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A Partner in Equipment Development

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During the past 35 years, several special interest groups have been associated with the Forest Service's Equipment Development Group, effectively using our skills for evaluating and developing unique equipment. Some groups functioned satisfactorily for a few years, then disbanded. However, one has persisted since 1946 and has proven its value year after year. Officially, this group does not exist; it is so loosely structured that it should not have survived; and it is so informal that there is no possibility of its achieving anything useful or being recognized for its contributions. Yet, the group's record of accomplishment during the past 37 years has been outstanding. I am describing the Vegetation Rehabilitation and Equipment Workshop (VREW), a true partner to Equipment Development.

ORIGINS

Back in 1946, some 15 to 20 range specialists got together to share their knowledge and exchange information about range seeding equipment. Recognizing the need for effective and suitable equipment, they decided to form a committee to tackle the problem. Within a short time, the group became known as the Interagency Range Seeding Equipment Committee.

When the American Society of Range Management (later, the Society for Range Management) was founded in 1948, the Interagency Range Seeding Equipment Committee began holding meetings just prior to and in the same location as the Society's annual meeting. Since many Equipment Committee participants were members of the Range Society, this scheduling stimulated attendance at both meetings, and this relationship has continued to this day.

Membership and participation grew and its composition varied over the years. In the Department of Agriculture, membership has included the Agricultural Research Service, Forest Service, Extension

Service, Soil Conservation Service, and the Agricultural Stabilization and Conservation Service; in the Department of the Interior, it has included the Bureau of Land Management, Bureau of Indian Affairs, Bureau of Reclamation, and the Fish and Wildlife Service. Representation has included various State agencies (fish and game departments, highway departments, and universities and other educational institutions); industrial representatives (chemical, equipment, mining, and seed companies); ranchers; and--more recently--environmental consultants. Many countries, including Australia, Canada, Mexico, and South Africa, also have participated.

OBJECTIVES & ACTIVITIES

The broad objectives of the VREW have been to keep abreast of the field of commercially developed equipment, to make modifications as required for adaptation to wildland use, and to develop equipment not commercially available. Generally, the work can be described as evaluating commercially available equipment; identifying development needs; developing specifications and standards; arranging for construction; evaluating results; disseminating information; and implementing the successful equipment.

The Workshop is divided into a number of active work groups that develop proposals, monitor project progress, assist in field testing, and report accomplishments. Names of these work groups include Exploratory; Information; Seeding and Planting; Plant Materials; Seed Harvesting; Steep Slope Stabilization; Disturbed Land Reclamation; and Mechanical, Chemical, and Thermal Plant Control. Over the years, other work groups have evolved as they were needed, operated as long as necessary, then disbanded.

The Forest Service Equipment Development Centers at San Dimas, California, and Missoula, Montana, normally handle project work on equipment development or evaluation activities. These professionally staffed engineering organizations were chartered by the Forest Service to help resource managers be more effective and efficient through mechanization and improved systems and techniques. This effort, however, is not limited to the Development Centers. Cooperative work is undertaken with private industry; research is conducted at universities; and trail trial projects and evaluations are being executed by field personnel.

The Forest Service, the Bureau of Land Management, and the Bureau of Indian Affairs provide most of the

financial support. In addition, these agencies and other organizations also contribute considerable time and equipment to field testing and evaluation. Based on agency needs and priorities, specific project proposals may be financed through the Workshop. For private companies with identified needs for equipment development, there are procedures for cooperative financing.

EQUIPMENT DEVELOPED

Before discussing our most recent activities, I would like to mention a few examples of equipment developed by the Interagency Range Seeding Equipment Committee. Most of this equipment was associated with range improvement work, which received heavy emphasis beginning in the mid-forties. One of the first items developed was the Rangeland Drill, which is still in demand. A version of a farm grain drill, this drill is very heavy and has independently sprung furrow arms for use on rough, irregular terrain. The Brushland Plow, a close second in popularity, is an adaptation of the Australian Stump-Jump Plow, with each disk arm separately sprung for use in heavy brush. Each arm can lift over an obstruction without raising the entire plow. Contour trenching, which has been studied frequently, brought about such devices as modified front-end plows; a small Holt Plow; the Rocky Mountain Disk Trencher; and a contour furrower that furrows, dams, seeds, and fertilizes in one operation.

In addition, the Committee has developed a great variety of seeders: the seed dribbler, interseeder, browse seeder, and various types of broadcast seeders. The collection of browse seed has long been a problem, and several attempts have been made to develop a device to collect a variety of seeds under adverse conditions. The Committee developed one truck-mounted piece of equipment, and we are still working on a backpack unit. Much activity has focused on control of sagebrush and other plant species, developments in aerial application equipment and techniques, and ground sprayers for chemicals. However, with the recent criticism surrounding the use of chemicals, greater emphasis has been placed on mechanical methods of brush control. We evaluated several types of brush cutters and crushers for various terrains and conditions, and we found thermal treatment useful in small areas for sagebrush and small conifer control. This list could go on, but these few examples show the great diversity of our endeavors and how they led us into even broader aspects of rehabilitation work.

NEW DIRECTIONS

In the early seventies, there was a rapidly growing interest in, and demand for, rehabilitation of disturbed lands--largely stemming from the environmental concerns connected with strip mining.

Because of our many years of experience in range improvement, we were suddenly called upon to help in related disturbed vegetation problems. It immediately became obvious that a new role was evolving for the Committee. Therefore, in 1973, the Committee changed its name to the Vegetative Rehabilitation and Equipment Workshop and instituted a new work group on Disturbed Land Reclamation. Since then, the overall program has become quite heavily oriented toward stabilization of disturbed lands, although project work continues on range improvement equipment.

Through equipment development efforts, the VREW produced a gouger that dispenses seeds as it builds basins; refined the Vermeer Tree Spade to transplant trees in rough terrain (as well as a transporter to make the operation economically feasible); evaluated the Howard Rotovator for mixing additives; modified a commercial manure spreader to dispense hay; built a new basin blade and a plug planter; and developed a large sod mover. Smaller, more localized devices also have been developed for disturbed land operations.

CONCLUSION

In summary, the VREW has been a true partnership between resource managers and engineers in equipment development. As mentioned earlier, it has been an informal group--no charter, bylaws, or direction by a single agency; yet, the results have been significant. Perhaps the cooperative spirit engendered by the Workshop is as important as any of its achievements. It is a classic example of what can be accomplished if no <u>one</u> is too concerned about who gets the credit!

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THE ENGINEERING FIELD NOTES SERIES is published periodically as a means of exchanging engineering-related ideas and information on activities, problems encountered and solutions developed, or other data that may be of value to engineers Service-wide. Articles are usually less than six pages, and include material that is not appropriate for an Engineering Technical Report, or suitable for Engineering Management publications (FSM 1630 and 7113).

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