

# Control Mesquite BY FIRE

Killing Even the Tops of Trees  
May Prove to be Very Beneficial

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The mesquite common in southern Arizona can be killed back to the ground by running grass fires. The smaller trees are usually killed back whenever there is fuel enough for fire to carry. About 10 percent of the trees that are top killed in this way do not stump sprout. As someone remarked, "It kills 'em dead and they stay dead."

The other 90 percent send up stump sprouts from the buds that are always present near or just below ground level. Unless there is fuel close to the base of the trunk, the fire may not be hot enough to top-kill the larger trees.

## June Best Time to Burn

Late June, just before the start of the summer rains is a good time to burn. The kill may be almost as good, though, from late fall burns.

The fact that relatively few mesquites are killed completely does not indicate that fire has no place as a control measure. A brief analysis of the problem shows that fire may be an effective tool and that killing even the tops of the trees may be very beneficial.

Studies made at the University of Arizona have shown that mesquite is wasteful of water. Mesquite takes more than four times as much water to produce a pound of dry matter as does Rothrock grama or curly mesquite.

When the trees or their tops are killed, this moisture loss stops. Even those that stump-sprout grow very slowly and many years will elapse before they will be large enough to use more than a small fraction of the water they originally did.

One fact needs no emphasis in most of Arizona: moisture for plant growth is limited. There is not enough to go around and any used by low-forage-producing plants means that less is available to produce forage.

Although only about 10 percent of the mesquites were killed completely by burning, this does not mean that fire is never more effective than this. The 10 percent kill was observed on one burn in June and one in December. There is much that is not known about mesquite and further study may yield quite different results. There is some indication that this is so.

One report on work done by the University in 1910 stated that mesquite was killed by burning. Another,

based on observations made in 1934, stated that 50 percent of the mesquite burned in each of two fires was killed.

## Many Fires

There is no doubt that fires were a common occurrence at one time on most range lands now infested with mesquite. These ranges were covered with grass and burned readily from fires set by Indians or lightning. Fires not only kept mesquite from becoming established; they killed most other shrubs as well.

Although there have been few fires on our mesquite-infested range lands for at least 40 years, evidence still exists that fires did occur there at one time. A few old mesquite trees always grew along the washes where the soil was too rocky and the grass too thin for fire to burn very hot.

A recent survey was made of trees along some of these washes. The survey showed that 69 percent of the old mesquites 14 inches or more in diameter still had old fire scars that contained fragments of charcoal.

There is no escaping the fact that fire that burns up noxious plants also burns up feed. This objection can be countered by two principal facts.

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▲ Mesquite control by fire, Page Ranch,

▼ Foothills of the Santa Rita Mountains in 1903. (Bureau of Plant Industry Photo.)



▼ Same area shown in Photo No. 1, re-photographed in 1947, after 45 years of no fires. (Forest Service Photo.)



## Late Spring Lettuce

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wrap, shape, butt, rib, presence of Tip Burn and Rib Discoloration for each strain. Size data were taken by individual head grading and counting from 200 feet of bed. Marketable heads included four dozen and five dozen per crate sizes only. In most of the strains, over two-thirds of the marketable heads were the more desirable 4 dozen size.

As each lot was packed in the shed, sample iced crates of fifteen strains were taken from the line and rushed to a storage room at the University of Arizona, Tempe farm. These crates were held in storage at 34°F. for thirty days, opened at room temperature for one day and then examined for keeping quality.

### Best Strains Noted

Comparisons between the twenty-eight strains tested in regard to all the characteristics were made from the data assembled. Of special interest are the following: Best strains yielded well over 80% cut-out. Two strains, Imperial 615-Ferry Morse strain 383 and Woodruff's variety A36, showed poor yields.

Color was remarkably uniform between the lots, and Ferry Morse variety K1 was the best desirable dark green. There was little variation in wrap; all strains were quite satisfactory in this character. Shape was fairly good throughout.

There was more variation in rib type than in other characters. Contrary to general belief, the Imperial 615 type did not have the best ribs although their ratings were reasonably high. Desirable rib characters were shown by Dr. Thompson's #4164 which contrasted greatly with Great Lakes 428 that had extremely thick and curved ribs.

Tip Burn and Rib Discoloration are the two head maladies which most

## Why Not Ag Economics?

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The Agricultural Economics Department at the University of Arizona has outlined a course of study which best prepares the student for work in the diverse group of positions listed. It offers the Master's Degree for those who care to pursue graduate study.

Students interested in this field—the business aspects of farming—should contact the Department Head and arrange a program of work which will best achieve their desired goals or which will put them in positions of high demand upon graduation.

seriously affect the marketability of late spring lettuce. While neither disease appeared in severe form in the Earl Recker Farm, their presence was noted when found and the resultant ratings given varieties on susceptibility to these troubles give good indication of the suitability of the strains for the late spring crop. Dr. Thompson's #3867 was the only strain in the test entirely free of either disease.

### Storage Results

The number of marketable heads left in a crate after as long a period as 31 days gives a good indication of the ability of the strain to withstand storage shipping. Of the fifteen strains subjected to the storage test, Great Lakes 428-Loomis was the best. Ferry Morse Great Lakes 1180 had the poorest keeping quality.

In this grower cooperative test conducted as a late spring lettuce variety trial for the 1952 season, Ferry Morse Great Lakes 366A was judged best of the trial on the basis of good storing ability, good head characters and high yield.

### Selected Lettuce Varieties and Strains with Yield Data (28 strains tested)

Variety	Strain	Source	Yield as % Marketable Heads
Great Lakes	366 A*	Ferry Morse	82.4
Great Lakes 59	67095	Associated	84.9
Great Lakes 428	1-505	Loomis	66.3
A 36		Woodruff	45.4
Special	3188	Thompson U.S.D.A.	69.5
Special	20965	Whitaker U.S.D.A.	64.0
Imperial 615	385	Ferry Morse	69.7
Imperial 615	27563	Associated	41.8
K 1	34362	Ferry Morse	58.6

\*Best of 12 Ferry Morse Great Lakes Strains tested.

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The first of these is that everything, even range land, costs something to maintain.

The second is that if burning is done in June, the summer rains and new feed are just around the corner. Cattle won't eat the dry feed anyway when the green feed comes on. One has to decide whether he can afford to sacrifice a little feed today to do a job that 10 or 20 years from now will cost twice or four or ten times as much.

### Need Grass to Carry Fire

The major obstacle to burning today is the lack of grass to carry a fire. In some places and in some years this is true. In a thick stand of mesquite the trees use up all the water and little grass can grow even without a hoof of stock on the ground.

However, there are still many areas where mesquite, cholla, burroweed and other shrubs are just coming in that will burn in some years. In places of this sort fire can be used effectively in maintaining and improving a range.

## Costs of Pumping Water Compared

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natural gas wells, an increase in lift from 150 to 300 feet resulted in an increase in operating costs from \$3.25 to \$5.25, or \$1.33 per additional 100 feet of lift.

The cost advantage of natural gas over electric wells is much less at the shallower lifts. As the lift increases, the cost advantage of gas over electricity increases. This relationship is a result of the high initial installation cost for a natural gas unit coupled with a steeply graduated natural gas cost rate. As the amount of gas used per month increases, the average cost per unit decreases rapidly.

Other factors such as dependability, convenience and initial cost should, and do, influence the type of power to be selected. Under conditions as they exist at the present time in Pinal County, natural gas appears to be a cheaper source of power than electricity assuming a five year write-off on the equipment.