



In-depth Investigation | Product Mix Optimization, Demand and Supply Docking Improvement – A Talk with Xu Xiaobo, Deputy Chief of Shanghai Landscaping Management and Guidance Division, about Garden Machinery



Xu Xiaobo, Deputy Chief of Shanghai Landscaping Management and Guidance Division

In recent years, with the transformation and development of the industry, mechanization has become a hot topic among professionals in the landscaping industry. However, what characteristics does the current machinery market have? What's the future road for the industry to become mechanized? What else do we need to try?

With these questions, we had a close interview with Xu Xiaobo, Deputy Chief of Shanghai Landscaping Management and Guidance Division. During the interview, Xu expressed his expectation to see more world-leading equipment at Greenery & Landscaping China 2017.

Q: What are the important stages during the development of landscaping machinery in Shanghai? What are the characteristics of each stage?

A: It's necessary and inevitable to develop garden machine whether for the sustainable development of the industry, the improvement of the city's emergency response capabilities or for the enhancement of the city's image. For a long time, relevant government authorities have paid great attention and attached great importance to the mechanization of landscaping in Shanghai.

From the middle 1950s, the landscaping community in Shanghai started to explore the possibilities of operating through aerial work platforms, which were researched and developed by Shanghai Landscaping Tools Factory. However, due to various reasons, such aerial work platforms were not widely promoted.

In the early 1980s, tree branch crushers, which were developed by Shanghai



Landscaping Tools Factory, became mainly used in places such as Xuhui Landscaping Division and Shanghai Zoo to crush branches less than 10 centimeters long.

In the early 1990s, Shanghai Landscaping Administration Bureau specially commissioned Shanghai Institute of marine to develop and design tree branch crushers and a company in Taizhou, Jiangsu Province to produce several machines, which were later used by organizations such as Shanghai Zoo and Yangpu Landscaping Division. In the meantime, soil experts of Shanghai Institute for Scientific Research conducted biocatalysis on the crushed materials to study organic fertilizer.

In the middle 1990s, Shanghai Administration Department of Afforestation and City Appearance arranged some experts to visit Guangzhou for learning. Later, large-sized tree branch crushers were introduced from abroad, and Shanghai Greenery Maintenance Company was established to provide one-stop services for crushing tree branches. However, such machines failed to be successfully applied. During the same period, Pudong New Area, Yangpu District, Xuhui District, Putuo District and other areas in Shanghai also introduced from abroad large-sized tree branch crushers for their own tree branch crushing processes.

In the middle 1990s, with the development of landscaping, a variety of garden machines from other countries cracked market in Shanghai, and many construction and maintenance companies began to use some small-sized machines, including lawn mowers, brush cutters, sprayers and hedge trimmers.

From 2006, Shanghai introduced Aichi aerial work platforms from Japan and Jiffy aerial work platforms from the United States for aerial trimming of roadside trees. In the same year, deep-root fertilizer distributors were introduced from Canada for fertilization of roots of greenbelts and roadside trees. Later, such machines were applied in different districts of Shanghai, and experiments on deep-root fertilization of roadside trees were conducted. Besides, large-sized spraying vehicles were introduced for large-scale pest control.

The period from 2010 to 2012 witnessed a rapid development of mechanization of landscaping in Shanghai owing to the world expo being held then. According to general statistics, a total of 567 sets from 22 types of related machinery were purchased, covering a wide range of functions such as aerial work, daily maintenance and transportation, cleaning, pruning, fertilization, irrigation, plant protection, tree branch crushing, and lawn maintenance. All the machines were allocated to 17 districts and counties as well as 7 municipal agencies and services. According to the characteristics of allocated machines, individual and group training sessions were provided for approximately 300 operators on how to operate aerial work platforms, tree branch crushers, garden road sweepers, deep-root fertilizer distributors and tree centralizers, and related certificates were issued accordingly.



Q: Please analyze the basic situation of the current garden machine market in Shanghai? What are the major characteristics?

