lute color rendering is not yet really practical. Experiments should be so planned that reliance is placed on comparison of adjoining material on the same film, with no attempt to set up absolute color values. With these limitations, our experience has shown us that the advantages of color film are such as to render it a necessity for certain types of work. We have attempted color reproduction on paper, which for some purposes would be most useful, but at present we must report adversely. Color rendering is quite markedly diminished and the cost in time, of processing especially, is practically prohibitive except for limited use.

Growth Regulators Prolong the Bloom of Oriental Flowering Cherries and Dogwood

Horace V. Wester and Paul C. Marth
National Capital Parks, Department of the Interior, Washington, D. C., and Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U.S.D.A., Beltsville, Maryland

Considerable interest has been shown in the progress of experiments with growth-regulator (hormone) sprays to prolong the blossom display of the Oriental Japanese, or flowering cherries, Yoshino, *Prunus yedoensis* Matsum; Akebono, *P. yedoensis*; Kwanzan, *P. serrulata* Lindl.; and Shiro-fugen, *P. serrulata*, in Washington, D. C. These experiments have been conducted during the past two seasons (1948 and 1949) and have been extended to include a number of other woody ornamentals. Thus far the treatment has proved most effective on Oriental cherries and white flowering dogwood, *Cornus florida* L.

In 1948, individual branches on trees of the single-flowered Yoshino variety and small whole trees of the double-flowered Kwanzan cherry were used. Both varieties responded to sprays of α-naphthaleneacetic acid and β-naphthaoxyacetic acid at concentrations of 5, 10, 20, 40, and 80 ppm. Frequently 25% of the petals of sprayed flowers remained attached 4 to 10 days longer than the unsprayed. Foliage of Yoshino and Kwanzan was injured by sprays containing 40 and 80 ppm, but no injury was evident at the lower concentrations. A spray mixture containing 64 ppm of indolebutyric acid and 16 ppm of β-naphthoxyacetic acid was also effective in retarding petal fall of Yoshino, but proportionate mixtures of this combination at one-half and lower concentrations were ineffective. Another compound, *p*-chlorophenoxyacetic acid, was ineffective in retarding petal fall of the Shiro-fugen cherry at spray concentrations 5 to 20 ppm, whereas naphthaleneacetic acid at the same concentrations was quite effective.

Branches of Yoshino that were sprayed retained their petals 4 to 7 days longer than comparable unsprayed branches. During this period the sprayed petals gradually developed a more intense pink pigmentation than did unsprayed ones and the majority of the treated petals appeared fresh until they fell from the tree.

Young Kwanzan trees held their flowers for 7 to 10 days longer than unsprayed ones. The double flowers of this variety are borne on long, slender flower stalks which allow them to be whipped back and forth by the wind, thus causing some discoloration and shedding of the petals. At a distance of 10 to 15 ft the mass floral display was nevertheless fairly attractive during most of the period that the flowers remained attached, even though the petals were injured by the wind.

In another experiment, naphthaleneacetic acid spray (10 ppm) was applied at intervals during the blossoming period. The results of this test indicated that the chemical was most effective when applied as the trees came into full bloom. Treatments applied to flower buds just prior to opening were ineffective.

Over 400 Japanese flowering cherry trees were treated with the growth-regulator sprays in experiments conducted during 1949. In the Tidal Basin planting, some Yoshino and Akebono trees retained 35% to 80% of their blossoms 3 to 7 days longer than unsprayed trees, but others showed little or no response. A detailed check on the effect of naphthaleneacetic acid (10 ppm) applied to 65 large Yoshino trees on March 29–30 showed an average of 20% of the flowers present April 11, 13 days after full bloom, in comparison with 3% remaining on ten comparable unsprayed trees at this time. Direct comparison between naphthaleneacetic acid and β-naphthoxyacetic acid showed that the former compound was the more effective.

Kwanzan flowers responded more consistently to 10 ppm naphthaleneacetic acid than did the Yoshino and Akebono varieties. Thirteen days after treatment, an average of 23% of the flowers was found present on 32 large Kwanzan trees, in comparison with 4% on nine comparable untreated trees.

In addition to Japanese cherry, tests have been conducted on other spring-flowering ornamental plants. White flowering dogwood has shown a definite response in two years of testing. During the 1948 season two compounds, α-naphthaleneacetic acid and *p*-chlorophenoxyacetic acid, were applied to individual branches at 10- and 20-ppm spray concentrations. The petal-like flower bracts of dogwood remained attached 4 to 6 days longer when sprayed with either concentration of these compounds than when left unsprayed. Further tests made in 1949 indicate that *p*-chlorophenoxyacetic acid is much more effective in prolonging dogwood blossom display than is naphthaleneacetic acid; but the former compound tends to deform the young leaves at spray concentrations as low as 5 ppm. For this reason additional experimentation with sprays of lower concentration than 5 ppm is necessary to evaluate the practicability of using *p*-chlorophenoxyacetic acid on dogwood.

In tests conducted thus far, the flowers of a number of other kinds of plants have not shown a definite reduction in rate of petal fall when sprayed with α-naphthaleneacetic acid, *p*-chlorophenoxyacetic acid, or β-naphthoxyacetic acid in concentrations of 10 and 20 ppm. Among the plants used were azalea, aronia, American and Asiatic crab apples, flowering almond, flowering quince, redbud, bridal wreath spirea, lilac, star magnolia, and saucer magnolia.