



This is the first article of a series featuring the agricultural field stations operated by the University of California. The stations are located from the Oregon to the Mexican borders. A brochure locating and describing all of the field stations is available free. Write to AGRICULTURAL PUBLICATIONS, University Hall, University of California, Berkeley 4, California.

**F**ARMING is "different" in the low elevation desert areas of southern California. Summer temperatures reach 125°F; winter temperatures are mild; and the growing season is 365 days a year. Water is needed in abundance in the area, not only to irrigate crops, but to leach out salts from the soil. Nearly all of the farming land is near or below sea level.

This land was not used for farming until 1900, at which time water was brought in from the Colorado River. Most of the first crops were those that would yield a quick harvest; but when feed was produced in quantity, the livestock industry also moved in. From this beginning, farming in the desert areas has grown into big business with the annual gross value of agricultural production in Imperial County alone adding up to about \$160 million in recent years.

By 1908 the need for an experimental station to investigate agricultural problems peculiar to these areas was recognized. Four years later, through the cooperation of interested individuals and the County Board of Supervisors, the Imperial Valley Field Station was established at Meloland, about seven miles east of El Centro on Highway 80.

From an original site of 10 acres, the Station has been expanded over the years to its present 250 acres. Facilities now include an administration building, greenhouse, shop and other buildings, as well as housing for 12 permanent staff members. From the original work on field crops, experimental programs have ex-

Lettuce breeding trials produced the new downy-mildew-resistant Calmar variety, especially adapted for the Salinas area. Weather conditions and absence of insect vectors allow use of seed without a low mosaic index.

New M-100 onion developed and recently released as a breeding line by the University is adapted for the southern areas of the state. Valuable qualities of this variety include earliness, depth of bulb and resistance to bolting.

Animal husbandry investigations include these feed utilization trials with cattle in digestion stalls. Input and excreta are carefully weighed and analyzed to determine how much of the feed is utilized by the animals.



panded into four major areas: vegetable crops, animal husbandry, agronomy and alfalfa breeding. This year the Station celebrated 50 years of service to farmers in the desert areas including the Imperial, Palo Verde, Bard and Mexicali valleys.

Among the Station's major contributions to desert agriculture can be listed the development of several new crop varieties including: Calmar lettuce, Imperial flax, Imperial kafir, Burseen clover and the M-100 onion. Work at the Station also led to development of suitable livestock shades and pens for desert area ranching. Many of the irrigation practices, including those now being used by desert area sugar beet producers, resulted from experimental work at the Station.

Some of the current research projects at the Imperial Valley Field Station are:

- *Small grains* improvement work for the Imperial Valley: George F. Worker, Jr., Superintendent, Imperial Valley Field Station; Charles W. Schaller, Agronomy Department, and C. A. Suneson, USDA, Agronomy Department, Davis.
- *Cotton improvements* for desert areas: Worker and Peter Van Schaik, USDA, Brawley.
- *Sugar beet* culture and climate study: Worker; Robert S. Loomis, Agronomy Department, Davis, and Albert Ulrich, Soils and Plant Nutrition Department, Berkeley.
- *Sorghum and corn*—genetic basis of breeding improved varieties: Worker and Dale G. Smeltzer, Agronomy Department, Davis.
- *Hormonal adjuvants* in lambs grazing alfalfa pasture: William N. Garrett, Animal Husbandry, Imperial Valley Field Station, El Centro; W. C. Weir and M. T. Clegg, Animal Husbandry, Davis.

- *Foundation seed* increase: William George, Agronomy Department, Davis; Worker, and Frank G. Parson, Agronomy Department, Davis.
- *Flax, safflower* and other oil crops research of the Imperial Valley Field Station: Worker and Paul F. Knowles, Agronomy Department, Davis.
- *Sorghum varieties*—relative feed values: Garrett and Worker.
- *Beef cattle*—the effect of environment on feed utilization: Garrett.
- *Livestock* environmental studies: Garrett; C. F. Kelly, Agricultural Engineering, and T. E. Bond, USDA, Agricultural Engineering, Davis.
- *Vitamin A* studies with feedlot cattle: Garrett and J. H. Meyer, Animal Husbandry, Davis.
- *Breeding alfalfa* adapted to desert valley areas of Southwestern United States with special emphasis on resistance to the spotted alfalfa aphid: William F. Lehman, Imperial Valley Field Station; Ernest H. Stanford, Agronomy Department, Davis; Donald C. Erwin, Plant Pathology Department, Riverside; Sterling J. Richards, Department of Soils and Plant Nutrition, Riverside; and Frank V. Lieberman, Entomology Research Division, ARS, USDA, Tucson, Arizona.
- *Tomato*—development of insect and disease resistance, improvement in quality and yield, adaptation to mechanical harvesting, and inheritance studies: G. C. Hanna, P. G. Smith, and C. M. Rick, Vegetable Crops Department, Davis; and O. D. McCoy, Vegetable Crops, Imperial Valley Field Station.
- *Lettuce*—development of insect and disease resistance, improvement in quality, yield and inheritance of characters: J. E. Welch, F. W. Zink, G. M. Kihara, Vegetable Crops Department, Davis; McCoy; R. G. Grogan and K. A. Kimble, Plant Pathology Department, and W. H. Lange, Entomologist, Davis.

- *Carrot*—development of insect and disease resistance, improvement in quality, yield and inheritance of characters: Welch, Zink, Kihara, A. H. Millett, Vegetable Crops Department, Davis; McCoy, Grogan and Kimble.
- *Onion*—development of insect and disease resistance, high quality and yield; inheritance of characters: G. N. Davis, Vegetable Crops Department, Davis; and McCoy.
- *Cucurbits*—development of insect and disease resistance, high quality, and yield; inheritance of characters: Davis, A. R. Spurr, Vegetable Crops Department, Davis; and McCoy.
- *Phosphorus studies* on effects of sources and of continuous applications of phosphorus fertilizers on available soil phosphorus as related to yield and plant composition of various vegetables: O. A. Lorenz, Frank H. Takatori, Kent Tyler, Vegetable Crops Department, Riverside, and McCoy.
- *Effect of crop rotation* and manure on growth of soil micro-organisms and yield of cantaloupes: Lorenz, McCoy, and J. B. Kendrick, Jr., Plant Pathology Department, Riverside.
- *Physiology and quality* of vegetable crops—reaction of vegetable crops to applied chemicals, exclusive of nutrients: McCoy, C. A. Shadbolt, Vegetable Crops Department, Riverside; B. J. Hoyle, Superintendent, Tule Lake Field Station; and J. C. Bishop, U. S. Cotton Field Station, Shafter.
- *The effect of various plant protectors* on the growth of cantaloupe and tomatoes. The effect of bed direction on bed temperature: Shadbolt and McCoy.
- *Asparagus studies*—brush vigor and earliness: Takatori, McCoy, and J. I. Stillman, Vegetable Crops Department, Riverside.
- *Labor requirements*—lettuce harvest in Imperial Valley: McCoy, J. H. MacGillivray, and Mike Zahara, Vegetable Crops Department, Davis.

Crop rotation plots show beds (front to back) of sugar beets, cantaloupes, alfalfa, barley and more cantaloupes. The study is to determine the best rotation crops with cantaloupes in the low elevation desert areas of southern California.

Breeding alfalfa varieties adapted to the lower desert valley areas is a major program at the Station. Tensiometers indicating soil moisture were used as part of a study to determine irrigation water needs of alfalfa and effects on plants, soil and disease incidence.

