


Stronger Adult Extension Programs in Range Management

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An effective adult extension program in range management must consider first the extent and breadth of the art and science of range management. Range management is the managed use of range for maximum sustained production of livestock; the final measure of a range program must be practical, efficient, and economic conversion of range forage into livestock. Conservation of the soil resources and production of the right kinds and amounts of forage largely determine the principal end product—livestock.

Developing helpful adult educational programs in range management is the primary responsibility of the agricultural extension services in the various states. These programs are serviced by county agents, county and area specialists, state specialists, and teaching and research personnel. The agricultural extension service in each state is both a federal and a state organization. It is the educational arm of the U.S.D.A. in that state but also functions as a segment of the land grant university in carrying out off-campus educational programs.

A range management extension program must be directed towards application of sound practices on range. If effective, it will help the stockman provide a better living for himself and his family through developing, maintaining, and efficiently using his forage resources. This includes the management and coordinated use of both his private and his public grazing lands.

Range Research

The prime source of information for an extension range management program is range research. Research data and its application are the bases of solving
ranch problems. Extension programs can seldom exceed the research programs. Before the potential of most ranges can be reached, further applied research will be needed to point the way.

Rangeland often has been the last agricultural resource to receive its due attention from research. This has resulted in part from:

1. Land grant universities being located in farming rather than range areas in most western states. This has encouraged research emphasis to be given cropland agriculture. The problem of travel distances has been alleviated somewhat by locating substations in the range areas.

2. Fewer ranch than farm units has further reduced priority given range research.

3. Ranchers have often been less demanding of the resources of the experiment station.

4. The science of range management and the accompanying focus on range and ranch problems is of recent origin.

5. Range research often requires many years, large acreages, and many livestock. Proven range research techniques have often not been available.

Range research needed to expedite range management extension programs in the Central Great Plains (and probably in most other range areas as well) include further study of:

1. Natural factors limiting range forage production.

2. Increases in forage production, livestock carrying capacity, and beef turn-off that can be expected from various range development practices.

3. Behavior and grazing habits of range livestock and how to manipulate these grazing habits.

4. Grazing systems based on the welfare of both forage plants and the grazing livestock.

5. Nutritive and palatability evaluation of range plant species.

6. Factors affecting nutrient intake of range livestock as a basis for supplementation of range livestock.

7. Range and ranch economics research.

More study is needed to determine the effects of type of ranch organization, livestock production programs, size of operations, range development, and grazing management on net ranch income. More efficient and economic combinations of range forage, hay, and supplements in meeting animal production requirements deserve expanded research attention.

Getting more range research underway is not the sole responsibility of the researcher. All who make use of research information have the responsibility of encouraging and expediting range research. A public awareness of research needs should be sought. Ranchers and rancher organizations are in a good position to help.

The major role played by local ranchers in establishing the Texas Experimental Ranch near Seymour, Texas, could well serve as a blueprint for action in other areas. At this Texas station, not only did a considerable part of the planning come from local rancher groups but also much of the lands and facilities needed for the research program. Rancher members of the A.S.R.M. are invaluable in promoting, suggesting, advising, assisting, and evaluating range research.

Channels of Range Management Information

The ultimate consumer of range management information must be the rancher—whether he be the owner, the manager, or the foreman. There are many channels through which range management information may reach the rancher. Information may go directly from university personnel in research, teaching, or extension to the rancher. However, an increasingly great amount of information goes through indirect routes.

Intermediate "users" of range land and livestock management information include technicians in service and land managing agencies, bankers, livestock organization officers, editors, representatives of industry, and many others. Since these groups also work with ranchers, they should have every opportunity to consult research, teaching, and extension personnel for the latest information. They in turn should be recognized as part of the clientele of the agricultural extension service.

That ranchers obtain their information from various sources is borne out by a 1955 survey made by the Washington Agricultural Experiment Station and the American National Cattlemen's Association (Table 1). This survey inquired as to what sources of beef cattle information...
tion were used and what were the chief sources. "Beef cattle information" included breeding, diseases, and marketing as well as nutrition, management, and pasture and range. Although college bulletins and state colleges of agriculture ranked about midway, their true importance is much greater inasmuch as these sources also serve as the basic source of information for other rancher contact sources of information.

The traditional flow of range management information has been from the researcher to the state extension specialist, to the county agent, to the rancher. Ranchers of today are becoming more and more specialized and are demanding specialized help. The advancement of present-day technology in all sciences has made it necessary that all handlers of information along the way be specialists. Ranchers with years of specialized experience in range management and with one or more degrees in range management or related fields are truly specialists.

Where allowance for specialization in county or other extension field staff is not made, a partial or complete block in the flow of information can result. The cause can be related directly to the impossibility of any scientist being a specialist in all fields of agriculture and related sciences today. Emphasis on broadening extension programs at the field level without providing additional depth in subject matter further aggravates the problem.

**Reasons for Ineffective Programs**

Reasons why some range counties have ineffective or no extension range programs vary but generally include:

1. Competition for agent's time from other agricultural and non-agricultural programs. This is particularly common in "one-agent" counties having diversified agriculture.

2. Pressure to expand the scope of extension programs from agriculture alone to all disciplines represented at the land grant university and to serve urban as well as rural people. This trend is most common in counties with high proportions of non-agricultural population.

