

BUREAU OF PLANT INDUSTRY  
Washington, D. C.

FARMERS' CO-OPERATIVE DEMONSTRATION WORK

ARKANSAS, LOUISIANA, MISSISSIPPI, TENNESSEE, TEXAS, INDIAN  
TERRITORY AND OKLAHOMA.

With the object of determining, as far as practicable, the per cent. of work accomplished by the "Farmers Co-operative Demonstration Work" since it was inaugurated in Texas and Louisiana by the U. S. Department of Agriculture in January, 1903, I sent to each of our field agents a letter of inquiry, and asked them to go over their respective districts with care and obtain estimates from the best farmers and merchants, tabulate them and forward the results to our office. It was made clear that a plain, cold statement of facts, without bias or coloring, was all that was required.

The following replies were received. In Arkansas, Mississippi, Tennessee and the Territories the work is too recent to determine results at this date.

S. A. KNAPP,  
Special Agent in Charge.

Lake Charles, La., May 1, 1906.

College Station, Texas, April 5, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Dr. Knapp: Your letter of recent date making inquiry as to influence of the demonstration farm work, received.

In answer to the first question propounded, will say that a very small per cent of the farmers, if any, made a practice of breaking land deeply in



the fall and following with light winter cultivation before this method was proposed or introduced by you. Quite a large per cent of the farmers of the state are now following this system. All agree that it is eminently the proper thing to do, but owing to conditions in the fall, the rush of work, picking cotton, gathering corn and other crops and interference of too much rain fall, many do not get to do as they wish.

Question No. 2, as to intensive cultivation practiced prior to 1903, as a system. -- Occasionally you could find a progressive farmer who practiced intensive cultivation as a system, but there were very few farmers who made a practice of intensive culture for either cotton or corn. Usually corn would be plowed about three times and cotton given about four cultivations at most. Now it is a very common practice for farmers to use the intensive methods of culture, plowing corn from four to five times and cotton five or six times, sometimes even more under certain conditions.

Prior to 1903 comparatively a small per cent of farmers selected cotton seed for planting. Quite a number, however, used crib selections for corn, picking out the largest ears and saving them for seed. The past two or three years farmers are fast realizing the importance of seed selection and are now planting the very best cotton and corn seed obtainable. They are now willing to pay big prices for selected corn and cotton seed. Some make a practice of selecting both corn and cotton from the best plants in the field. This idea is fast growing and I believe has taken root and in a few more years a very large per cent of the farmers of the state will have their seed patches for both corn and cotton and make selections from the field. Your agents have been making quite a point in encouraging the farmers to follow this system. The general improvement in agricultural practice in this state has been very marked in the last three years, and I think much of this is due to the methods proposed and encouraged by your work.

You will note that I have not given percentages in actual figures.



I would not care to do this at a guess and it would be more or less a guess. However, I will state that it is easy to see the general improvement in this state in methods practiced by the farmers.

Yours very truly,

J.W.Casson,

Special Agent.

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Belcher, La., April 14, 1906.

Dr. S. A. Knapp, Special Agent in Charge.

Dear Sir: With the close of this week I completed a canvas of my entire territory and must say that I am very much gratified with the progress our work is making in Louisiana. To see the work being done this year in comparison with the old style of farming, say, for instance, prior to 1903. Up to that time I think not over 5 per cent. of the people fall-broke their land and gave any winter cultivation whatever, while at this time at least 60 per cent. of the hill and 95 per cent. of the river farmers follow this method. Prior to 1903 about one in five of our farmers used intensive cultivation as a system, while at this time at least 75 per cent. are now using intensive cultivation more or less. Heretofore they made very little effort to secure improved seed of any kind for planting. Some few old men that had learned the importance of having good seed were the only ones that followed this plan, while at this time every farmer with ordinary intelligence is making strenuous efforts to secure the best selected seed for planting of both corn and cotton that is obtainable.

While a few years ago it was quite a job to get up any interest in improved agriculture, now it is very different. It is rather the order of the day than otherwise. These results have been brought about by the work done by the Department of Agriculture, through the co-operative cotton demonstration work.



