

### Irrigation Cut-Off Dates

|         | Cut-Off Date | Acre-Feet Used | Bale Count/Acre | Gross Profit |
|---------|--------------|----------------|-----------------|--------------|
| Field 1 | 8/ 2/65      | 3.84           | 3.80            | \$239.56     |
|         | 8/20/65      | 4.68           | 3.89            | 232.57       |
|         | 9/ 2/65      | 5.72           | 3.78            | 194.81       |

\* \* \* \* \*

### SPRINKLER VS. FLOOD IRRIGATION OF COTTON

K. R. Frost, Agricultural Engineer

Low-rate sprinkler irrigation was tested on grain sorghum and cotton at the Campbell Avenue Farm. One-half the rows in each of the treatments were strip-mulched with asphalt for germination in the cotton plantings. Ten per cent more plants were obtained with the petroleum treatment compared with treatment without mulch.

Irrigations were applied on all treatments as indicated by the plants. The sprinkled plots received 3.05 ac.-ft. per acre on the cotton and 2.32 on the sorghum, while the flooded received 3.23 on the cotton and 2.40 on the sorghum.

Seed-cotton yields are listed in the table and indicate about the same result from all treatments. The better stand from the petroleum-mulch treated did not result in significant differences in either sprinkled or flooded plots. Both treatments were planted to a stand and not thinned.

Even though a very low rate of application with the sprinklers (0.12 in./hr.) was used, the cotton required less water than with the flooded plots. More seed cotton in pounds per acre-foot was obtained with the sprinkled plots than with the flooded.

Sprinkler vs. Surface  
1966 Irrigation of Cotton  
Campbell Avenue Farm

| Irrigation<br>Method | Treatment          | Water Applied<br>Ac. ft./Ac. | Yield S. C.<br>lb. per Acre | Seed Cotton<br>lb. per Ac. ft. |
|----------------------|--------------------|------------------------------|-----------------------------|--------------------------------|
| Flooded              | Petroleum<br>Mulch | 3.23                         | 2923                        | 920                            |
|                      | Non- P.M.          | 3.23                         | 3054                        | 945                            |
| Sprinkled            | Petroleum<br>Mulch | 3.05                         | 3136                        | 1028                           |
|                      | Non- P.M.          | 3.05                         | 2962                        | 971                            |

\* \* \* \* \*

IRRIGATING PRESENT-DAY COTTON VARIETIES WITH TECHNIQUES  
DETERMINED FROM PAST RESEARCH STUDIES

Leonard J. Erie, Irrigation Engineer, USDA  
Orrin F. French, Hydraulic Engineering Technician, USDA

From studies conducted several years ago, an optimum technique for developing an irrigation schedule was determined for Acala cottons, the popular type at that time. These studies showed that consumptive use fluctuated between years and, thus, the irrigation schedules also differed between years. Research was initiated in 1966 to evaluate the adequacy of these irrigation recommendations for several new varieties recently introduced in Arizona.

In the past, irrigations were prescheduled on the calendar, then modified according to plant physiology "thirst" signs -- slight wilting in the afternoon, internode redness, leaves showing a dark bluish-green color, and a definite lack of new growth.

Consumptive use measurements were made throughout the growing season on all varieties to determine seasonal water use, pattern of use, and time of peak use by each variety. Two pickings were made, the first by hand, the second by machine. Samples were taken for lint-percentage determination. Yield results do not include "rooded" cotton.

Early-season cotton growth and water use indicated a rather normal but high-producing year. Dust storms occurring on August 17 and 18 may have affected total yield, yield variation between varieties, and total seasonal consumptive use. All varieties were affected, and both open and green bolls were damaged in varying amounts. Considerable secondary growth occurred after