PLANT PROPAGATION IN CHINA

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Plant propagation in China is done at a basic level by the predominantly peasant population, without the aid of modern technology or the sophisticated equipment that money can buy.

Climatically and geographically China is a land full of surprises. Areas where plants are cultivated range from the permanently frozen tundra in the north to fully tropical zones in the south. China is much larger in area than the whole of Australia, measuring over 5000 km from east to west and more than 5500 km north to south.

In the far west is the Tibetan plateau which remains cold all year. Mountains fill about 33 percent of the Chinese landscape and, because of the rainfall experienced in these mountainous regions, there is a very large number of river systems spreading across the land. One of these, the Chanjiang (Yangtze) River, is the fourth longest river in the world—covering some 6000 km. There are other major rivers such as the Huang He (Yellow) River, and hundreds of smaller ones as well as myriads of lakes.

In contrast to this there is the huge inland Gobi Desert which is bare and desolate. At the edge of the desert is an area called Turpan, which is a huge depression that is actually 150 m below sea level and is one of the lowest, hottest, driest places on our planet.

Arable farming land in China is very limited and is estimated to be no more than 0.1 ha. per head of population. All the useable land is farmed and utilized to obtain maximum output by integrating and interplanting horticultural and agricultural crops. In many areas four to five crops can be seen growing together in one plot of land.

Trees are planted everywhere. Vast areas are being reforested, every railway line and roadway has millions of trees planted along the verge, mainly poplars, willows, conifers, paulownia, and eucalypts from Australia.

These agroforestry projects supply wood for fuel, carpentry, building, and some is exported to Japan for the production of consumer items.

For century after century the people of China have propagated and grown plants just to feed themselves, operating as self-sufficient family groups or in communes. One of the results of some 2000 to 3000 years of peasant farming in communes or small communities has been the development of relatively isolated farming areas similar to counties or small state provinces.

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These individual areas have gradually developed their own selections of plants and vegetables. This factor, coupled with the tremendous diversification of crops which has arisen from this practice has resulted in a fantastic genetic pool, from which the rest of the world will benefit.

For instance, there are about 200 species of vegetables grown in China. Recent research has shown that these plants belong to 29 family groups and a staggering 11,000 selections (cultivars) have been found.

The diversification of species does not only apply to food and forestry plants. There are many plant selections (occurring in the wild) or growing in botanical gardens, such as conifers, rhododendrons, azaleas, magnolias, and herbs. Many of these selections could have a role as garden plants, ornamentals, forestry trees, or in plant breeding programmes.

The recent development (1980's) of the "responsibility system" has allowed farmers/growers to control small plots of land and to produce what they like. This land has virtually become a hobby farm within the commune system. Family enterprises conducted on this land are separate from the commune system and money gained by sale of products from this land is almost tax free.

In this type of climate many Chinese are actively engaged in propagating plants and trees to sell, and so increase their income. Propagation is usually by seed, cuttings, or division in open ground. Cheaply built structures made from bamboo and plastic sheeting are used as "greenhouses" (Fig. 1). Plastic sheeting is used very extensively to aid in propagation; in fact the use of plastic is one major reason that horticultural and agricultural production has increased fivefold in the past few years. This is due mainly to the crop protection provided.

Figure 1. An example of the extensive use of plastic sheeting in crop production in China

Some large tree nurseries exist in China but most of the propagation is done in individual family units within a commune. There are 21 botanical gardens in China. The gardens visited were being upgraded and in some cases re-landscaped. Because of the past neglect and lack of funds, due to severe restraints before the cultural revolution, these institutions are also in need of modern propagation techniques, advice, and technology. Many large city parks or areas planted with ornamental trees and shrubs also have small plant propagation nurseries attached (Fig. 2).

Figure 2. Small propagation nursery attached to an arboretum. Cracked silt layer from bottom of dried-out fish production pond has been used as a fertiliser.

The "China" that is developing under the new socialist/capitalist system is benefiting the Chinese people. Now they have a sense of importance, renewed energy and incentive, and have more money to buy consumer goods and farm equipment.

Although I have visited China for three consecutive years it was only in 1986 that I saw the first evidence of plant nurseries developing, probably on land controlled by the family groups. Nearly every family home in China has potted plants on display, so the market demand is there to be exploited. I estimate that the ornamental plant industry, flower growing industry, and other related horticultural industries will develop within China during the next decade. In fact, because of the cheap labour available and present government incentives, I would not be surprised to see China make unprecedented advances in horticulture and become one of the leading producers in the world (Figures 1, 2, 3, 4). An excellent example of China's ability to jump the industrial, technological gap

is the building of a huge hydroponic factory in Beijing where more than 20 vegetable cultivars are grown in a multi-layered tiered system.

Figure 3. Typical plant transport system using a bicycle.

Figure 4. Grass matting used for frost and snow protection in vegetable plot.

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