate that further sizable increases in capacity will be few. However, specialty, or “niche” nursery production, tied closely with crop development will very probably continue to expand.

The use of native taxa of grasses and sedges will most likely increase. Native grass species will certainly be more widely used as preservation of natural areas and their restoration expands. However, horticulturally selected and improved material (for such characters as lodging resistance) from within the natural diversity of the native flora is needed. Such better performers will result in even wider use in the conventional, developed landscape and in informal, naturalistic, or “wild-looking” landscapes (what might be called “pseudo-restoration”).

What other developments within ornamental grasses and sedges might be beneficial? One area of great importance is species and cultivar testing. Performance evaluation, especially in a variety of geographic loca-

tions and environments would provide very helpful information to landscape practitioners and the public. Such “trial” programs used to be a strength of the land-grant university system. Today, this function might better be centered in arboreta and botanic gardens. This is especially true given the longer-term nature of such evaluations and the shift in universities to more basic research.

Another useful direction for this crop group would be development of cultivars/taxa that are not a threat to natural areas due to invasiveness. Conventional breeding methods and interspecific hybridization may offer appropriate means to this end, but so too may biotechnology. Gene insertion and other developing methods may provide an expeditious means of achieving sexual sterility, thus limiting the invasiveness of a species due to spread by seedlings. Similarly, taxa that are vegetatively aggressive could be engineered to a reduced growth rate. As herbaceous plants, grasses and sedges should readily lend themselves to biotechnology methods and plant regeneration.

Ornamental grasses and sedges are a diverse group of interesting plants with an interesting past and an expanding future. Shared efforts by the commercial and institutional sectors should move this plant group to greater utility in the years ahead.

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