Inclosed are a couple of letters from citizens that I think will verify my report.

With kind regards I am, very truly yours,

J. E. Wemple,

Special Agent.

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Grand Cane, La., April 7, 1906

Mr. J. E. Wemple, Belcher, La.

Dear Sir: As requested, I will try to answer the following in regard tot the effect that the Bureau of Agriculture is having on the farmers in this vicinity.

1st. Fall and winter plowing. Prior to 1903, 10 per cent. followed this method; now I think 75 per cent.

2nd. New methods of farming. Prior to 1903, 10 per cent.; now I think 80 per cent. are trying it.

Those trying to get the best seed. Prior to 1903, 15 per cent.; now 80 per cent. are trying to get the best seed.

In conclusion will say that I think the education and new methods of farming to the farmers by the Bureau of Agriculture will result in great benefit to our community.

Yours truly,

L. M. Cook.

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Gilliam, La., April 9, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: For nearly 14 years I have been closely associated with the farmers' interest of this portion of the Red River Valley, and until within the last few years, say, since 1903, the old saying "any fool can farm," was seemingly acknowledged a fact, but now it seems that each white farmer, large and small, is putting into his work those elements that go to make the successful men in any vocation.



It would be difficult for me to state with any degree of certainty what percent of land is winter-broken, what per cent use intensive cultivation as a system, but I can say positively, that previous to 1903 none of this was done, "boat corn" as it was called, was the ideal seed corn because earlier by a few days than home raised. The last picking of cotton was saved for seed, the first being sold, and the cultivation of corn was always neglected for cotton.

I am glad to state, however, that through the efforts of the Department of Agriculture, by its agents, the thinking farmers have been rapidly changing their methods and now spare no pains nor expense to begin early in the fall preparing his land for the next crop, and buys the best seed he can procure. The greatly increased sale of improved agricultural implements is a sure index of the great interest manifested in the new order of things, and is very noticeable to me, having seen so many crops made with a turn plow and a scoop.

The young men of the country should be very grateful to the Department for the unfolding of the vast opportunities that have been opened up to them and should put forth the best efforts of their hands and brains to make their vocation an honored as well as an honorable one.

May the good work continue and may our Southland prosper.

Yours sincerely,

R.D.Douglas.

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(Letter from Col. W. E. Glassell, President North Louisiana  
Cotton Growers Association,).

Shreveport, La., April 2, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: The position I have occupied as a commission merchant, supplying goods and cash to planters, and as a farmer myself, has put me in direct contact with the producer. The improvement in cultivation and better plowing has been of considerable interest to me. Fall plowing was unusual, only a few of the most progressive farmers in this section did any



fall plowing until recently. Now it is unusually for a planter not to break up his corn land in the fall. Results have been so satisfactory that a great many not only broke up last year's corn land, but a good proportion of their cotton land was plowed up this winter. The selection of planting seed has become an important matter recently. Very little attention was formerly given to selecting corn or cotton seed. The average farmer would go to a public gin and get any kind of cotton seed to plant (which was the leavings after the oil mills had the best), their seed was thrown down on unprepared lands to be germinated by rains( late rains, late crops). Now the man who plants selects his best seed or buys seed from his more provident or careful neighbor, and is very particular in selecting the variety. The improvement in selecting cotton seed and preparing the cotton land is more general than in preparing for corn culture. I could not say to what per cent. the improvement has been, but know that it is considerable. The experimental patches put in by your department has had the effect of not only showing what can be done, but of stimulating a great many others to do better than the government. The trouble in having new models of culture used in the natural independence of the average farmer who feels that his plan of cultivating a crop is the best, because it has been in practice so long. The success of a neighbor who is using the better and later methods of plowing, seed selection and cultivation is a practical evidence of what can be done, and results are beneficial not only to those who take the experimental farms, but to the whole neighborhood where the farms are located.

Permit me to thank you for the interest you are taking in forwarding the interest of the producer, and to express my appreciation of what has been done.

