January 24, 2013
Ninnaji Head Temple
Keitakusan Ryuhoji Temple
Sumitomo Forestry Co., Ltd.

Omurozakura Research Project, Ninnaji Temple

Test Planting of Tissue-cultivated Cherry Tree Seedlings in the Tohoku Region

—Praying for Restoration of the Tohoku Region and Growth of the Omurozakura—

In April 2007, Ninnaji Temple, the head temple of the Omuro school of Shingon Buddhism (Head priest: Yodo Minami; Ukyo-ku, Kyoto) launched the *Omurozakura* Research Project along with Sumitomo Forestry Co., Ltd. (President and Representative Director: Akira Ichikawa; Head Office: Chiyoda-ku, Tokyo) and others. The project carries out a variety of surveys and research, including growth surveys for the *Omurozakura* cherry tree, soil and root surveys, the multiplication of seedlings using tissue cultures, and surveys of plant varieties based on DNA.

In January 2010, Sumitomo Forestry successfully grew seedlings using tissue cultivation, which is a plant biotechnology method. In February 2012, the first *Omurozakura* seedlings had grown large enough to plant and were returned to Ninnaji Temple and planted on the temple grounds. In launching this test planting of the cultivated seedlings, which will eventually be planted throughout Japan, some of the cherry trees will be planted at Keitakusan Ryuhoji Temple (Chief priest: Chido Sugawara; Aoba-ku, Sendai City, Miyagi Prefecture). A Buddhist memorial ceremony will be held at the temple to pray for restoration of the Tohoku region, and the success of the *Omurozakura* Research Project.

- *Omurozakura* Research Project

Sumitomo Forestry Group and the Faculty of Horticulture, Chiba University jointly launched this research project in April 2007, after Ninnaji Temple consulted with the Cultural Properties Division of the Kyoto Prefectural Government and various government organizations regarding the management and upkeep of the temple's beautiful landscape.

To preserve the precious *Omurozakura* for future generations, it was necessary to unravel their ecology of the trees, and develop management techniques based on this scientific knowledge. The growth of *Omurozakura* is an enigma—their flowers bloom later than other varieties and they only grow to the height of a person. The seedlings, produced from tissue cultivation, all have the same traits. It is hoped that raising these trees in different types of soil and in areas with different weather conditions will clarify the reason behind the tree's short stature. Planting of the seedlings has begun at Ninnaji Temple, Sumitomo Forestry Group related properties, and elementary and junior high schools in the Tohoku region. This is the first time the *Omurozakura* has been planted anywhere other than Ninnaji Temple.

■ Overview of Test Planting

The *Omurozakura* grove, a renowned scenic spot, is located on the left-hand side after passing through the inner gate of the temple grounds of Ninnaji Temple. Since the clump of trees is only the height of an average person, the cherry blossoms can be viewed at eye level. The trees, said to have been planted when the temple was reconstructed in 1646, are thought to be over 360 years old. The decline in the trees' vitality is noticeable. There is a risk that they will wither and die.

The tissue-cultivated seedlings have the same traits as the trees the tissues were harvested from. In light of this, it is assumed that if the soil and weather conditions are the same, then development will also be the same. In a past soil survey conducted at Ninnaji Temple, it was discovered that the soil where the *Omurozakura* trees grow is clayish, and lacks nutrients (carbon, nitrogen, phosphorous, etc.) that are essential for plant growth. Consequently, it is believed the cause behind the tree's stunted growth can be pinpointed by comparison and observation to assess growth of seedlings planted in quality soil, such as horticultural soil, and those planted in the clayish soil, or whether the tree's height is a trait, or whether both factors impact growth. This makes it possible to conduct valuable verifications for preserving and raising the

precious *Omurozakura*. Also, the impact of weather conditions on growth can also be tested by planting the seedlings in regions nationwide. This should also indicate the southern- and northern-most regions in which the *Omurozakura* can be grown.

In addition to planting at Ninnaji Temple, the planting of seedlings is being carried out in Miyazaki, Ehime, Gifu, Ibaraki, and Hokkaido prefectures on land managed by bodies related to Ninnaji Temple and on land managed by the Sumitomo Forestry Group. As a way to support reconstruction in the Tohoku region following the Great East Japan Earthquake, after consulting with relevant organizations, in most cases the Board of Education in each town or city, planting, nurturing, and observations of the *Omurozakura* seedlings are being conducted mainly in conjunction with elementary and junior high schools of the devastated region.

