

SUGGESTIONS FOR REPORT OF SUBJECT-MATTER SPECIALISTS. *

*Agricultural
Engineering*

A. (1) What are the principal farm and home problems with reference to your project, and (2) which ones did you attack during 1920?

B. For each of the problems attacked, give the following information:

1. What organization was developed at the college and throughout the State?
What cooperative relationships did you establish with other subject-matter departments, State leaders, and organizations?

2. Indicate the total number of meetings held by extension specialists to give expert assistance to county agricultural agents, home demonstration agents, club agents and local leaders, and give total attendance of each.

(Include meetings held at the college and State and County conferences, and community meetings.)

3. How was this work developed in the counties?

(a) (Did the county extension agents call for your assistance? Did you solicit the county extension agents and county project leaders to undertake the work in the counties)?

(b) Was there an organization already available?

What local organization, if any, were built up to aid your work?

(Poultry associations, community canneries, boys' or girls' clubs, breeders' associations, shippers' associations, cow testing associations, bull clubs, community purchases of sprayers, lime crushers, etc).

(c) What relationships were established with such organizations as:

(Farmers' clubs and other farmers' organizations, produce dealers, elevator managers, and the like.

Women's clubs public nursing associations, boy scouts, boys' working reserve, and the like).

4. What publicity methods did you use, and which did you find most effective?

(Agricultural and local papers, farm bureau papers, college bulletins and pamphlets, press notices, and other extension publications, posters, signs, window displays.

Also include a statement of any aid you gave extension agents and county project leaders and local demonstrators concerning the outstanding features of your work and organization).

5. What methods were used in securing data?

(a) As to the value of practices advocated as compared with ordinary practices.

* This report should cover the crop year 1920.

(Describe methods of demonstration. For example, the use of lime, tested seed corn, treatment of oats for smut, running water in the house, home garden and orchard versus purchased supplies, homemade versus purchased clothing. Send samples of blanks used. Describe your method of check--whether a narrow strip in the field, a few trees left untreated.

- (b) As to number of units affected, (farms, homes, acres, trees, animals, jars, water systems, silos, etc).
- (c) Was data gathered through the county extension agents or sent direct to you at the college by individuals.

6. What results were obtained?

- 1. (a) Number of county extension agents or local leaders trained or aided by subject-matter specialists.
 - (b) Number of counties in which specialists worked.
- 2. (a) 1. Actual number of farms or homes conducting demonstrations through cooperation of county extension agents and project leaders, and subject-matter specialists.
 - 2. Number of units affected.
- (b) 1. Number of farms or home adopting instructions on account of the influence of demonstrations described above. (Spread of influence).
 - 2. Number of units affected.
- 3. Other results directly or indirectly showing the efficiency of the work on this project. For example, dealers realize the value of infertile eggs, therefore they are willing to pay extra prices to get the roosters off the farms. Dealers or merchants are willing to pay extra prices for standard articles. Activities of home demonstration agents may pave the way for a visiting nurse or a children's clinic. Or the development of dairy work may call for the establishment of a new industry, as a butter factory.

- C. Give any additional facts not brought out above that will enable us to understand clearly your problems, methods of organizing and conducting work, and results obtained during the year.
- D. Describe the most outstanding piece of extension work accomplished under your project during the year.
- E. What general changes, if any, have taken place during the year in those phases of agriculture or home making which your work touches?

REPORT OF THE AGRICULTURAL ENGINEERING DEPARTMENT
Extension Division, V. P. I., Blacksburg, Va.
From July 1, 1920 to June 30, 1921.

- A
- (1) The principle farm and home problems with reference to this project are:
1. Land Drainage
 2. Terracing
 3. Land Clearing
 4. Farm Buildings
 5. Farm Machinery
 6. Power Farming
 7. Domestic Engineering - (including lighting systems, water works and farm sanitation).
 8. Miscellaneous activities along engineering lines.
- (2) The problems attacked during 1920 were:
1. Land Drainage
 2. Farm Buildings
 3. Power Farming
 4. Water Works

- B
1. Farm Ditching Machine Organizations were developed in the state through which the farmers may get their ditching for tile drainage at a minimum cost.

Cooperative relationships were established with -

The Tractor and Farm Machinery Companies for the purpose of holding tractor demonstrations.

The Ditching Machine Manufacturers for the purpose of organizing Ditching Machine Companies.

The U. S. Department of Agriculture, Bureau of Drainage, for the purpose of developing drainage districts for the drainage of large areas.

The State Commissioner of Agriculture for the purpose of spreading drainage and agricultural engineering information through his bulletions.

The Agricultural High Schoolsof the state for the purpose of spreading agricultural engineering information in their communities.

