

—Identifying New Varieties Using DNA Recognition Technologies—
Success in Breeding Seedlings of Yuten Shonin’s
“Yuten-zakura” Using Plant Tissue Culture Techniques

Seigan-ji (Chief priest: Shinku Yoshida; Location: Kamiosaki, Shinagawa-ku, Tokyo) is one of the eight sub-temples under Zojo-ji (Shibakoen, Minato-ku, Tokyo), the main temple of the Jodo Sect of Buddhism. Every spring an old cherry tree said to be between 250 and 300 years old, commonly known as the “Yuten-zakura,” comes into full bloom there. The Yuten-zakura is said to be the oldest cherry tree in Tokyo’s 23 wards, having survived the Meiji Restoration, the 1923 Great Kanto Earthquake, and the Great Tokyo Air Raids of 1945. This is the only cherry tree to have been designated a protected species in Shinagawa-ku. However, since the tree’s decrepitude has become apparent as the result of the dramatic change in climate of recent years, in addition to the tree’s great age and the effect of the war and disaster damage of the past, a need has arisen to breed saplings.

Seigan-ji temple and the Yuten-ji temple founded by Yuten Shonin (Chief priest: Katsumasa Iwaya; Location: Naka-Meguro, Meguro-ku, Tokyo), have decided to breed saplings with the aim of passing on the important Yuten-zakura to future generations as a way of commemorating this year’s 800th anniversary of the death of the founder of the Jodo Sect, Honen Shonin, as well as the 300th anniversary of the death of Yuten Shonin in 2017.

In collaboration with Sumitomo Forestry Tsukuba Research Institute (Director: Naoteru Umesaki; Location: Tsukuba City, Ibaraki Prefecture) and Sumitomo Forestry Landscaping Co., Ltd. (President: Yasuyuki Yamamoto; Head Office: Nakano-ku, Tokyo), Sumitomo Forestry Co., Ltd. (President and Representative Director: Akira Ichikawa; Head Office: Otemachi, Chiyoda-ku, Tokyo) has been developing tree breeding technology for its plantation forest operations and greening business. In order to achieve the breeding of saplings to succeed the Yuten-zakura, R&D has been carried out while applying the techniques developed to date. As a result of this, the group has succeeded in the breeding of seedlings of “Yuten-zakura” by making use of the biotechnology of plant tissue culture techniques.

■ **Benefits of Plant Tissue Culture Techniques**

Usually, cherry tree saplings are bred by grafting, but since the age of a tree is maintained as is by grafting, the seedlings produced are the same age as the original cherry tree. In contrast, saplings bred using plant tissue culture techniques experience a phenomenon called rejuvenation, and it is said that this holds promise for making the plants young again. Furthermore, when decrepitude advances in a tree, there is little lengthening of branches and obtaining ones in a good condition suitable for grafting is difficult, whereas plant tissue culture techniques enable breeding so long as there is bud tissue.

In addition, if disease and insect damage occurs when breeding by means of grafting grown outside, there is a danger of the damage spreading and causing all of the saplings to wilt. However, breeding by means of plant tissue culture techniques enables the breeding of many saplings from just one bud and, since breeding is performed in a sterile test tube, damage due to disease and insect is also of no concern. Indefinite preservation under safe conditions is possible by replacing the test tube’s culture fluid, and it is considered the most suitable method for handing down important heritage trees for posterity.

To date, Tsukuba Research Institute has succeeded in breeding saplings to succeed the “Togyu no Sakura” of Daigo-ji temple (Kyoto), the “Yoraku-zakura” of Shotai-ji temple (Odawara), the

“Omuro-zakura” of Ninna-ji temple (Kyoto), the *Camellia sasanqua* of Ankokuron-ji temple (Kamakura), and the *Camellia japonica* of Reikan-ji temple (Kyoto).

■ Future Initiatives by Sumitomo Forestry

- (1) As well as making use of a cherry tree DNA database and plant tissue culture techniques, and identifying cherry trees of unknown cultivars, Sumitomo Forestry’s policy going forward is also to turn its attention to the breeding business of heritage trees and other important trees throughout Japan.
- (2) Sumitomo will promote initiatives to leave important trees for future generations such as identifying various tree species and specimens, reliably grasping such factors as species diversity, and background.
- (3) Sumitomo Forestry developed technology in 2007 to ensure the traceability of saplings of species identical to those of plantations, plantation timber, and wood/timber products such as logs and plywood, using DNA-based recognition technologies. Based on this technology, going forward Sumitomo Forestry will continue to move into such businesses as quality assurance of saplings, conservation of forest diversity, and scientific authentication of processed wood products for legal compliance.