

Safflower, one of man's oldest crops, appears to have found a new home. It shows promise of becoming one of Arizona's major field crops. From an insignificant 325 acres in 1959, the acreage has increased to the 60,000 or more acres harvested in 1962.



**THE AUTHOR MEASURES** height of an excellent field of Gila Safflower in the Salt River Valley.

## Arizona's New Glamour Crop

D. F. McAlister

It is estimated that the average safflower yield for Arizona from the 1962 harvest will be between 2,500 and 3,000 pounds per acre. The range in yields reported has been from zero for a few unharvested fields to over 5,000 pounds per acre. The extremely high yields reported were from skip-row plantings where the outside safflower rows could take advantage of the moisture and fertility of the skip area. Some yields of over 4,000 pounds per acre were reported from solid plantings.

### Good Despite Late Plantings

The 1962 safflower yields were surprisingly high, considering that a considerable portion of the reported acreage was planted after the recommended date for planting. The unseasonably cool weather during May was especially favorable to late plantings. Usually, the warm weather in May stops vegetative growth and the yield from late planting is reduced.

There are several reasons why safflower is well on the way to becoming a permanent crop in Arizona. Of prime impor-

tance, safflower is best adapted to arid and semiarid areas. Because of disease and harvest problems, this crop does not do well in the more humid parts of the world.

Also, of special importance to a new crop, there is a good market for safflower oil. Safflower oil is chemically unique among natural oils in that it is composed mostly of unsaturated fatty acids—73 percent or more of linoleic acid, about 20 percent oleic acid and only 6 to 8 percent of saturated fatty acids. With such a composition, safflower oil has excellent potential for industrial use in paints and varnishes and as an edible oil.

### Madison Avenue Boost

There is little doubt that the recent publicity given to the use of "unsaturated

fats" in the human diet has resulted in a very favorable marketing status for safflower oil. Prices paid to Arizona safflower growers have increased from about \$70 per ton in 1958 to as much as \$100 per ton in 1962.

Another reason for the ready acceptance of safflower by Arizona farmers is that it can be grown without additional capital investment in equipment. The machinery and cultural methods used for existing crops can readily be adapted for planting, cultivating and harvesting safflower. This crop also fits well into the cropping scheme for most Arizona farmers, being grown as a winter crop in the southern counties and as an early summer crop at higher elevations in the state.

### No Processing Problem

Still another favorable part of the environment for safflower in Arizona is that the same mills that crush cotton seed can be adapted to processing safflower seed. Since the establishment of acreage restrictions on cotton, our cottonseed mills have been operating far below capacity. Lack of processing facilities is often a serious obstacle to the development of a crop such as safflower in a new area. It is well known that the cost of shipping a bulky farm product such as safflower seeds long distances for processing greatly reduces the net returns to the grower.

Arizona safflower growers are also fortunate to have the variety Gila, which is a well-adapted, high-yielding variety with a good oil content. Perhaps more important, Gila is resistant to *Phytophthora* root rot, a fungus disease which occurs naturally in many of Arizona's farm soils. Excepting possibly U.S. 10, the other safflower varieties available are either not adapted or else susceptible to the strain of this disease found in Arizona.

The safflower research program sponsored jointly by the Arizona Agricultural Experiment Station and the U. S. Agricultural Research Service developed the Gila

*(continued on next page)*

Dr. McAlister is head of the Department of Agronomy.

## Greenlee County Safflower Looks Good



This vigorous field of safflower near Duncan, Ariz., is getting scrutiny from the experts.

Left to right: Harold Young, a federal safflower worker; Wilbur Lunt, farmer on whose farm the crop is being grown; Norris Gilbert, U. S. Department of Agriculture safflower investigator; and at extreme right Ernest Foster, Greenlee County extension agent.

Dr. Fred Turner, U of A experiment station superintendent at Safford, took the above photo in July, 1962. The crop was expected to yield a ton and a half to two tons per acre of the precious oilseed.

*(continued from previous page)*

variety in 1958. It also made possible recommendations for the cultural practices presently used in growing this crop.

