

Rapida

. . . a new oat crop
for California

C. A. SUNESON · J. T. FEATHER

RAPIDA, A NEW OAT VARIETY, features quicker development than any other normally winter-sown feed grain (barley, oats, wheat or rye). Considered more a "new crop" than a new variety, Rapida came from a double hybridization of a cultivated oat variety with the wild oat, *Avena fatua* L. In the Davis area, it has been planted July 1 and harvested (mature grain) early in September—suggesting the possibility of growing three successive crops in some parts of California.

Rapida should be useful in many special situations: in near-desert areas farmed without irrigation, because of its drought resistance; where double cropping under irrigation will give an alternate crop choice; where a short-term cover crop or a quick pasture is needed; for a salvage crop after flooding; or for habitually late-planting operations. When sown during the summer, Rapida has matured in 70 to 75 days. Under "optimum conditions"—with more time to grow—Sierra or Curt oats have been more productive than Rapida.

The extreme earliness of Rapida oats resulted from a double crossing to selections of wild oats by utilizing an out-crossing technique under development since 1949 to circumvent the usual difficulties in developing oat hybrids. Core features of the out-crossing technique were the use of cultivated types of monosomic oat females (with both a missing chromosome, and partial self-sterility) and direct application of wild oat pollen (without emasculation). In the succeeding generation, the desired hybrids from wild oats comprised about half of the offspring and were readily identifiable.

Rapida is an F₃ generation selection made in 1961. It shows none of the weedy traits typical of wild oat. Its grains are white with an awn on the primary floret of each spikelet. The grains thresh mostly in a manner to be classed as *Avena sativa* L. Height, straw strength, leafiness, shattering, and test weight are all average. Tillering is relatively poor. There is built-in protection from crown and stem rust and BYD virus. There is no seed dormancy.

Low tillering characteristics are associated with the rapid development of the variety and heavier seeding rates are necessary. However, although frost generally damages Rapida less than comparably developed barley or wheat, early winter planting will often result in flowering in the frost period—in which case, seeding rates of less than 40 lbs of seed per acre are recommended. This seeding rate will delay maturity and also will spread the flowering of the tillers on each plant. Quick development of the variety generally helps avoidance of drought and diseases.

Foundation seed of Rapida was produced in 1966 and seed stocks should be generally available following the 1967 harvest.

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WHITEWASH

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Whitewash applied to the leaves of Persian walnut trees of the Payne variety showed no injury to the leaf and did not interfere with photosynthesis. There was no significant effect on total yield in the whitewash tests, but the percentage of larger, sound nuts increased. These studies also indicated that temperatures above 90° F were very detrimental to photosynthesis and temperatures of 95° F or above stopped it completely.

GROWERS HAVE QUESTIONED the short- and long-time effect of whitewash on walnut leaves and trees. Would such spraying of leaves adversely affect the leaves and trees? Would the shade produced by the whitewash reduce the photosynthesis rate?

This study was conducted at the Summerland Research Station, British Columbia, Canada, in the summer of 1965. Specific aim was to study the effects of whitewash on the net assimilation rate (NAR) of individual leaflets (Persian walnut leaves usually consist of five leaflets). A study was made of the effects of whitewash on the net assimilation rate of the leaflets, as influenced by temperature and by light intensity. Net assimilation rate is a measure of the net carbon dioxide uptake by the leaf during photosynthesis.

Trees under test were of the Payne variety on northern California black walnut rootstock grown in 40-gallon drums. The trees were on 2-year-old rootstocks and had 1-year-old tops. The trees had been shipped from California for the tests. Temperature control was obtained by moving the trees in and out of a green-