

R. K. THOMPSON, at left, and Dr. M. H. Schonhorst, right, observe comparable yields of hay from summer-irrigated and non-summer irrigated plots. Piles of bales are from the fifth cutting in 1959.

DOES IT PAY TO IRRIGATE ALFALFA IN THE SUMMER?

M. H. Schonhorst, R. K. Thompson, and R. E. Dennis

Alfalfa in southern Arizona frequently is not irrigated during July and August. This practice induces the plants to go dormant. Alfalfa is not irrigated during this time because of the demands for water by other crops and as a measure to control the growth of summer annual weeds in the alfalfa.

A test was made at the Mesa Branch Experiment Station during the period 1959 to 1962 to study the effect of induced summer dormancy on hay yields and persistence of stand of Moapa alfalfa.

Given Phosphate Fertilizer

A uniform application of 200 pounds per acre of P_2O_5 was disked into the soil during seedbed preparation. In addition, annual applications of 100 pounds of P_2O_5 per acre were made to all plots in January each year thereafter.

The 24 borders used for the test were planted January 15, 1959. A buffer border 33 feet wide was used between the plots for the two levels of irrigation. This permitted application of water to summer irrigated plots without influencing results obtained on nonsummer irrigated plots.

Cuttings were made when 10 to 25 percent of the plants were flowering.

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In the spring, fall and winter when temperatures were cooler and day lengths shorter little flowering occurred. During this time cuttings were made when shoot and bud re-growth at the crown of the plants had reached approximately two inches in height.

Cut With Equal Frequency

Seven cuttings were made during the first, and nine during the second

and third years of this study. Both summer irrigated and nonsummer irrigated plots were cut the same number of times each year. However, the nonsummer irrigated plots usually produced less than one-fourth ton per acre for the two midsummer cuttings.

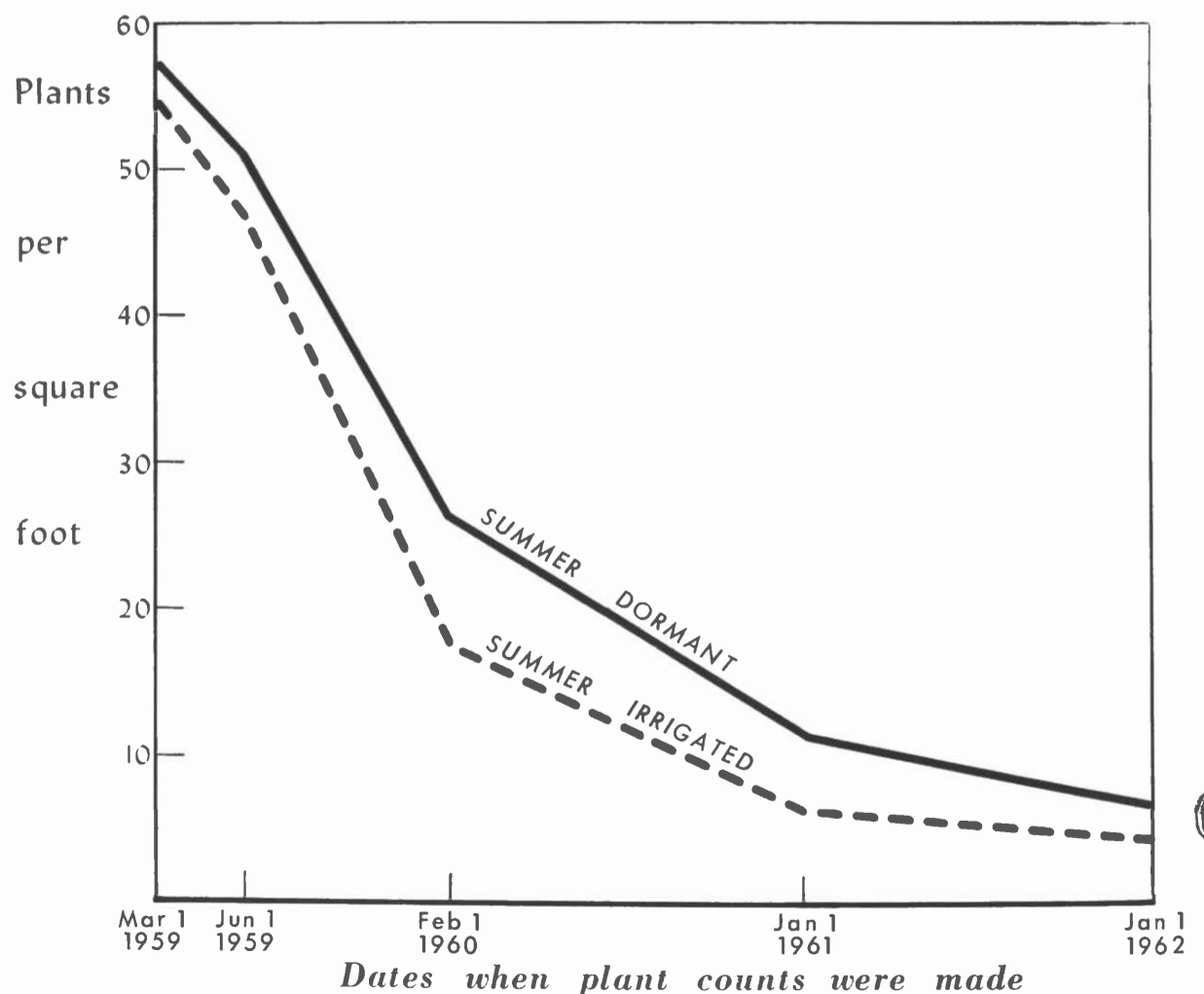
Rains which fell during the summer dormancy period of 1960 and 1961 favored the nonirrigated plots. In some instances, these rains followed shortly after irrigation and caused the summer irrigated plots to receive excessive moisture.