A: According to incomplete statistics, as of 2012, there were a total of 2265 greenery maintenance machines in our city, among which there were 261 transportation vehicles, 3 vehicles for comprehensive maintenance and emergency rescue, 31 aerial work vehicles, 479 machines for plant protection, sprinkler irrigation and deep-root fertilization, 783 lawn maintenance machines, and 727 cutting and pruning machines and 2 other machines.

As for the characteristics, we can generally use “three large numbers” and “three small numbers” to sum them up. In other words, there are a large number of low-end products but a small number of high-end products. There are a large number of small-sized pieces of equipment but a small number of large-sized pieces of equipment. There are a large number of pieces of equipment for general purposes but a small number of pieces of equipment for specific purposes.

Specifically, first of all, the scissors used for pruning are mostly low-end equipment. We hope that one day our workers can operate a vehicle with a robotic arm to trim plants and trees. Second, while there are large-sized machines, such as cranes, used for greenery construction, there's a limited rate of application of large equipment during the maintenance period. In contrast, the use of small-sized power machinery is widespread, which normally feature low prices and low utilization costs but can dramatically improve work efficiency. Examples of such equipment include chain saws, hedge trimmers, lawn mowers, brush cutters, and small power sprayers. Compared with manual operation, these machines have remarkable advantages in terms of efficiency and cost performance, thus being widely applied in daily greenery maintenance work.

Finally, most of the equipment we are now using is for other industries. While some can meet the needs of our industry, many are neither highly compatible with the landscaping industry nor for specific purposes, which can affect their operational results to some extent.

From the above mentioned three characteristics, we have not yet formed a mature product line. Compared with developed foreign countries, dedicated landscaping machinery and equipment have yet to be further developed. There are a large number of low-end products in the market, but the product line is incomplete with low degree of market segmentation. Besides, there's an insufficient demand for such products, and a lack of research and development capabilities. Based on the current maintenance and management model, the demand for machinery and equipment is not fully stimulated, the market development is low, and the degree of mechanization of the industry in general is low because of unclear industrial benchmarks and requirements as well as insufficient funding.



Q: In response to the above mentioned current situation, what further attempts should we make for product development? What progress have we achieved?

A: We hope that two directions will be considered for future mechanization of landscaping. The first is the introduction of new products, especially well-developed machines from other countries, which we can engineer and upgrade later. We expect to see some good equipment from other countries at Greenery & Landscaping China 2017 organized by Shanghai Landscape Architecture Gardening Trade Association and NürnbergMesse Group.

The second is the research and development of locally-made professional equipment, especially fertilizer distributors and aerial work platforms. First, let's talk about fertilizer distributors. Not long ago, a product co-developed by us and a Shanghai-based company were put into use in four districts in Shanghai, and we are now applying for patents for it. Many years ago, we also introduced large-sized fertilizer distributors from Japan and Canada at high prices, but they were proven to be awkward when actually applied. In addition, these machines were suitable for soft soil in foreign countries, but the soil in our country is much harder. As a result, their work efficiency was quite low. Three or four people could only fertilize about 50 trees per day with them. By comparison, two people can fertilize about 200 trees per day with our newly developed equipment which features small size, light weight and ease for operation on roads.

Second, the aerial work platform. At present, we are working with Jiangsu-based HANDLER to develop special aerial work platform for landscaping. Only half the size of a typical aerial work platform, it will also feature small size and thus good maneuverability. On such work platforms, we will also provide a number of auxiliary facilities, such as connections to electricity, hydraulic power, and air pumps. In other words, we will equip the platform with some functions that are otherwise performed on the ground to improve its professional performance. Furthermore, some small-sized products from other countries such as Japan are equipped with power sources, so we can only engineer them to adapt them to our industrial needs.

Q: Apart from products, underdevelopment of related mechanisms, discrepancy between demand and supply information and some other factors are also hindering the mechanization and development of the landscaping industry to some extent. As far as you are concerned, what should we do to effectively change the current situation and facilitate the development of garden machine in Shanghai?

