

## **New Mulberry Cultivars ‘Lalaberry’ and ‘Popberry’ for Fruit Production**

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In Japan, mulberry has been cultivated as a food source for silkworms ever since sericulture was introduced from China in old days. However, the mulberry fruit has recently been evaluated as one of the products that could stimulate the activity of upland farming. Products processed from mulberry fruits in food industries, such as jam and wine, are being sold in a small scale all over the country. In order to meet the demand of mulberry varieties with high fruit productivity, Okaraguwa and Kataneo were selected as genotypes suitable for fruit production from a large number of genetic mulberry resources. Therefore, we developed new polyploid cultivars which bear larger fruits from the two selected genotypes to achieve high productivity. These two cultivars were designated as Lalaberry and Popberry, and officially registered as mulberry cultivars suitable for fruit production for the first time in Japan. This report signifies the importance of developing mulberry cultivars aiming at fruit production.

Lalaberry and Popberry were developed from a colchicine treatment. It was found that these two cultivars were mixoploids comprised of diploid and tetraploid as confirmed by chromosome analysis. Moreover, it was found that these cultivars were peripheral cytochimeras, showing orderly structure of diploid-tetraploid- tetraploid-tetraploid from the outermost cell layer to the innermost. This structure is found to be consistently stable.

Generally, it is shown that autotetraploids make various cells and tissues gigantic. Lalaberry and Popberry possess diploid cells at the surface, but the other tissues consist of tetraploid cells because of the chimera structure, which may explain why the fruits became so large.

Lalaberry and Popberry bore many fruits in the second year after field plantation. The number of fruits was about 30% less than that of the original genotypes, however, the average weight of fruits was almost two times. The total yield of the fruits for the period of three years (three to five years after plantation), increased by about 20% in Lalaberry and about 35% in Popberry, respectively, as compared to Kataneo and Okaraguwa. Comparing the new two cultivars, Popberry exceeds Lalaberry in size of fruits, and maximum weight

exceeds over 15g per fruit. Lalaberry shows high production ability thereby yielding fruits about 5 kg per plant every year, which is more than that of Popberry. The sugar content of fruits was about 9 Brix%, and the fruit was very juicy. Therefore, the fruit from these cultivars are considered not only suitable for processing, but can also be substitute as an edible fresh fruit.

To spend a healthy life, anthocyanins have recently been assigned to function as an anti-oxidative. It is well known that mulberry fruits contain a high concentration of anthocyanins. Moreover, it was found that 1-deoxynojirimycin, which is said to have a profound effect in lowering the blood-sugar level in diabetic patients, is amply present in mulberry fruits. Elucidation of new properties of mulberry fruits should promote their use as a healthy food. We hope that these cultivars can provide ample supply of mulberry fruits to pharmaceutical and food industries and will further promote the activity of upland farming.