

Fire Science At Texas Tech

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FIRE ecology at Texas Tech, at least with reference to agricultural operations, had its beginning in 1967 as a part of the brush research program in the College of Agricultural Sciences. It was at that point that Texas Tech began to receive special State appropriations to support research on the control of mesquite and other noxious plant species. Brush infestation of rangelands is the number one economic enemy of ranchers in Texas.

At the very outset of the brush research program, the decision was made to find answers to some basic physical and physiological questions regarding the growth of noxious woody species and to seek innovative approaches to the problem of brush control. As an example, Henry Wright of our Range Management faculty was brought to Texas Tech to evaluate the potential that fire might have in controlling brush.

Initially, Dr. Wright and his graduate students began some exploratory burning at several locations within a 200-mile radius of Lubbock to determine what would happen to rangeland after burning. During the first year, they found that fire had tremendous potential in mesquite-tobosa communities. Tobosa grass produced two to three times its normal yield on the burned areas. Fire also appeared to be effective in burning down dead mesquite stems.

With this preliminary encouragement, Henry and his co-workers began to develop prescription burning techniques in tobosa com-

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munities. Today, he will report his results on the effects of fire on mesquite-tobosa communities.

In the fall of 1969, through the cooperative efforts of Mr. Bob Beckham, a rancher near Abilene, Dr. Wright found another plant community, Ashe juniper, where fire is well-suited as a management tool. Broadcast burning effectively kills young Ashe juniper trees, removes piles of dead trees, and if conducted at the appropriate time, increases production of little bluestem and tall grama grass as much as 50 percent. Since the effectiveness of chemicals on Ashe juniper is relatively limited, fire appears to be the cheapest means of killing the young trees. Presently, Henry is developing prescription burning techniques in this plant community.

The fire science program at Texas Tech is field oriented. Our people go out to ranches where the brush is located. Basic problems, however, are also studied in the laboratory. For example, Dr. Wright and his students are engaged in a cooperative study with the Department of Electrical Engineering on the ignition properties of mesquite wood. This work is being conducted in a fire laboratory on campus.

We believe that Dr. Wright's work to develop prescription burning techniques in the volatile juniper and the relatively non-volatile mesquite species of brush is providing a very significant contribution to the study of range management. Little of this kind of research is being conducted in the United States, and there is obviously a real need for it. It is worthy of note that Dr. Wright is quantifying differences in response of vegetation to wildfires, which generally occur after long periods of drouth, and to prescribed fires, which are generally conducted soon after rains.

Following wildfires or escapes from oil slush pits, our researchers frequently have requests from ranchers and oil companies with regard to how long it will take for vegetation to recover. Often these people also want to know how much erosion is caused by burning. At present, we do not have the complete answer to the latter question, but we are confident that it is forthcoming with respect to both juniper and mesquite communities. Dr. Wright initiated a watershed study in the juniper community last year and has written a grant proposal to begin a study on the mesquite-tobosa community in 1973.

Where do we go from here with regard to fire research at Texas

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Tech? The general plan of action over the next 5 years is to complete long-term vegetative studies and a nitrogen cycling study in mesquite-robosa communities, to continue the development of prescription burning techniques and watershed studies in Ashe juniper, to initiate a plant community study in Ashe juniper, and to begin prescribed burning studies in alkali-saccaton and salt cedar communities.

In closing, I want to say how delighted we are to have you here and to express my appreciation to the faculty and staff of Range and Wildlife Management for their efforts in preparing for this program. You have our best wishes for a most successful conference. When we at Texas Tech can be of assistance to you, please let us know.