Yours truly,

W. E. Glassell.

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Palestine, Texas March 3, 1906.



Dr. S. A. Knapp, Lake Charles, La.

My Dear Sir: Yours of the 27th inst. received, and contents fully noted.

1st. Will say that in the southwestern part of my territory the fall plowing and winter harrowing of the soil was practically 100 per cent. and in the central part about 60 per cent. of the farmers are using these methods. In the eastern portion not more than about 15 per cent. except in my immediate neighborhood, where it is almost 100 per cent.

I think that probably 60 per cent. of all the farmers are practically using our methods today.

2nd. I do not know of but a few outside of Brazos Co. who were using these methods prior to 1903; not enough to give a per cent.

3rd. I think that about 75 per cent. of the farmers are using the better methods of farming.

4th. Seed selection prior to the last four or five years was not thought of except by very few farmers. Now they all try to get the very best cotton they can procure; even going so far as to pay almost a fabulous price for the seed, and a great deal of imposition has been practiced upon the farmers in some cases by unscrupulous seed dealers. Seed selection is one thing that we cannot give <sup>too</sup> much attention to. Six years ago, an average yield of 30 per cent. of lint was considered a very good yield of lint; now by a little care and the selection of seed, we often have cotton that yields as high as 38 per cent. of lint. That alone in the cotton crop of the South means a profit of about thirty millions dollars.

As for selecting seed corn, there are very few who select their seed from the field prior to gathering, but there will be a good many who will select their seed corn this year, and also follow up the method of cutting our barren stalks.

There is more attention paid to better methods of cultivation today than the most sanguine people could have hoped for three years ago. I can have all of the above certified to by all of the best farmers and business men throughout the territory in which I travel. In evidence of



the above, I will enclose a letter from a gentleman from St. Louis, who was down here a few days ago and expressed very fully what he thinks of the work we are doing. I took him out to my farm and showed him the kind of work I was doing here myself and having done throughout my territory.

Yours truly,

L. J. Berryman,

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St. Louis, March 21, 1906.

Mr. L. J. Berryman, Palestine, Texas.

My Dear Mr. Berryman: I want to thank you for the most enjoyable afternoon spent with you last week. I have felt ever since I commenced going down to Palestine that one of the great needs of that section is a place to show prospective purchasers exactly what can be done with good culture and proper management.

I think you ought to be commended in the highest degree for what you are starting out to do in that direction and I believe at the same time that it will prove a paying venture for you. I do not see how such good cultivation and handling can fail to bring satisfactory results financially. \*\*\*

Sincerely yours,

F. W. Taylor.

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Houston, Texas, March 31, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: In the beginning of my work with the Department of Agriculture in 1903 I found, as a general rule, the farmers following the old method of preparing, planting and cultivating, at least 90 per cent. waiting until January and February to begin the preparation for planting, and not infrequently March, whereas, now there must be at least 75 per cent. fall breaking, breaking deeper, using the harrow or disk during the winter



months, turning under their roughage and their barn yard fertilizer; and in the black land belt a larger per cent. than above stated, i.e., where the weather has permitted. In the north section of the territory that I cover the rainfall has been excessive each fall and it was with difficulty that our recommendations were carried out to a great extent. And as to the cultivation of the crop, there is a marked improvement. In the first place the lands are more thoroughly prepared in the beginning; hence it is not so difficult to do more thorough and systematic work. And it also enables them to secure better stands of both cotton and corn, and nearly every farmer has become used to plowing out his crop from 5 to 10 times, while formerly he was usually content to lay by with 2 or 3; and as to seed for planting of both cotton and corn, there never was in the history of Texas such, as we have witnessed this spring, hunting of improved seed, well bred corn and cotton, and since we have distributed small packages among the general farmers I find all are anxious to obtain enough to plant their entire tract, especially is this true of the cotton. The seed we were enabled to give out last season produced from one third to three times as much as the old varieties, and it was to their minds almost an ideal cotton, productive, large bolls and yielding a large per cent of lint; and I am glad to state that a large number of them culled out the very best of the big bolls and will, in the future, plant nothing but selected seed. At Grosbeck, in Limestone county, there will be perhaps not less than 7,000 acres of improved cotton planted this season, and if the season is at all favorable it will result in making 1,000 bales more cotton than it would if planted in the old mixed varieties on the same acreage.

