

## Development of Defoliation Technology Using Salt Water on Pear Tree

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### Summary

The objective of this study is development of a defoliation technology on pear tree by spraying of salt water (a NaCl solution). The effects of concentration of the NaCl solution on defoliation were investigated. The NaCl solution (0, 1, 3, 6, or 10%) was sprayed once on the tree of Japanese pear 'Shinko' and European pear 'Le Lectier' after harvesting. The defoliation period of Japanese pear 'Shinko' treated with 3% NaCl solution was the same as 6 or 10% NaCl solution, and the leaves of those treatment was lost earlier than the control (NaCl solution of 0%). However, the promotion effect on the fallen leaves by the NaCl solution was not seen on European pear 'Le Lectier'.

To clarify the influence of early defoliation by spraying of salt water on tree growth, elongation of the shoots, growth of fruits and starch content of the branches and roots were investigated. In previous year, the adult trees of Japanese pear 'Hosui' at 160, 170, or 180-181 days after full bloom (DAFB) and Japanese pear 'Shinko' at 188-190 or 196-199 DAFB were treated with 6% NaCl solution in 2009 and 2010, and the nursery plants of European pear 'Le Lectier' on Oct. 10, Oct. 28, or Nov. 6 was treated with 6% NaCl solution in 2009. The defoliations of the branches of three pear cultivars were promoted by spraying of the NaCl solution. In 2010, elongation of the shoots on Japanese pear 'Housui' and 'Shinko' had little difference. However, in 2010, elongation of the shoots of 'Hosui' and growth of fruits of 'Shinko' treated with NaCl solution were clearly reduced. Furthermore, elongation of the shoots of nursery plants of European pear 'Le Lectier' treated with NaCl solution was reduced. The Starch content was investigated by a simple assay method (a potassium iodide reaction). The starch content of shoot and root was decreased by early treatment of NaCl solution, and starch content of the nursery plant was lower than the adult plants. These results show that early defoliation was caused by spraying of the NaCl solution. In addition, these findings suggest that accumulation of starch content and the growth of nursery plants in the next year might be affected by spraying of the NaCl solution. Furthermore, the growth of adult trees also might be affected by second consecutive years treatment.