### Seek Thin-Hulled Variety

Many new developments will result from research now in progress. The immediate goal of the Experiment Station safflower project is to develop a variety with a thin seed hull. Seeds of all present commercial varieties have a thick hull which must be removed by processors before oil extraction if a high protein content meal is produced. Even with present processing equipment, removal of the hull before processing is sometimes difficult.

When the oil is removed from seed of the present varieties without decorticating (removing the hulls) the resulting meal has a protein content of only 18 to 21 percent. Meal from decorticated seeds has a protein content of 40 percent or more, and is much more valuable as a supplement for livestock, dairy and poultry feeds.

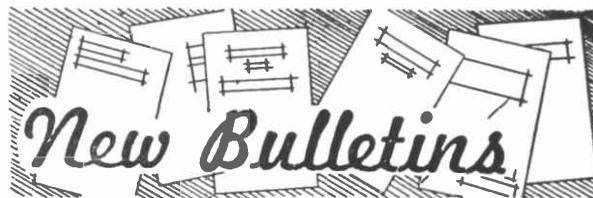
In 1955 Dr. D. D. Rubis of The University of Arizona discovered a mutant strain of safflower which has an almost paper-thin hull on the seed. Unfortunately, the plants produced from this mutant parent were weak-stemmed and low in yield. The transfer of the thin-hull char-

acteristic to a commercial variety is nearly completed. When the new thin-hulled variety is in production, the processor will no longer need to remove the hull from safflower seed to produce a high protein meal.

### Seek Other Goals

Progress is being made in other objectives of this experiment station's safflower breeding program. Principal areas of emphasis include the development of varieties which have a higher yield, more oil and more disease resistance. Significant progress is also being made in the development of hybrid safflower, a goal in most plant breeding programs where the advantages of hybrid vigor are not already being realized.

The great variation in safflower yields in Arizona in 1962 indicates the need for expanded research. It is also possible that many growers are not carrying out the best cultural practices already known for this new crop. However, if present trends continue, safflower probably will find a permanent place in Arizona's agriculture.



### Circulars

- 148 (Rev.) — Fruit Insect Control Hints
- 149—In Furniture, the Finish Counts
- 160 (Reprint)—Tailor Your Draperies
- 206—An Easy Way to Iron a Shirt
- 267—Balanced Nutrition for a Healthi-

## Snowflake Site Of Northern Arizona Field Day

Robert V. McKnight

Northern Arizona farmers recently learned more about irrigating efficiency, control of tansy mustard and bindweed, alfalfa, grain sorghum, and hybrid corn. Scene was the farm crop field day of The University of Arizona at Snowflake.

University of Arizona agricultural scientists said that since agriculture in northern Arizona is closely interwoven with livestock and dairying, hay, pasture and silage crops are most important there.

"Forage crops are especially suited to higher elevations of Arizona where winter temperatures are low and the growing season is short compared to southern Arizona," they added. Visiting farmers toured the Snowflake station, examining various varieties of alfalfa, sorghum, and corn.

### Area Has Special Problems

"There are special problems in northern Arizona because of great differences in climate and soil in the irrigated valleys of these higher elevation areas," explained Dr. D. F. McAlister, assistant director, U of A Agricultural Experiment Station.

Problems concerned with controlling tansy mustard in alfalfa and field bindweed in both crop and non-crop land were outlined by Dr. K. C. Hamilton, U of A agronomist.

"Tansy mustard is a fairly serious annual weed in the first cuttings of alfalfa in several high elevation counties," he said.

"Most farmers ignore the weed, since  
*(continued on next page)*

The author is an information specialist in the Agricultural Extension Service.

cr, Happier You  
284—Improving Teenage Nutrition

### Bulletins

- A-22—Dates in Arizona
- A-23—Descriptions and Habits of Arizona Cotton Insects

### Folders

- 68—List of Arizona Farm & Home Publications
- 97—Soil and Petiole Analyses Can Pinpoint Cotton's Nitrogen Needs
- 98—Controlling Mesquite with 2,4,5-T