Experiments have been conducted in the propagation of clonal walnut rootstocks by the use of both hardwood cuttings and leafy, softwood cuttings.

**Hardwood Cuttings.** Tests conducted during the winter of 1976-77, in which cuttings were taken at different times, showed 10, 40, and 50% rooting with cuttings taken October 28, November 11, and January 26, respectively. Considerable differences occurred among varieties in ease of rooting. Serr gave 50% rooting; Vina, 27%; Ashley, 10%; Hartley and Chico 0%. (B.K. Paradox cuttings gave 60% rooting.) Best results were obtained with large diameter cuttings which were placed for rooting in a porous mix of vermiculite-perlite, 3:1, in outdoor beds under shelter with 75°F bottom heat. A treatment with a root promoting growth hormone, indolebutyric acid (IBA), was essential for any roots to form. A concentration of 300 ppm, in which the bases of the cuttings are soaked for 24 hrs, was optimal.

A treatment in which the base of the cuttings were dipped for 10 seconds in 1M sulfuric acid, then rinsed in water, stimulated rooting over cuttings receiving only IBA treatments, increasing rooting from 40 to 60%. Wounding the base of the cuttings prior to any chemical treatments also stimulated rooting in some tests. Survival of rooted cuttings is a problem. Disturbance of newly emerging roots is detrimental.

The 1978 rooting tests with hardwood cuttings are now underway using the best treatments found previously. Emphasis is on methods for obtaining good survival of rooted cuttings. This includes: 1) fungicidal treatment of cuttings; 2) moving cuttings to the nursery row once roots have been initiated by the chemical and bottom heat treatments, but before visible roots appear externally; 3) use of a more porous rooting medium than was used in previous tests.

**Softwood Cuttings.** Preliminary experiments were conducted in 1975 and in 1976 in rooting leafy walnut cuttings under water mist sprays in the greenhouse. Little success was obtained until late in the summer when the shoots became hardened fairly well. Cutting materials was obtained from trees that had been cut back severely to produce large numbers of vigorous shoots.

In 1977, nine J. regia varieties were used, plus J. hindsii and J. nigra. Terminal cuttings were placed under mist over bottom heat (72°F) at different times from September 8 to 22, and were evaluated for rooting after 30 to 40 days. An IBA treatment was necessary for any rooting, the optimum generally being a 10,000 ppm 5 sec. dip of the cutting bases. A very porous rooting medium, 1/3 vermiculite and 2/3 perlite, was required. Best rooting (80%) occurred with J. hindsii, followed by the J. regia varieties, Vina (50%), Serr (47%), Hartley (30%), and Mayette (30%). As with hardwood cuttings, a major problem is obtaining survival once the cuttings are rooted.

Subsequent handling and survival of the rooted leafy cuttings in October presents more difficulties than may be encountered with hardwood cuttings rooted in March. It appears, therefore, that clonal propagation by hardwood cuttings in late winter offers the most promise.