



THE  
HONG KONG  
INSTITUTE OF  
LANDSCAPE  
ARCHITECTS

談園說境  
Lpod

2019/2020

ISSUE 31



**LANDSCAPE  
ARCHITECTURE**

# A BRIEF INTRODUCTION ON ORNAMENTAL GRASSES IN USA AND STUDY OF POTENTIAL ORNAMENTAL VALUE IN HONG KONG

by Eric YT LEE, PhD, Senior Honorary Research Fellow, School of Life Sciences, CUHK  
Immediate Past President, Hong Kong Institute of Horticultural Science

In the past 40 some years, due to my educational background, nature of my previous jobs, my appreciation of the beauty of local grasses, my frequent visits to the United States and in particular my awareness that the germplasm of a large number of a major US ornamental grass cultivars came from one common grass species in China, i.e. *Miscanthus sinensis*, I have been keen on the development of the ornamental grass industry in the States inclusive of the gradual but steady incorporation and increasing use of these grasses in landscape designs also general acceptance by both the professionals and general public. Based on my observation, ornamental grass is now accounted for about 20% of the planting areas in both public and private gardens, so as in smaller planters along streets in the city. The trend is likely to increase further in the future. This phenomenon is also noted in Europe, Australia and New Zealand.

Commencing in the 80's, I have noticed an ever-increasing quantities and species of ornamental grasses sold in garden nurseries throughout the US, so as in public and private landscaping areas.



Figure 1: Patented US Silvergrass cultivars with germplasm coming from a Chinese species (*Miscanthus sinensis*)



Figure 2: Common ornamental grasses found in the United States



Figure 3: Ornamental grasses on sale in plant nurseries in the US



Figure 4: Ornamental grasses widely used in household garden, parks and on planters

Extreme weather conditions caused by global warming have become more and more frequent in the past decades worldwide. These conditions, especially drought has led many landscape architects to look for more drought-tolerant and sustainable alternatives for landscaping uses. Ornamental grasses, because of its exceptional high tolerance to drought and the literally no or little maintenance nature, would nicely fit in such a niche in reducing water consumption and labor cost in both public and private areas. This may well be accounted for why ornamental grasses have become so popular in such a short period. Other reasons accounted for this sudden blooming on use of ornamental grasses are listed below:

- A lot of R/D work done in the industry
- New cultivars developed were patented and protected by law
- They are indeed beautiful, long lasting and with seasonal changes
- Good market promotion plus secured source of quality stock of supplies
- Low water requirement and in general drought resistant
- Easy to maintain, less pest problem
- Sufficient pre-sale and post-sale technical support

Commencing 2002, after joining the herbarium headed by the late Prof. Shiu Ying Hu in The Chinese University of Hong Kong, I started my research on local ornamental grasses by collecting information on grasses with potential ornamental value in Hong Kong. It was my sincere hope that there will be more and more local grass found or their germplasm to be used in developing new selections/cultivars to beautify

our surroundings. As up to date, there has been limited R/D work on ornamental grasses in Hong Kong and other parts of China. Known institutes with research on ornamental grasses are listed below:

- Nanjing - Introducing/naturalizing exotic ornamental grasses
- Northeast China – Intending to write books on ornamental grass
- Shanghai - Introducing/naturalizing exotic ornamental grasses
- Beijing – Introducing/naturalizing exotic ornamental grass; selecting, breeding and developing new local ornamental grasses
- Hong Kong – Assessing local grasses with potential ornamental value and use them for landscaping purpose

In Hong Kong, there are many native and introduced/naturalized grasses with potential ornamental value. Photos of these grasses are listed in the table below.

## 20 NATIVE & INTRODUCED/NATURALIZED GRASSES WITH POTENTIAL VALUE FOUND IN HONG KONG

\* Exotic/introduced species



1. *Arundo donax* 籐竹



2. *Coix lacryma-jobi* 薏苡



3. *Eragrostis curvula* 彎葉畫眉草 (戀風草)\*



1. *Imperata cylindrica* var. *major* 白茅 (絲茅)



5. *Melinis repens* 紅毛草\*



6. *Miscanthus floridulus* 五節芒



7. *Neyraudia reynaudiana* 類蘆



8. *Panicum maximum*\* 大黍



9. *Pennisetum alopecuroides* 狼尾草



10. *Pennisetum ploystachyon* 牧地狼尾草



11. *Pennisetum purpureum* 象草\*



12. *Phragmites australis* 蘆葦



13. *Phragmites vallisneria* 卡開簾



14. *Saccharum arundinaceum* 斑茅 (大密)



15. *Saccharum spontaneum* 甜根兒草



16. *Setaria palmifolia* 棕葉狗尾草



17. *Spinifex littoreus* 蠶刺 (Left: Male plant; Right: female plant)



18. *Themeda villosa* 菅



19. *Thysanolaena latifolia* 棕葉簾\*



20. *Vetiveria zizanioides* 培地茅

## MAINTAINING THE ORNAMENTAL GRASSES

Ornamental grasses are easy to maintain or literally no maintenance required. However, ornamental grass has to be maintained properly with minimum effort and cost. The maintenance will include the following:

- Pruning – Once annually. Normally carry out in late autumn or early winter by removing plant parts from 15-30 cm above the ground.