3. The county extension agent lacks training in range management along with the confidence this gives in guiding a range management program. Although county extension programs are guided by the expressed needs of local people, the agent still has wide latitude in selecting fields for program emphasis in which he has greatest interest, training, and confidence. Subject matter training programs for agents with general subject matter assignments are too often impractical or ineffective. Yet, minimum subject matter understanding is mandatory to plan and guide a county range program.

4. Failure to associate the extension range program with related programs and particularly with the beef cattle program. Both the range management and the beef cattle programs have the same final goal—maximum sustained livestock production.

5. Ranchers locally unorganized and live in less accessible parts of the county, thus reducing ease of contact with the county agent.

6. Emphasis on intangible benefits of sound range management such as conservation and wise use, to exclusion of tangibles such as carrying capacity, percent calf crop, weaning weights, and net ranch income.

7. Insufficient state or area specialists to service county range management programs.

**Strengthening Range Management Programs**

The prescription for increasing vitality and effectiveness in extension range management programs varies from county to county and from state to state depending upon many social, geographical, economic, and biological factors. However, problems and opportunities affecting range extension programs commonly cross county and state lines.

The following are suggested for strengthening county range management programs:

1. Provide county or area specialists to carry out the range program locally. By-passing local field personnel by state specialists has largely been unsuccessful. Only field personnel normally have sufficient contact with local people to do effective teaching and the necessary follow-up. Providing local specialists will, in turn, allow the state specialist to function in his primary roles—training field personnel, program planning, and materials development.

2. Further develop and make greater use of A.S.R.M. section educational programs such as range judging contests, section newsletters, exhibits, tours, and field days.

3. More joint programs with local livestock producer groups and organizations. This may require organizing county or area livestock associations where they are not presently found.

4. Close coordination and cooperation with beef cattle, crops, and agricultural economics extension personnel. Joint efforts in organizing workshops and roundups, developing 4-H projects, and writing bulletins deserve high priority.

5. Greater use of adult workshops and shortcourses to concentrate educational efforts. Three- to five-session workshops, each lasting about 3 hours, have proven particularly effective in Nebraska when sessions cover related topics. One or two sessions can be held each week and workshops in several counties can be carried on at the same time.
FOR EFFECTIVE ADULT RANGE EXTENSION PROGRAMS . . .

**Figure 1.** Train extension field personnel in range management.

**Figure 2.** Expand A. S. R. M. Section educational programs.

**Figure 3.** Use research projects and facilities through field days and tours.

**Figure 4.** Hold adult shortcourses, work shops, and roundups.

**Figure 5.** Develop a State range judging program for adults and youth.

**Figure 6.** Develop programs for older youth.

**Figure 7.** Assist in training programs for agency and industry personnel.
6. Greater use of research projects and facilities in extension education through field days and tours.
7. More adult activity in the range judging program.
8. Greater emphasis on 4-H range management. Range projects adapted to older 4-H members are generally inadequate. A going youth program in range management continues to be the best adult program also.
9. Develop a county range management advisory committee or a range management sub-committee within the county program projection committee.

State and national extension range management programs can conceivably be strengthened by:

1. Providing a state range management specialist in each range state to coordinate and develop the state program. In the western states, several still have no full-time extension range management specialist.
2. Greater exchange of programs, materials, and ideas between state range specialists.
3. Active participation of state range specialists and county agents in the American Society of Range Management.
4. A greater role by state and local range specialists in applied research. The line between extension and applied research has become faint and many administrators suggest it should disappear. Regional centers for both extension and research offer many advantages.
5. Give more attention to out-of-state research while promoting more research within a state.
6. Providing a federal extension range management specialist or improving coordination at the federal level of animal, agronomic, and economic aspects of range management.
7. Continue biennial planning conferences on a regional basis for animal husbandry and range management specialists.

**Summary**

The newness of the science of range management and its interrelation with other sciences requires continued attention to maintaining the identity of the extension range management program while insuring its coordination with related programs in animal husbandry, crops, soils, and agricultural economics. Extension organization at the federal, state, and county level must consider the highly specialized nature of the science of range management.

Chairmen of departments in the land grant universities having range management responsibilities will be required to give greater attention to the extension program if the latter's effectiveness in disseminating subject matter is to be at par with the resident teaching program. Applied research must continue in high priority and activity in order to provide the basis of a sound extension range management program.

**Frequency Sampling of Blue Grama Range**

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**Highlight**

A quadrat 2 inches square satisfactorily sampled frequency distribution of blue grama but a complementary quadrat 16 inches square was needed to sample associated species. A tallying technique was developed using beads and plastic tubes.

The frequencies that species are found present in quadrats of appropriate sizes represent an abstraction or blend of density (number of plants per unit area) and dispersion characteristics. Since these characteristics of perennial vegetation are relatively stable seasonally but variable with sites and grazing treatments, frequency-sampling should be useful for the classification of sites and responses to grazing (Hanson, 1934). If so, advantages of simplicity, objectivity, and speed should be gained with the substitution of frequency techniques for commonly used cover and basal area techniques.

This paper gives the results of studies undertaken to determine procedures for frequency sampling of blue grama range. The development of frequency-sampling techniques required the selection of appropriate quadrat sizes, the determination of efficient allocations of sampling units, the estimation of a satisfactory sample size, and the instrumentation of data recording. Frequency (p) is defined as p = m/n where m is the number of quadrats containing a given species and n is the total number of quadrates observed. We express frequencies in percentage.

**Materials and Methods**

Theoretical considerations involved in determining appropriate quadrat sizes (Curtis and McIntosh, 1960) and efficient allocations of sampling units (Cochran, 1953) for frequency sampling were reviewed in a recent