I find, too, there is a deep interest manifested in the study of soils, planting crops best suited to each, and where their soils are deficient in plant food, they supply the same by rotation of crops, turning under such green crops as are convenient to grow, and financially the country is beginning to grow very fast.

Most every farmer has a small bank account where, formerly, it was all time extension. Rarely do we find that system in vogue to any



great extent now.

These are plain facts and can be substantiated by the bankers and merchants of the country and the farmers themselves.

W. F. Proctor,  
Special Agent.

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Marlin, Texas, April 2, 1906.

Dr. S. A. Knapp,  
Special Agent, U.S. Dept. of Agriculture.

Dear Sir: Your Mr. Proctor was here Saturday when he and I went over matters pertaining to the Demonstration farm which I have under my superintendence and management. I am glad to note the advanced methods and ideas about farming, which we of this community are getting from your department. Three years ago and prior to the advent of the boll weevil into this country we had very little system in our farming. As to cotton, we planted when we got ready and we picked it when we got ready. As to the corn crop we were contented to streak off the rows across an unprepared field, rough in the seed and practically trust the luck for the harvest.

In the planting of cotton it was no common thing for a farmer to lay off stubble land, after harvesting the oat crop, plant a cotton crop and then rest his case with the seasons and wonderful productiveness of our soil. But there has been a wonderful change come over our farming interests (thanks to the suggestions made by your department) and where you formerly saw the seed being put into unprepared lands you now find everything at planting time in a thorough state of preparation, the lands having been fallowed during the fall and winter preceding.

In addition to your advice as to the preparation of the lands we are also in love with your idea of intensive cultivation of the crops. It is of wonderful educational value to our farmers who have heretofore been too sluggish. We take off our hats to Mr. Wilson, who, we now concede, is doing a great work for the agricultural interests of this country.

Yours very truly,  
J.A. Dunkum.



Waco, Texas, April 9, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: Will write you a short statement in regard to existing conditions among the farmers in Central Texas, especially in the territory over which I have traveled the past two or three years.

Formerly but very little fall plowing was ~~done~~, sorry to say, not as much now, as should be. From my observation there are perhaps thirty-five per cent of farmers who are doing fall plowing now, but few do systematic winter cultivation. Very few farmers practiced intensive cultivation prior to 1903, perhaps not more than ten per cent; quite a large number are doing better cultivation now, perhaps fifty per cent. Formerly few farmers made any special selection of or planted improved seed, but now nearly all farmers are becoming interested in securing the best cotton seed possible to be had at least seventy-five per cent of them. In some section quite a large number of farmers are doing better farming, planting more improved seed and are making earlier and better preparations and are using better methods in cultivation crops, showing that there is an awakening among the farmers to the importance of improvement and advancement all along the line. The larger per cent of our farmers until recently took even less interest in improving their seed corn, than they did the cotton but some are beginning to realize the importance of planting better seed corn.

Very truly yours,

J. L. Quicksall.

April 13, 1906.

I regard this as a safe conservation statement of facts and existing conditions.

G. Rotan, Cashier First National Bank.

M. A. Cooper, Wholesale Grocer.

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We fully concur with Mr. Quicksall's report.

J. S. McLandon,



W. O. Lacy,  
C. J. George.

Shreveport, La., April 2, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: Yours of 27th of March, in reference to my report on our demonstration work since 1903, at hand and noted. I will confine my report to the territory I have worked. I commenced work in February, 1904, and in 1905 I covered double the amount of territory that I did in 1904. The section that I worked in 1904 did not require so much of my time, as they knew something of our demonstration work. It will be very hard to give the per cent. In 1904 we had 21 farms in 6 parishes. 50 per cent. of the farmers adjacent to these 21 farms are following our plan; while they do not make any report they are following our cultural method.