Figure 5: Pruning of the grass in late autumn

- Removing dry leaves when needed.
- Applying light dose of fertilizer once or twice annually or when needed.
- Weeding when needed or put in mulch layer up 25- 35 mm for weed control/water retention.
- Installing simple guard rail to help holding up the weak calms of the grass.
- When the grass bundle got too large, dividing the bundle for transplanting or carrying root pruning to confine the periphery of the grass may be needed.
- Ornamental grass is rarely infected by diseases. Common diseases are rust and a few other fungal diseases, all of them can be treated with proper fungicides.
- Ornamental grass is rarely attacked by pests such as insects (mainly aphids and grass hoppers), slugs and/or snails. They are more nuisances and treatment is rarely Needed.

## APPLICATION OF ORNAMENTAL GRASSES IN HONG KONG

In the past 20 years, I have been advocating the use of some local grasses with potential ornamental value for beautifying the surroundings. A couple of the golf courses adopted the idea and keep/plant some of the grasses in the course for landscaping purposes and yielded good results.



Figure 6: Ornamental grasses in golf courses in Hong Kong

At the same time, landscape architects and contractors also started the use of ornamental grasses for landscaping purpose, but restricted their uses to two species, namely the "Red Pennisetum" (*Pennisetum setaceum* 'Rubrum') and the "Green Pennisetum" (*P. alopecuroides*). These grasses are gaining acceptance by the local residence.

Introducing exotic ornamental grass species indiscriminately in Hong Kong would likely post dangers of getting invasive foreign species into the region, a potential disaster to local environment. In this instance, only selective strands such as those sterile triploid cultivars or selections should be considered. Using local ornamental grasses would, however, eliminate such potential dangers.



Figure 7: Ornamental grasses used in landscaping areas in public housing project

From 2016 to 2018, under the auspice of the Housing Authority of Hong Kong, I carried out a systematic study on the selection, propagation and application of 8 local grasses with potential ornamental value for landscaping uses in public housing areas. This study covered the collection of the sample grasses and their seeds in the wild, and nursing or propagating them in open nurseries and/or inside a greenhouse. By end of the study, some 200 mature plants were resulted. They were all transplanted to three sample planters designated for planting these grasses in the public housing in On Tat Estate in Anderson Road, Kowloon. Survival rate of transplanting was nearly up to 100%. These grass

planters blended in well with the nearby landscape design but with a unique feature. They would serve as a pilot test and can be used for future reference in similar application.

In the same study, I had succeeded in sowing seeds of an indigenous grass, the Reed-like Grass (*Neyraudia reynaudiana*), in pots then observing the entire process of the tiny seeds from germination, growing, flowering to fruiting in six months. I documented the full course of development by photographs at fixed intervals and file a report which was published in the last issue of Yuen Lin. This study could be the first of this kind in this topic.



Figure 8: Ornamental Grasses in pilot planters in On Tat Estate, Kowloon

觀賞草 ORNAMENTAL GRASS		中文名: 花葉草 英文名: Variegated Silvergrass 學名: Miscanthus sinensis 'Variegatus'	中文名: 燕尾草 英文名: Plume Grass 學名: Pennisetum alopecuroides	中文名: 大狗牙 (狗牙) 英文名: Lalang Grass 學名: Sorghum halepense var. 'Major'	中文名: 五節草 英文名: Many-flowered Silvergrass 學名: Miscanthus floridulus	中文名: 蒲草 英文名: Burma Reed 學名: Neyraudia reynaudiana
中文名: 紅尾草 英文名: Red Top 學名: Molinia caerulea	中文名: 藍葉草 英文名: Zebra Grass 學名: Miscanthus sinensis 'Zebra'	中文名: 粉黛亂子草 英文名: Mistake Grass 學名: Pennisetum pluchianum	中文名: 藍草 英文名: Reed-like Sugarcane 學名: Saccharum spontaneum	中文名: 紅尾草 英文名: Red Plume Grass 學名: Pennisetum setosum ex Rubrum	中文名: 虎尾草 英文名: Tiger Grass 學名: Phytolacca setacea	

Figure 9: Information board about ornamental grasses used in the project



Figure 10: Ornamental Grasses in pilot planters in On Tat Estate, Kowloon

## FUTURE WORK ON ORNAMENTAL GRASSES IN HONG KONG

With a better understanding on beauties and merits on environmental impacts of the ornamental grasses, our focus should now be on their further incorporation in our landscaping areas and perhaps also the following listed:

- Searching and identifying grasses with potential value in the region
- Establishing local or neighboring areas ornamental grass research/propagation nurseries
- Culturing and developing new ornamental grass selections/cultivars and get them registered and patented for commercial uses locally and overseas
- Promoting and marketing these new/improved products

## ACKNOWLEDGEMENTS

My study on local ornamental grasses started after I joint the research team headed by the late Prof. Shiu Ying Hu of the then Biology Department of The Chinese University of Hong Kong. I still remember the care and love extended to me by her, and as always regarded her as my mentor. This paper is a tribute in her memory.

The above paper is part of the result of part of the study supported by the Hong Kong Housing Authority on the Application of Ornamental Grasses cum Review of Turf Construction and Maintenance in Public Housing Developments. I am in debt to Mr. S.C. Lo, Senior Landscape Architect and his colleagues of the Housing Department for their support throughout the entire course of the study.



### About the Author - Eric YT LEE, PhD

*Dr. Lee is Senior Honorary Research Fellow of the School of Life Sciences, The Chinese University of Hong Kong, and the Founding and Immediate Past President of Hong Kong Institute of Horticultural Science. Dr. Lee is also a renowned turfgrass expert, local and international. His recent article included "From Seeds to Mature Plants – A Case Study on Growth/Development of the Reed-Like Grass." and Yuan Lin (Issue 2015): Amenity and Sports turfgrass in Hong Kong.*