Summer irrigated plots received about six and one-half acre feet and nonsummer irrigated plots about five acre feet of irrigation water per acre each year. An average of 14 irrigations was applied to the summer irrigated and 10 irrigations to the nonsummer irrigated plots each year.

Difference Is Slight

Alfalfa plants irrigated during the summer produced more forage each year than those not irrigated. However, during the second and third years, yield increases for the summer

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irrigated plots were only about half a ton per acre greater than from plots not receiving summer irrigation.

Data in the table below show the amount of baled hay produced for both irrigation treatments. Summer irrigated plots produced slightly less than eight tons the first, 12 tons the second and 10 tons the third year, with an average production of 10 tons of air dried baled hay per acre per year. Non-summer irrigated plots produced 6.9 tons the first, 11.5 the second and 9.5 the third year, with an average production of 9.3 tons of air dried baled hay per acre per year.

In the spring and early summer of 1962, four harvests were made prior to the termination of the study. During this time the over-all average yield was nearly 3.9 tons per acre for both irrigation treatments. During the corresponding period for 1960 and 1961, the average yields were 6.6 and 5.2 tons per acre respectively.

Study Decline in Stands

To find out how much the stand declined in both summer irrigated and non-summer irrigated plots, plant counts were made on five different dates, as shown in the accompanying graph. On March 1, 1959, two months after planting, there were 57 plants per square foot in the summer dormant and 55 in the nonsummer dormant plots. Three years later the number of plants had dropped to seven for the summer nonirrigated and four per square foot for the summer irrigated plots.

During the first year of production there were no summer annual weeds in either the summer irrigated or non-summer irrigated plots. However, with the decline of plant population during the second and third years, weed infestation occurred in those plots receiving summer irrigation.

Hay production (pounds) of Moapa alfalfa on summer dormant and summer irrigated plots, 1959 to 1961.

Year	Yield		
	Summer Dormant	Summer Irrigated	Difference
1959	13,829	15,861	2032
1960	22,942	23,957	1015
1961	19,025	20,198	1173
Average	18,598	20,005	1407

Irrigation of Moapa alfalfa during the summer, without a period of in-



Cochise County

KAWT, Douglas—6:15 a.m. Mon. through Fri.

KHIL, Willcox — Mon. thru Fri., 2 p.m.

Coconino County

KCLS, Flagstaff—Tues. and Thurs., 8:20 a.m.

KGLS, Flagstaff (Home Agent) — Thurs., 9:45 a.m.

