

Effect of Irrigation Amount on Flower Bud Growth and Fruit Set in Japanese Apricot ‘Nanko’

Yasuhisa Tsuchida and Noriaki Jomura

*Japanese Apricot Laboratory, Wakayama Fruit Tree Experiment Station, Minabe, Wakayama
645-0021, Japan*

Yield optimization of young Japanese ‘Nanko’ apricot (*Prunus mume* Siebold et Zucc.) trees requires adequate and timely irrigation. Here, different irrigation amounts (5, 10, 15, and 20 mm) were applied to three-year-old trees from July (initiation of flower bud differentiation stage) to March (fruit setting stage), when the pF meter reading was 2.7. Then, the effects on flower buds and fruit setting rate were assessed. Trees supplied with the 5 and 10 mm irrigation amounts experienced severe drought stress. Limited water supply reduced flower-bud growth and flower-bud number, possibly caused by several factors including inhibition of flower-bud differentiation in summer and abscission of immature buds just before anthesis. Limited irrigation did not inhibit complete flower formation, except under the 5 mm irrigation treatment, but flower size and fruit-setting rate were negatively affected. These findings indicated that insufficient irrigation caused poor flower formation and low fertility. Combined, these effects explained the observed yield reduction and all irrigation treatments, except for the 20 mm one, severely affected productivity. Based on these results, we recommend that the amount of water applied to young Japanese apricot trees from flower-bud differentiation to fruit set should be no less than 20 mm to achieve adequate flower bud growth and a high fruit-setting rate for high fruit yield.

灌水量がウメ‘南高’の花芽生育および着果に及ぼす影響

ウメ‘南高’の収量を維持するためには適宜必要量の灌水を行うことが重要である。本研究では3年生樹にpFメーターが2.7を示した時点で、異なる灌水量(5, 10, 15および20mm)を7月(花芽分化開始期)から3月(結実期)まで行い、花芽生育や着果率への影響を調査した。5および10mmの灌水を行った樹体は強い水分ストレスを受けていた。灌水量が少なくなるほど花芽生育の抑制と花芽数の減少が認められた。これらは花芽分化の抑制や開花前の落下により引き起こされたと考えられる。完全花の形成は、5mm区を除いて妨げられなかった。しかし灌水量が少なくなるとともに花は小さくなり、着果率は低くなった。このことから、「南高」の若木では灌水量が十分でないと、花の形成が不十分になり、受精が抑制されることが示唆された。灌水量の減少によるこれらの影響が収量の減少につながり、20mmより少ない灌水量では果実の生産性が低下することが示された。