to six weeks.

The skin of Jerseymac is thin and tough like McIntosh; the flesh is tender, juicy and aromatic like McIntosh; the flesh is white when the fruit is fully ripe. The edible quality (texture, flavor and aroma) is equal, if not superior, to that of McIntosh.

Jerseymac has been propagated successfully on several size controlling understocks, but performance records are not available at this time.

Experience with the new red, summer dessert apples in New Jersey, including Jerseymac, suggests very strongly that they will not produce fruit with good eating and keeping quality if the trees are overly vegetative. If properly thinned, good crops of well-colored and good quality fruit are produced at nitrogen levels much less than that which growers are accustomed to using on Red Delicious. There is an indication that all summer dessert apple varieties will not necessarily respond similarly to chemical thinners. Commercial growers will have to build upon their own experience.

Trees are available from the New Jersey Apple Institute, RD 3, Princeton, N. J. 08540 and the New York State Fruit Testing Association, Geneva, New York 14456.

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Titan, a Seed Source for F_1 Almond x Nemaguard Peach Hybrids

R. W. JONES*

The late flowering almond selection 92-54 has been named Titan. It blooms cimultaneously with Nemaguard peach. When planted adjacent to one another in isolated situations, it is readily pollinated by Nemaguard to produce a very high proportion of F_1 almond x Nemaguard peach hybrid seed. Certain Nemaguard seedlings pollinate Titan equally well.

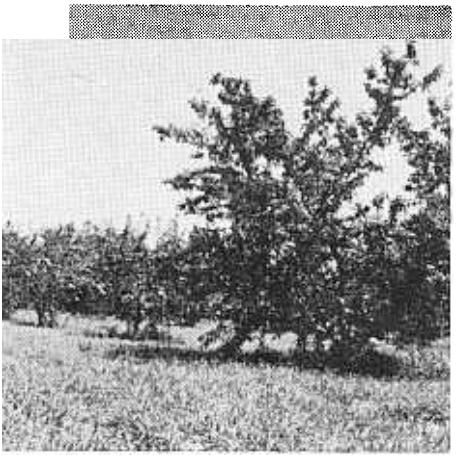

Fig. 1. Right foreground: Texas almond on an F_1 almond x Nemaguard peach hybrid root. Background: Dwarfed trees which are Texas on Nemaguard, planted at the same time, January 1961. This is a very sandy, nematode area on a ranch near Kingsburg, California.

Titan is an open-pollinated seedling of a late flowering mutant of Nonpareil. It was selected in 1964 by Robert W. Jones at the U. S. Horticultural Field Station in Fresno, California, in plots operated cooperatively with the Fresno State College Foun-

*USDA Horticultural Station, 2021 Peach Ave., Fresno, Cal. 93727. Present address: U. S. Pecan Field Station, P. O. Box 579, Brownwood, Texas 76801.

dation. The hybrid seedlings have been grown and budded by cooperating nurserymen and other horticulturists.**

Titan seeds produce vigorous, uniform F_1 hybrid seedlings which make exceptionally drouth resistant rootstocks. These Titan seedlings show nematode resistance and produce smooth and strong unions with almond and peach tops. Peach-almond (or almond x peach) hybrids have long been recognized as superior rootstocks for almond and peach because of their vigor and longevity (1, 2, 5). Other almond x Nemaguard hybrid seedlings, when grown for one season with their own tops, and then fall-budded to almond (4), made excellent growth in replant situations or in sandy nematode areas where Nemaguard rooted trees have been stunted (Fig. 1).

Fig. 2. Titan x Nemaguard seedlings in a nursery row. The height of these seedlings was 20 to 30 inches (50-75 cm.) on June 15, 1971, six months after planting. The configuration of these seedlings permits them to be budded easily.

Moreover, where almond x Nemaguard F_1 hybrid rooted trees were interplanted in a row of Texas almond on Nemaguard roots on a well irrigated sandy clay loam, growth differences could not readily be observed. However, when irrigation was withheld during the harvest season, leaves on the hybrid rooted trees remained turgid while those on Nemaguard rooted trees became markedly wilted.

The possibility of commercially producing the F_1 almond x Nemaguard peach from seed was first discussed by Jones (4). Twelve almond selections when pollinated by Nemaguard provided a sufficient number of F_1 hybrid seedlings to study (4), but only four warranted grafting into orchard situations to test for commercial hybrid seed production. Later, two other seedling selections of a late flowering mutant of Nonpareil were orchard evaluated. 92-54 (Titan) was one of these.

Titan trees are very productive, and the seed has a high proportion of hybrids when produced as described. The shell of the nut is closed, preventing worm damage and injury to the kernel. Double kernels are scarce which improves spacing in the seedling row. Germination of seed planted the previous December takes place readily following natural winter chilling in the San Joaquin Valley, although slower than with almonds. The soil should be well drained. The few almond seedlings that appear can be easily distinguished and should be rogued from the row as early as possible (3, 4). Such seedlings occur by very limited selfing or contamination from stray almond pollen.

Titan seedlings lack branching just above the ground level, which facilitates budding. The very extensive

**I wish to acknowledge cooperative assistance in the evaluation of seedlings of Titan by the following: Armstrong Nurseries, Wasco, California; Bright's Nursery, Le Grand, California; and Burchell Nursery, Modesto, California.

and penetrating root system of Titan F_1 hybrid rootstocks permit them to grow well with less water than does peach. This has particular significance to localities with limited irrigation, and particularly to the sandy soils of the San Joaquin Valley.

In summary, the rootstock from Titan derives its value from its vigor, its uniformity, its compatibility with peach and almond tops, and a more desirable configuration for budding than those from other almond selections tested (Fig. 2). Also, it is the one selection that produces sufficient hybrids to make it commercially feasible. It can reduce production costs for both almond and peach under the stated conditions, and generally increases production in some areas where economic production with peach rooted trees has been difficult to achieve.

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Variation in Germinability of Pear Seeds*

H. KHATAMIAN AND R. J. HILTON**

European pomologists have shown recent interest in obtaining rootstock lines of common pear as replacements for quince, Angers A, B and C. This has brought attention to the production of pear stocks from seed. Long-abandoned farmlands recently acquired by the University of Guelph were found to contain a fairly dense stand of young and mature wild seedlings of common pear *(Pyrus communis* L.). It seems reasonable to assume, from the presence of a few very old mother trees, that the community has emerged as progeny of French pear rootstocks such as were commonly used in Ontario nurseries of a century or more ago.

Considerable variability was evident in tree and fruit form and size but all bearing trees had fruit that was acid and astringent and all but a few were round or oblate rather than pyriform. In effect, the fruit resembles that grown in France and England for "perry" (pear cider) production. Three trees were selected for an initial examination of the germination performance of their seeds, and it is this trial with which this report is concerned.

Unstratified seeds of common pear show a germination capacity of about 1%, but seeds stratified for 60 to 90 days show a germination range of 41 to 98% (1). Other work has demonstrated that deeply dormant seed of temperate zone woody plants respond best to stratification within the 0 to 7°C range and that a rise to 8 or 10°C will stall the rest-breaking process. A reversion (to secondary dormancy) may occur if the temperature is raised to 14°C for an appreciable time, hence the 8 to 10°C range is the compensation point of dormancy (2).

*Contribution from Ontario Agricultural College, University of Guelph.
**Graduate student and Professor, respectively, Horticultural Science Department, University of Guelph, Ontario, Canada.