KPGE, Page — Fri., 2:30 p.m.

Graham County

KATO, Safford — Sat., 9:30 a.m.

Maricopa County

KTAR, Phoenix — Mon. thru Sat., 5:30 a.m.

KUPD, Phoenix — Mon. thru Sat., 5:30 a.m. and 12:25 p.m.

KPHO, Phoenix — Mon. (cotton report) 12:40 p.m.; Thurs. (dairy and livestock report) 12:40 p.m.

Navajo County

KDJI, Holbrook — Tues., 1:00 to 1:15 p.m.

Pinal County

KPIN, Casa Grande — Mon. thru Sat., 6:55 a.m.; Mon. and Fri., 9:30 a.m.; Tues., Thurs. and Sat., 12:20 p.m.

Santa Cruz County

KNOG, Nogales — Mon., 6:30 a.m.

Yavapai County

KYCO, Prescott — Mon., Wed. and Fri., 5:55 p.m.

KNOT, Prescott — Mon., Wed. and Fri., 5:35 a.m.

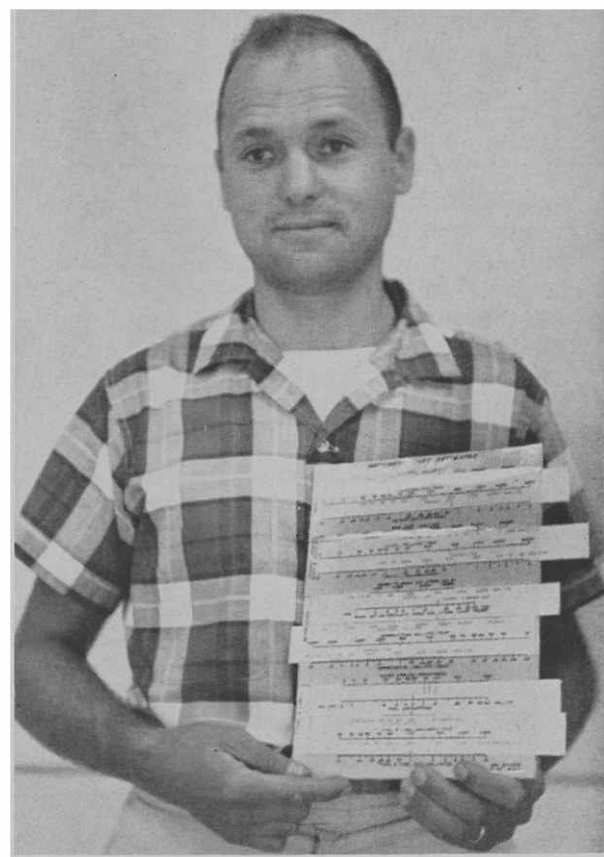
Yuma County

KVOY, Yuma — Mon. thru Fri., 5:45 a.m.

KYUM, Yuma — Mon. thru Fri., 6:25 a.m.

duced dormancy, increased yield of hay by about one ton per acre during the year of establishment. Yield increases from summer irrigation during the second and third years were about half a ton of hay per acre per year. Summer irrigated plots received about one and one-half acre feet more irrigation water per acre per year than those not summer irrigated.

Larsen Wins Award For Cost-Computer



Holding some of the intricate slide rule devices which he has designed is William E. Larsen, extension farm machinery engineer with The University of Arizona.

At the annual meeting of the American Association of Agricultural Engineers a blue ribbon award was given Larsen for this entry.

The intricate computing system makes it possible for a farmer to estimate closely the cost of different types of machine operations — plowing, cultivating, field chopping of green feed, filling silo, land leveling, cotton harvesting, etc.

From such computations a farmer may quickly estimate which of variable choices is best for him, either quickest, cheapest or utilizing machinery which he owns.

Five-Sixths of Arizona Isn't Privately Owned

Of Arizona's 72.7 million acres, 31 million are in federal ownership, 8.7 million in state and 12.6 million in private ownership. Also, Indian lands account for over 19 million acres. They can't be called "public" because they are private, tribal holdings.

Nearly 25 million acres of federal land are under lease to stock growers in Arizona. So is much of the state's public acreage.