Quercus dentata 'Pinnatifida' was grafted onto a number of *Quercus* species [*Q. dentata*, *Q. aliena*, *Q. mongolica*, *Q. acutissima* (syn. *Q. serrata*), and *Q. variabilis*] with differing results. I observed that some *Q. dentata* f. *pinnatifida* grafted onto *Q. dentata* produced bigger leaves than on *Q. aliena* a year after grafting and leaves as strange as peacock feathers were observed in the 2nd year (Fig. 1). When grafted onto either *Q. acutissima* or *Q. mongolica* the leaves become thinner and curled at the tip like a phoenix. These results suggest that using different understocks may produce grafted plants with forms listed in the literature similar to *Q. dentata* f. *laciniata* and *Q. dentata* f. *pinnatiloba*. Further research will be needed to better understand these results. When grafted onto *Q. acutissima* and *Q. variabilis*, a beautiful golden leaf coloring developed which may have been affected by the inherent color of the rootstocks. In addition I am planning additional trials with different rootstocks aiming to improve fall color, reddish-brown in Japanese on European oaks, with scarlet oak and pin oak which have a natural red color.

In addition, I have had successful results with a weeping-type silktree albizzia which is difficult-to graft (Fig. 2).

Breeding of Spring Flowering Gladiolus for Cut Flower Production

H. Numata
Numata Nursery, Ogawa-machi, Ibaraki, 311-3422

BREEDING AND MARKETING

Two types of demand dominate cut flower sales (more than 80%) in Japan; one is business occasions such as ceremonial needs and the other is domestic consumption such as casual flowers. The remaining approximately 20% is demand by flower fanciers who have a passion for flowers. They may have studied flower arranging and take it for granted that one decorates with flowers when visitors come. Flower fanciers have a higher sensitivity with regard to flowers, are better at flower arranging, and may act as a driving force in the flower market leading to the next generation of casual flower sales. Therefore, breeders should pay more attention to their demands and produce/introduce new plants that can create new images with flowers. Traditionally the forces driving plant breeding have been predominately productivity increases and disease resistance.

POTENTIAL OF SPRING GLADIOLUS

Images of the commonly grown gladiolus are the following. A large and gaudy flower that is conspicuous everywhere in summer, suitable for a hotel lobby but not for a family table, good for decoration at the front entrance of a home but not good for placing on a cupboard, and fading quickly.

Spring gladiolus are different. They flower from autumn to spring and have a long flower life. Stem diameter is less than 7 mm and height is less than 1 m; this is good for compact flower decorations. The range of flower colors is wide and includes most

colors except red. In addition, fragrant flowers can be produced by future breeding because wild types have a strong scent.

- Additional characteristics of spring gladiolus are the followings:
- There are many types about 20 cm in height (wild type).
- They are suited for planting in perennial borders because of cold hardiness.
- It is possible for them to be used as biennial herbs because of the genetic characters in seedlings for flowering in the 2nd year.

NEEDS IN THE BREEDING OF JAPANESE-STYLE FLOWERS

Today, many flowers such as rose, dahlia, lily, carnation, anemone, pansy, and alstromeria, are bred in the belief that large and brilliant flowers are beautiful. However, small flowers such as red clover, Persian speedwell, and hagi in Ikebana (Japanese flower arrangement) have unforgettable beauty and these remain in the minds of Japanese people in a nostalgic way. Therefore, we also need to produce the traditional Japanese-style flowers because the demand will be present because of nostalgic reasons.

Micropropagation of *Rhododendron yedoense* var. *yedoense* by Hypocotyl Culture

S. Yamaguchi, and N. Ozaka
Laboratory of Vegetable and Flower Science, College Agriculture, Ehime University, Tarumi 3-5-7, Matsuyama, Ehime Pref. 790-8566

INTRODUCTION

Tissue culture has been adopted successfully for the mass production of many rhododendrons. However, the micropropagation of the tsutsusi group of evergreen rhododendrons is not commercially successful at the production level. We are conducting research to establish the protocol for the red-data species (threatened speices) found only in one spot on Shikoku Isle. In this paper we report preliminary results on the regeneration of shoots from seedling hypocotyls of *Rhododendron yedoense* var. *yedoense*.

MATERIALS AND METHODS

Seeds of *R. yedoense* var. *yedoense* were washed overnight in running tap water. Then, after sterilization with the calcium hypochloride solution and washing in the sterilized distilled water, the seeds were placed on solidified half-strength Murashige and Skoog medium supplemented with sugar (30 mg liter^{-1}). One-month-old seedlings were collected and hypocotyl explants were excised and placed on the previous medium supplemented with combinations of 2ip (0.5, 0.1, and 0.05) and NAA (0.1, 0.2, 0.4, and 0.8). After 1½ months we recorded the amount/number of callus, green spots, adventitious buds, and shoots present.