

RELATIONSHIPS BETWEEN TREE VIGOR AND FLOWERING CONDITIONS OF *Cerasus jamasakura* IN YOSHINOYAMA, NARA PREFECTURE

Hiroko Okugawa

Key words: *Cerasus jamasakura*, tree vigor, flowering, Yoshinoyama

1. INTRODUCTION

Cerasus spp. are widely distributed and planted in Japan. However, decline of trees are sometimes serious due to lack of proper management, and it is necessary to monitor tree vigor. Tree vigor (or healthiness) of *Cerasus* spp. are commonly evaluated by amount of flowers. However, relationship between tree vigor and amount of flowers is unknown. Additionally, although it is said that size of individual trees effected amount of flowers for some species, relationship in *Cerasus* spp. remained unclear. Yoshinoyama in Nara Prefecture contains about 50ha of *Cerasus jamasakura* mainly and its unique landscape is very important. In this paper, relationships among tree size, tree vigor on summer and flowering conditions on the following spring of *Cerasus jamasakura* were studied in Yoshinoyama, Nara Prefecture, Japan.

2. METHOD

This study was conducted in the area of “Nakasenbon” in Yoshinoyama. This area is consisted of different levels of vigor of *Cerasus jamasakura*. Field researches were conducted in 57 individuals of *Cerasus jamasakura*. In summer 2008, DBH (cm), tree height (cm), SPAD, leaf area (cm²), SLA (cm²/g) and length of current shoot (cm) were measured and tree vigor was evaluated visually in 4 ranks. Tree-ring samples were collected in autumn 2009 and widths of annual ring (mm) of the previous year were measured. In spring 2008, number of buds on current shoot at the top of crown (NB), ratio of leaf buds on current shoot at the top of crown (RL), number of flowers in one flowering bud (NF) and prospective amount of flowers at tree level (AF) were evaluated visually in 4 ranks. In addition, soil analyses were conducted at 4 sites.

Relationships between DBH and vigor, flowering conditions were analyzed by tracing scatter diagrams. Relationships between tree vigor and flowering conditions were analyzed with PCA analysis. CART analysis was conducted for each indicator of flowering conditions explained by indicators of tree vigor and tree size.

3. RESULTS AND DISCUSSION

Soil conditions were not significantly different among the sites. In the result of PCA, NB and RL were located close to indicators of tree vigor. NF and AF showed different trends. Indicators of flowering conditions showed different trends. In the results of CART analysis, summarized in current shoot level, in case of *Cerasus jamasakura* having better growth of shoot, they have greater NB and RL. On the other hand, when individuals become to show much less growths and greater dieback at shoot terminal, NB and RL are low and NF is superior. Furthermore, individuals of smaller DBH had comparatively better shoot growth and individuals of larger DBH tended to have much less growths and greater dieback at shoot terminal. Moreover, individuals of larger DBH have lower NB and NF is superior. In terms of AF, individuals of retaining natural tree form and lower DBH were evaluated as greater AF. It is assumed that these results are distinguished with those of current shoot level.

In conclusion, while flowering conditions were influenced by tree size, NB, RL and NF were related to growth of current shoot and dieback at shoot terminal. On the other hand, AF related to tree form and DBH was an indirect indicator of tree vigor of the previous summer. Therefore, evaluation of tree vigor for *Cerasus jamasakura* by AF alone is uncertain.