Animal Husbandry and Dairy Husbandry Department of College and Extension in plaging barns, etc. The Horticultural Department in planning and constructing of potato and apple storage houses.

The College in developing a Department of Agricultural Engineering for resident college instruction.

2. Sixteen Meetings were held at which expert assistance was given to farmers and agents. The total attendance of these meetings were 545.
3. (a) The County Agents and farmers called for our assistance. We had many more requests for assistance than we could possibly fill.

(b) The only organization available through which the engineer could work were the ditching machine companies, which were organized the preceding year by the engineer.

(c) Relationships were established with farmers clubs by assisting with the planning of lime storage houses. Thirty two farm equipment companies cooperated with our department in putting on farm machinery demonstrations and loaning equipment for their use in short courses.
4. Articles relating to the different projects were written for the various county and farm journals. In advertising the Tractor Demonstrations, posters were distributed throughout the territory of the demonstration by the Implement Dealers. Circular letters were sent out from this office. News items were run in the local farm papers advertising the demonstrations. Bulletins and Blue Prints on the various engineering subjects were sent out from this department to the farmers by requests.

The County papers were found to be the most effective in advertising demonstrations. Bulletins and circulars the most effective in distributing information.

5. (a) Demonstrators were asked to report on the result of the new methods adopted as compared with the old. Demonstrations such as drainage, terracing and farm buildings speak for themselves. The results are so apparent that all may see.

Tile Drainage Demonstrations are conducted somewhat as follows: A representative farmer who wishes to tile drain is given assistance by the engineer. A drainage survey is made of his wet land and a map prepared showing the location of the tile system, size of tile, grades, etc. After he has secured his tile the engineer goes back to the farm and stakes off the work and instructs the farmer in the proper method of grading the ditches and laying the tile, etc. Sufficient time is spent with the farmer to be assured that the work will be carried out successfully. Other farmers are invited to see how this work is done. The farmers have to report on the results. Demonstration plats are located, as far as possible, near the public roads.

In the farm building project, farm building plans are sent out upon request and in each case the farmer has to report on the cost of erecting the building, changes made in the plans, etc. In a few cases assistance was given in the actual construction of the buildings planned by this Department.

In the water supply project bulletins and plans are sent out upon request recommending water supply systems and giving best methods of installation. In a number of cases personal assistance is given in the installation of Hydraulic Rams, etc.

In the Power Farming project, field demonstrations are held at which the different tractors are assigned plots of land to plow and ~~under~~ ^{seed}. These demonstrations are advertized well and large crowds always turn out for them.

Short Courses are held at which the farmers are instructed on gas engines, tractors, implements, etc.

- (b) Demonstrators and County Agents are asked to advise this Department as to the number of acres tilled, buildings erected, etc., as a result of the demonstrations in the county.

- 6 1 (a). 48 County Agents trained or aided by specialists in this department
 3 District Agents
 50 Smith-Hughes Agricultural High School teachers trained
 5 Members of teaching staff of College aided.
 6 Specialists of Extension Division aided.
 4 Ditching Machine Operators trained.
 2 Agr. Agents of Banks aided.
 3 Agr. Agents of Railroads aided.
 2 Editors of Farm Journal aided.
 1 Agr. Director of Hampton Institute.

- (b) 42 Counties in which Specialists worked.

- 2 (a) 1.

305 farms conducted drainage demonstrations
 120 of these farms were given personal assistance on the farm by the Engineers.
 185 were given assistance through letters and bulletins.
 218 farmers given assistance on miscellaneous engineering problems thru correspondence.

- 260 Farms conducted farm building demonstrations.
- 5 Farms were given personal assistance on the farm in the construction of these buildings.
- 3 Farms conducted farmstead layout demonstrations.
- 55 Farms conducted water supply demonstrations.
- 16 of these farms were given personal assistance.
- 14 Farms conducted farm sanitation demonstrations.
- 3 Farms conducted land clearing demonstrations.

2. 32 Complete farm drainage surveys were made and map prepared comprising 2055 acres.
- 17 Farm drainage systems were staked out comprising 1015 acres.
 - 28 of the systems have already been constructed comprising 1545 acres.
 - 53 Preliminary examinations were made on farms in regard to overflowed and swamp land comprising 4835 acres.
 - Total acreage examined and advised on 9450 acres.
 - 55 Water systems installed.
 - 260 farm buildings constructed.

23. (b) 1. It is almost impossible to get figures on the number of farms adapting instructions as a result of the demonstrations. This is secured approximately from the County Agents' reports.

