

## Superior Tree Breeding of *Hovenia dulcis* var. *koreana* Nakai for High Fruit Petiole Productivity

Sea-Hyun Kim and Jingyu Han

Division of Foerst Genetic Resources, Korea Forest Research Institute

For the purpose of breeding a high-yield superior variety of Korean raisin tree (*Hovenia dulcis* var. *koreana* Nakai), whose value as an edible and medicinal resource is increasing, tree candidates for superior individuals were selected from its 11 habitats in Korea from 1996 to 1998. A clone bank preserve was created in 1998 with 70 clones proliferated by grafting.

The investigation of the traits of the blooming and fruition of 47 clones that normally bloomed and fructified in the clone bank preserve in 2002 revealed a great divergence among the clones. KW 3-3 revealed the best fruition trait: a 1.88-cm-diameter fruiting lateral, 19.3 units of fruiting laterals, 19.3 units of fructified laterals, 2.74 average bunches per fructified lateral, 91.5 average bunches per fruiting lateral, and 11.72 kg of fruit petiole fruition output.

The investigation that was conducted to select superior individuals based on the number of fructified laterals, the number of bunches, the average number of bunches per fruiting lateral, the yield per individual, etc., which are the main characteristics to be improved during cultivation, in the case where clones with over 16 units of fructified laterals, 3.2 bunches, 58 average bunches per fruiting lateral, and 6 kg of yield per individual were selected, revealed that it was possible to select five individuals, corresponding to 10% of the higher-ranking individuals.

Furthermore, in the case of the relaxation of the selection standard a little into over 12 fruiting laterals, 3.0 bunches, 39.1 average bunches per fruiting lateral, and 4 kg of yield per individual, 10 clones, equivalent to 20% of the higher-ranking individuals, were selected.

In the selection of five individuals, corresponding to the higher-ranking 10%, the fruit petiole yield of the chosen individuals was shown to be 261%, and in the case of the selection of 10 clones, equivalent to the higher-ranking 20%, a 216% fruit petiole yield was shown among the chosen individuals, proving an excellent selection effect.

On the subject of the five secondarily selected clones, tests on the stability of the blooming and fruition traits were additionally conducted, and three early-growth (KW 1-3), middle-growth (KW 3-3), and late-growth clones (JN 2-5) with a demonstrated difference in the maturity period were selected through the investigation and analysis of the fruit petiole maturity period. These three clones were bred as new cultivars of opposing high-yield Korean raisin tree for the production of fruit petiole, including 'Poong-Sung 1'. These bred new cultivars have a fruit petiole output per individual that is three times the output of an average individual, and due to the difference between the three cultivars in terms of their fruit petiole maturity period, labor dispersion can be expected when harvesting.