ANNUAL SUMMARY

Project No. 85-LA12 - Tree and Crop Research
Field Evaluation of Almond Varieties

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Objectives: (1) To obtain and evaluate yield, phenology, field performance, and nut characteristics of varieties in Regional Variety Test plots. (2) To obtain further information on pollen compatibility relationships among almond varieties including the relationship of Jeffries to other varieties. (3) To continue isozyme tests to identify and categorize parentage of almond varieties. (4) To complete summarization of variety field performance. (5) To establish a replicated rootstock trial in order to compare performance of selected almond varieties on peach x almond hybrid rootstocks in comparison to standard peach rootstocks (Lovell and Nemaguard).

Interpretive Summary

1. YIELD DATA FROM RVT PLOTS

Yield data for individual RVT plots for 1985 that have been compiled and analyzed are attached. Overall yields in numbers of nuts per tree was very high in many varieties similar to that which has occurred in commercial areas. Reduced nut size and weight has, however, resulted in lesser tonnage per acre than one might expect in some cases.

The compilation of yield data from the initiation of the older plots has now been long enough to show basic trends for individual varieties and to identify major factors of yield, primarily nut numbers and weight, as affect by tree age, season of bloom, and tree size. Age of bearing is found to be a major difference among varieties with the 4 through the 6th years being critical. In general 6 years or more marks the age when a general leveling-off of yield begins to occur in the plots but this varies with variety. Various varieties are yielding significantly higher than Nonpareil in this early period, while certain others are quite slow in coming into significant bearing. Later yield (approximately sixth year or more) shows differences among varieties which are not the same as in the early years. Nonpareil, for instance, appears to be slower to come into bearing but as an older tree continues

to grow in size and productivity to give one of the highest yields of any variety in the plots. On the other hand, other varieties which yield well when young - e.g., Carmel, Merced, - are showing decline in tree growth and productivity at least in some of the plots. Yield data for many varieties in form of the Regional Variety Trials are given on the following table.

Blossom density is related to growth habit is a factor in yield particularly as it related to precocity and the renewal of fruiting wood as the tree ages. Data on blossom density was obtained and, although significant differences in growth habit occurred among varieties, it could not be correlated to yield. Differences in the ability to set fruit appear to be present and may be an important factor in yield with some varieties.

2. CROSS COMPATIBILTY

Tests for cross-compatibility of pollen among varieties were continued this year and confirmed previous years tests. Following are important cross incompatibility groups for almond (varieties within the same group will not cross pollinate each other).

Nonpareil	Mission	Ne Plus Ultra
IXL	Ballico	Merced
Jeffries*	Mission	Ne Plus Ultra
Long IXL	Languedoc	Norman
Profuse		Price
Tardy Nonpareil		Ripon

Solano	Thompson	Carmel
Jeffries*	Granada	Carmel
Kapareil	Harvey	Carrion
Solano	Robson	Jeffries*
Sonora	Sauret #2	Livingston
Vesta	Thompson	Monarch
	Mono	Sauret #1

*See below

JEFFRIES is a mutation of Nonpareil and should belong to the NONPAREIL group. However, field experience combined with controlled tests in 1984 and 1985 show that Jeffries possesses unilateral incompatibility. JEFFRIES is unable to fertilize CARMEL and a group of other varieties. On the other hand both these varieties and others including Nonpareil can fertilize Jeffries.

Varieties tested that are cross compatible with Jeffries:	Merced and all members of this group, Thompson and all members of this group, Mission, Fritz.
Varieties tested that are not cross compatible with Jeffries: (pollen only)	Carmel and all members of that group, Butte, Monterey, Solano, Sonora, Nonpareil.

3. A paper describing isozyme relationships among almond varieties has been completed.

4. A publication "Almond Update - 1985" was prepared for distribution at the December 1985 Research Conference. The booklet includes information on time of bloom; pollen incompatibilities; time of harvest; ease of nut removal; yield history from the Regional Vareity Trials; kernel count per ounce and shelling percentage; kernel defects; market classification; disease, insect and mite susceptibility, presence of bud failure symptoms; compatiblity with Marianna 2624 rootstock; and tree characteristics. This compiles current information to date but is subject to revision in coming years.

The statistical analysis of yield and nut characteristics is largely completed and a summary will become part of this report when it is completed.

5. The proposed rootstock plot was planted in an orchard in western Fresno Co. in spring, 1986.