There is a very great spread of influence from the demonstrations. As an example - from the few drainage surveys made on the eastern shore a few years ago, hundreds of farmers have put in tile drainage systems. Tile drainage is becoming a very general practice in this section now. Many thousands of feet of tile have been used in the state as a result of the demonstrations. Wherever a new farm structure is built from our plans other farmers in the community build the same types of structures. Wherever a new and improved type of farm implement is located it means many more for the same section.

- 3 The increased interest being taken by farmers throughout the state on the various engineering projects indicate that the work of this Department is bearing fruit.

The value of extension work in drainage alone is worth many times more to the state than this Department is costing. When the land is drained on the 32 farms comprising 2055 acres, on which drainage surveys were made, the increased production of this land to the state will be at least \$41,000. This is based on an estimated increased productive value of only \$20.00 per acre. This estimate is very conservative.

1545 acres on which surveys were made during the year have actually been tilled - resulting in an increased productive value of \$30,900.

Besides the above is the 4835 acres of swamp and overflowed land which is not bringing in any revenue at the present time, but when drained will add thousands of dollars in productive value.

#5.

C

Agricultural Engineering Extension work is essentially different than most of the other Department projects. For most of our projects in the field, a survey is necessary which takes time and for each survey considerable office work is necessary for the making of maps, etc. A great deal of time is necessary for the drawing of farm building plans, figuring bills of material, designing water systems, etc. The nature of the work is such that it necessitates considerable office work which is not the case with other specialists

We have made reduced size drawings of all our farm building plans to put in ^{loose} basket form for the use of the County Agents.

We believe that one project actually carried through to completion is worth more than trying to reach large numbers through meetings, etc. This is proved by the results we are getting in projects being actually completed.

107 conferences were held to discuss problems in connection with our projects.

Two farm implement demonstrations were attended by 160 farmers

Three gas engine and tractor short courses were attended by 107 farmers.

Seven ditching machine demonstrations were attended by 220 farmers.

Five tractor demonstrations were attended by 3460 farmers.

D

Perhaps the most outstanding piece of Extension work accomplished under our project was the establishing of a Department of Agricultural Engineering at V. P. I. The Extension Agricultural engineer was responsible for the establishment of this Department of instruction. The engineer drew the plans and specifications for the new farm machinery building and supervised the construction. The engineer also solicited the machinery companies and arranged for their cooperation. 32 companies cooperated with the Department by loaning equipment to be used for instruction purposes for short courses and regular college courses. Approximately \$15,000 worth of equipment has been secured in this way. Two additional men have been added to the Department under an arrangement by which they each work six months on extension and six months on resident instruction. One student assistant is also employed and next year a full time instructor and a research man will be added. New Courses in Agricultural Engineering will also be added whereby the agricultural student can major in agricultural engineering. It will be possible to do much more effective Extension work with the newly organized Department.

E The extreme low prices for farm products has compelled the farmers to retrench. He has put more effort in repairing his old machinery instead of buying new machines. He has found by proper care of his implements that he can get increased usage from them and does not have to replace so often. Very few new implements have been bought by farmers this year.

SUMMARY --

42 Counties in which engines worked
 48 County Agents were aided
 50 Smith-Hughes Agricultural High School teachers were trained
 25 Agricultural leaders aided
 5 Professors at College aided
 6 Extension Specialists assisted
 4 Ditching Machine Operators trained
 2 Agricultural Agents of Banks assisted
 3 Agricultural Agents of Railroads assisted
 2 Editors of Farm Journals assisted
 1 Director of Agriculture at Hampton Institute assisted
 107 Conferences held
 545 Farmers attended 16 meetings
 160 Farmers attended 2 farm implement demonstrations.
 107 Farmers attended 3 gas engine and tractor short courses
 220 Farmers attended 7 ditching machine demonstrations
 3460 Farmers attended 5 tractor demonstrations
 3 Farmers conducted farmstead layout demonstrations
 55 Farmers conducted water supply demonstrations.
 24 Farmers conducted Farm Sanitation demonstrations.
 260 Farmers conducted farm building demonstrations and were supplied with plans.
 218 Farmers were assisted in miscellaneous engineering problems thru correspondence.
 305 Farmers conducted drainage demonstrations.
 2055 acres on 32 farms were surveyed and maps prepared for tile drainage.
 1015 Acres on 17 farms were staked out for tile drainage
 1545 acres on 20 farms - tile drainage systems were constructed
 4835 Acres on 51 farms preliminary drainage surveys were made.
 Approximately 900,000 feet of tile laid.
 \$30,900 increased productive value of land on which drainage systems were constructed.
 32 Farm equipment companies cooperated with Department.
 \$15,000 approximate value of equipment loaned by companies.
 14 new farm building plans drawn
 60 farm building plans redrawn for County Agent Booklet.
 20 days spent with exhibits at fairs.