- Cherry Trees of Hope Project

As a part of the test planting in the Tohoku region, the planting being carried out in the elementary and junior high school students in the devastated area is to be called the Cherry Trees of Hope Project. Sumitomo Forestry plans to raise the *Omurozakura* trees along with the children. Nurturing the precious cherry trees provides an opportunity for children to learn the significance of the transmission of history and introduces them to tissue cultivation, which is cutting-edge science. In addition, watching the growth of the *Omurozakura* trees provides them with the opportunity to think about the future. The seedlings that are being planted are expected to sprout cherry blossoms as early as spring 2015.

Overview of Planting and Observations
- One to six trees to be planted in each site.
- Elementary and junior high school students plant cherry trees in soil that has been ameliorated to resemble the clayish soil at Ninnaji Temple and soil from the local area. The children will then observe the differences in growth between the seedlings due to the different soils. During the test period, which lasts for five years after the tree is planted, students will regularly make observations, such as the height of the tree, the trunk's diameter, and flower buds. The students will then determine if the different soils resulted in differences in growth and write reports on their observations.

■Main planting areas
- Ninnaji Temple, head temple of the Omuro school of Shingon Buddhism (Ukyo-ku, Kyoto City, Kyoto Prefecture)
- Keitakusan Ryuhoji, Omuro school of Shingon Buddhism (Aoba-ku, Sendai City, Miyagi Prefecture)
- Sumitomo Forestry Group related land (Niihama City, Ehime Prefecture; Tsukuba City, Ibaraki Prefecture; and Monbetsu City, Hokkaido)
- Elementary schools in the Tohoku area

  Kirikiri Elementary School, Otsuchi, Iwate Prefecture (Kirikiri, Otsuchi Town, Kamihei-gun, Iwate Prefecture)

  Sumiyoshi Junior High School, Ishinomaki City, Miyagi Prefecture (Higashinakasato, Ishinomaki City, Miyagi Prefecture)

  Masuda Junior High, Natori City, Miyagi Prefecture (Yanagida Masuda, Natori City, Miyagi Prefecture)

  Trees have already been planted in these eight locations (as of the end of December 2012)

Scheduled planting
- Sumitomo Forestry Group related land (Hyuga City, Miyazaki Prefecture)
- Elementary and Junior High Schools in the Tohoku region

  Onagawa Daiichi Junior High School (Ohara, Onagawahama, Onagawa Town, Oshika-gun, Miyagi Prefecture)

  The company plans to plant more trees in elementary and junior high schools, and parks in the Tohoku region in the future.

Notes:

Ninnaji Temple, head temple of the Omuro school of Shingon Buddhism

Ninnaji Temple's history has its origins in the early Heian period when Emperor Koko, 58th emperor of Japan, ordered the construction of the Nishiyama Goganji Temple in 886. However, Emperor Koko passed away the following year. Emperor Uda, the 59th emperor, carried on Emperor Koko's dying wish and completed the temple's construction in 888. The name of the temple was taken from the name of the imperial era. In a stretch of land to the west of the inner gate there is a

famous grove of *Omurozakura*, a variety of late blooming cherry trees. They have been popular since the Edo period. The cherry trees are mentioned in many *waka*-style poems. In 1924, the grove was designated as a Scenic Spot. In 1994, the temple was listed as a UNESCO World Heritage site for being one of the historic monuments of ancient Kyoto. (Reference: Ninnaji Temple homepage)

Keitakusan Ryuhoji, Omuro school of Shingon Buddhism

The temple was rebuilt in 1186 by the founder of the Date clan, Tomomune Date. This became the temple where the members of the Date clan prayed. The temple's history is estimated to date as far back as the Heian period, given that the temple bell is engraved with the name of Sakanoue no Tamuramaro, a Heian period general of the Oshu Chinjufu government. Prior to the Meiji Restoration, the temple was attached to the Osaki Hachiman Shrine. The primary Buddha figure of the temple is a wooden statue of Shaka Nyorai, which is designated as an Important Cultural Property. (Reference: "Ryuhoji-engi" (origin and history of Ryuhoji))

Sumitomo Forestry Tsukuba Research Institute

Established within the Tsukuba Science City in Tsukuba, Ibaraki Prefecture, in 1991 to carry out broad research and development with the objective of making more effective use of wood in a wide range of fields. With a focus on the areas of wood resources and materials along with architectonic and housing, and sights set on a recycling-oriented society, the facility explores the potential of wood as a material, delving into a variety of themes, including research into wood materials for more appealing houses, effective use of resources, and research and development related to the creation of comfortable living environments. The Tsukuba Research Institute also has two attached facilities supporting commercialization of the latest technologies: the Techno Center, which tests and verifies the quality of housing materials and various other materials, and the Wood and Housing Technical Data Center, which gathers together research findings and technical data to have available at the right opportunity.