

Some Characteristic Phenomena of Cold Injury in Peach [*Prunus persica* (L.) Batsch]

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1. Introduction

In 2001, extremely cold air covered Korean peninsula during mid-January, recording -29.2°C in Cheolwon region in Kangwon province. As a result, 4 cities or department below -25 °C and 10 cities or department between 20 to -24.9 °C were under the anxiety of cold injury in peach and grape. This survey and investigation was carried out to elucidate the characteristic symptoms of cold injury in peach and to obtain the basic information about the phenomenon, which could be occur in low air temperature.

2. Materials and method

Date of Investigation : Feb. 1st, 2001 to Feb.12, 2001.

Regions investigated : 65 orchards in 7 cities or departments in Kyonggi, Kangwon, Chungbuk Province

Methods : By naked eye in situ and after incubation with water in greenhouse.

3. Results and discussion

Cold injury in peach tree was appeared near -20 °C air temperature and some variety, such as Nishio gold, was damaged seriously at -25 °C showing 100% of tree was injured irrevocably. But, the varieties and the planting position, especially the configuration of the earth in the investigated area varied the degree of cold injury. Even the Yumyeong, which could be sorted as cold - resistant variety can not survive well at the low air temperature below 25 °C but it would be influenced by the duration of exposed time at low temperature. The most serious cold injury was the separation of bark from the xylem but it was supposed that this kind of damage could be recovered in some extent by the application of rubber banding.

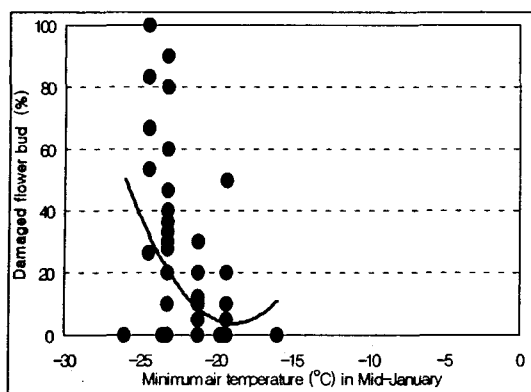


Fig 1. Distribution of peach orchards representing the percentage of dead flower buds as influenced by minimum temperature with different cultivars and in locations respectively

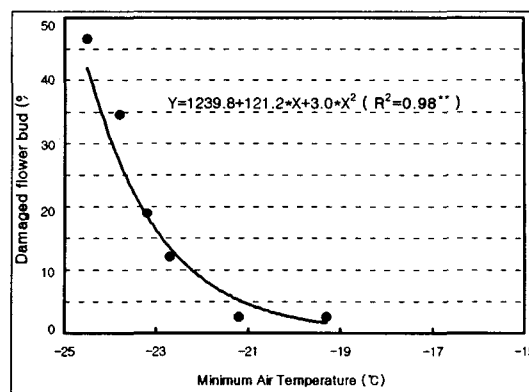


Fig 2. Regression analysis between the local minimums air temperature and the percentage of dead flower buds in Yumyeong cultivars

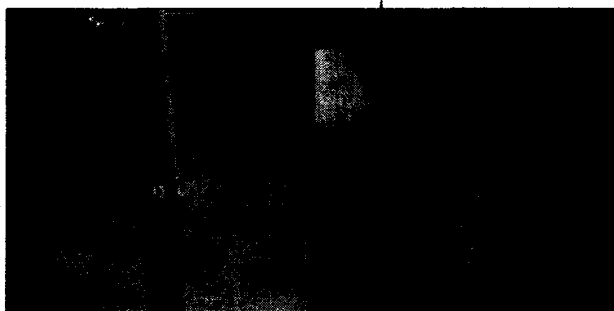


Fig 3. The flower bud in dormancy was more susceptible to cold injury compared with leaf bud. Mostly, the damaged parts was located in the center of flower bud and turn its color to brown or black. The xylem and the pith in the trunk of peach tree were very susceptible to cold injury so that it swells or burst by freezing. The damaged xylem turned to dark brown and as the time elapsed, bark and cambium of trunk separated from the xylem.



Fig 4. The treatment of recovery banding with elastic rubber bandage could attenuate the severe trunk cold injury (left) and the cured trunk by banding last year (right). The black colored scar represent the separated part, which was damaged last year by cold injury.

References

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