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PLAN OF ATTACK ON RANGE MANAGEMENT PROBLEMS

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Four years of collection and analysis of range research data and scrutiny of literature forms the basis for the following philosophy on the method of attacking or approaching range management problems. If anything these views are conservative, but it is believed that they will produce the best results in the long run.

Range research is a very young branch of agriculture science; the unsolved and unexplored still form the greater part of this large field. The very tools which the worker needs to conduct his work have to date been inadequately developed and refined. Furthermore, it has been found necessary in most cases to devise and use new tools and methods with each new problem and field condition encountered.

The fact that the research worker has not been in a position to sit down to a new problem and determine his methods, select his tools, plan, and finally proceed with full scale field experimentation has pointed to the need for preliminary studies by means of which the investigator could develop methods and become acquainted with field conditions. It has also been felt that the limitations of field experimentation should be determined before major studies are undertaken. For example, a field experiment has certain minimum physical requirements such as area of land or number of livestock, besides those of methods, men, time, funds, etc. If a satisfactory experiment, one in which experimental error is known and which yields positive reliable results, cannot be conducted under the minimum necessary field requirements, it is useless to proceed on a larger scale. The only recourse is to change the method of attack. It is easier to change before full scale studies

are started.

Another important justification of preliminary work centers in the working out of a satisfactory balance between direct and indirect measurements. There may be exceptions, but direct measurement of factors has given promise of yielding the more desirable results. To see and record the fact that a cow is grazing a plant is better than to infer it from observations on a grazed plant. To cut and weigh forage to determine how many tons of feed are produced in a pasture is better than to make volume estimates of this amount. It is recognized that a large amount of indirect measurement is unavoidable, but the more this can be reduced the better it is felt experimental results will be. This consideration is taken into account in the development of technique, but has been pointed out here because it again emphasizes the need for initial field work of a specific nature to cover such points.

It has been felt that in spite of all the difficulties that are encountered in a field of biological research such as range management, sight must not be lost of the fact that the data and not the research worker's interpretation must show beyond a doubt that results are valid. Too often interpretation far overshadows the weight of the data itself and as a result such work is not prone to be accepted as final or even reliable. Any experiment that falls short of supplying reliable data is just another experiment. It is true the investigator may have profited considerably by his experiences and can report on them, but he has not succeeded in solving the problem at hand. He has to begin over again and produce data that will be accepted by his fellow investigators. His word or interpretation is not good enough. Nor should the interpretation of any one man be accepted as

solving any problem. It is reasonable to assume, then, that until some tangible and reasonable assurance can be had of obtaining reliable results it is unwise to embark on experiments on a grand scale.

The determination of the importance of range problems and the need to conduct research in them is discussed elsewhere.