A: According to the requirements on the development of market-oriented operation services in the landscaping industry and by reference to good practices for mechanization in other industries such as environmental health, we should establish and implement requirements on the equipment of greenery maintenance companies with necessary machines, standards for mechanized operations as well as assessment and supervision, mechanisms to protect funding, and models for large-sized machinery rental services. For



example, in a bidding process, we should oblige companies to be equipped with required machinery and to use machines during construction. Besides, related government authorities should consider providing subsidies for companies purchasing required machinery to incentivize them and stimulate the market to create a robust and orderly ecosystem for the development of landscaping machinery.

As for daily maintenance of avenues and boulevards, the focus should be put on helping setting up one or two model districts for mechanized operations on roadside trees. Such districts should be equipped with a complete set of machines to perform tasks such as daily maintenance of roadside trees, tree pruning and watering, as well as green waste collection, crushing and disposal, and attention should be paid to testing, tracking, and feedback of operations of newly developed machines, improvement of product functionality and performance, optimization and enhancement of current machinery and equipment, estimation of machine utilization and maintenance costs, and establishment of mechanized operation models compatible with the environment and requirements for maintenance operations on roadside trees to lay the foundation for further promotion of mechanized operations.

A connection between research and development companies and users should be established so as to ensure good communication between them to avoid any undesirable gap between development and application. In the meantime, the market should be cultivated for mechanization of landscaping work. Now, with the fledgling market for greenery maintenance products yet to be truly awakened, we are sure that the future of the whole garden machine industry will be promising. Shanghai has always been a leader in China in garden machine, so the confidence of companies will be boosted if the market in Shanghai becomes active. Whether a product is popular or not is dependent on whether it's perfectly compatible with the whole market. Take Shanghai as an example. Landscaping departments and maintenance companies in different districts should make preparations for the applications of such products.

The mechanization of landscaping is an inevitable choice for Shanghai to develop its landscaping industry. In addition to safety, high efficiency and other advantages, a mechanized work environment that features high-end machinery can attract more talents to enter the landscaping industry and enhance their identification with the industry as well as enhance the confidence and pride of those already engaged in the industry.

Q: Do you have any other thought on the development trends of mechanized products in the future? What types of landscaping machines will you pay attention to? Why?

A: At present, the use of crushers in Shanghai is the most mature in Shanghai as all districts highly recognize the products being used. There's still a huge gap between the demand and supply of fertilizer distributors and aerial work platforms mentioned before. Besides, the demand for automatic hedge cutters is also big. Germany does a good job in this regard. Their machines can even automatically bypass obstacles. Moreover, tree



transplanting machines are also needed. Such machines are mainly used in nurseries of young plants. In China, we rarely use such machines, and we transplant trees manually. Furthermore, a special machine should be developed for tree hole digging. Last but not least, the focus should also be placed on vehicles for special purposes. In other countries, similar vehicles provide classified areas for storing different tools.

Of course, mechanization is not just about the upgrading of tools. We should also upgrade the protective measures for our workers, including protection at work. For example, we should improve the personal protective equipment for workers operating tree branch crushers and equip them with special protective clothing.

Q: What can we learn from mechanized development in other countries? Can you name the companies that have provided well-developed products in recent years?

A: With the constant development of landscaping, most developed countries have achieved the mechanization of landscaping and greenery maintenance, especially in terms of the maintenance of nurseries of young plants, which is characterized by high rate of utilization of maintenance machinery, high degree of specialization of machinery and equipment, and high degree of industrialization of the industry.

In developed countries, there are many companies engaged in the research, development, production and sale of garden machine, with many world-famous brands, such as Komatsu, Gardena, JLG, Genie, John Deere, Vermeer, Maruyama, STIHL, Honda, Hunter and Toro. Besides, there are many landscaping & maintenance companies equipped with a great variety of garden machines, and many specialized large machines can be rented.

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