1st. What per cent of the people in your territory fall-broke their land deeply and gave it light winter cultivation as a preparation for a crop?

In 1903, 2 per cent.

In 1904, 5 per cent.

In 1905, 15 per cent.

In 1906, 30 per cent.

2nd. Give the per cent. that used intensive cultivation prior to 1903, not occasionally, but as a system.

In 1903, 5 per cent.

In 1904, 10 per cent.

In 1905, 20 per cent.

In 1906, 30 per cent.

3rd. "Give the per cent. of farmers that now use intensive cultivation more or less." 30.

4th. "Give the per cent. of farmers that formerly selected the best seed corn and cotton for planting, also the per cent of farmers who are now using the best seed obtainable. "

Prior to 1903, not over 5 per cent.



1904, 10 per cent.

1905, 25 percent.

1906, 40 per cent.

"Finally state the general interest in improved agriculture, as compared with the general interest a few years ago."

In reply will say: In territory in 1904, when I commenced work for the department, I had to be very careful how I approached a farmer. Now they will stop me and ask questions and insist on my going to see them. They want the best seed and to know where it can be bought.

There is 50 per cent improvement in our agriculture as compared with the general interest a few years ago. This applies only where we had demonstration farms in 1904 and 1905. Go out this territory, where the farmer has not had any demonstration work, and you will find much improvement, only now and then will you find a first class farm. I have been planting in the territory for forty years and I can say that the money spent for seed and demonstration work in the last three years has accomplished more results with the men that live on the farms than the money that has been spent by the government prior to 1903. The man that gets a bulletin or goes to a experiment station, he will say, that is good for a garden but will not do in the field.

We go over the field and show him that we can do the same as shown in the experiment station. Start one and his neighbor will follow suit. So when we get one good farmer to adopt the cultural method we get all his neighbors.

Yours Truly,

F. A. Hilley.

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Tyler, Texas, April 6, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Dr. Knapp: In answer to your several questions, propounded in your letter of the 27th ult, looking to a comparative statement as to farm conditions now and prior to the commencement of your special work in



this territory, I beg to submit the following:

1st. "What per cent of the people of your territory fall-broke their land deeply and gave it light winter cultivation as a preparation for a crop?"

Ans. Not perhaps more than 1 per cent fall-broke their land; and the winter cultivation was scarcely practiced at all.

"Then give the per cent that you think are following this plan at the present time."

Ans. Perhaps 50 per cent broke land in later fall and early winter, not so large a per cent have given winter cultivation, but quite a number have done so.

2nd. "Give the per cent that used intensive cultivation prior to 1903, not occasionally, but as a system."

Ans. Not over 1 per cent. as intensive cultivation is now understood.

3rd. "Give the per cent of farmers that now use intensive cultivation, more or less."

Ans. Not less than 50 per cent, perhaps as high as 75 per cent.

4th. "Give the per cent of farmers that formerly selected the best seed corn and cotton for planting; also the per cent of farmers that are now using the best seed obtainable."

Ans. (a) Common gin-run seed was formerly quite generally used, probably not more than 5 per cent were careful in the selection of their seed.

(b) The interest now as to the importance of using the best, especially the "earliest cotton" seed, is very general, perhaps as much as 75 per cent of them are manifesting marked interest.

There is an increasing interest in better corn seed.

"Finally state the general interest in improved Agriculture as compared with the general interest a few years ago."

Ans. There has been almost an entire revolution.

Ed. W. Smith, Agent.



We, the undersigned, fully endorse the accuracy of the above and foregoing estimates made in response to the accompanying interrogatories, by special agent, Capt. Ed. W. Smith.

A. W. Birdwell, Co. Supt. of Pub. Instruction.

John M. Loyan, Ex-County Judge.

M. A. Long, Farmer and Architect.

G. R. Phillips, General Merchandise.

Boon, Wadel, Caldwell & Hughes,  
General Merchandise, Per W. H. Caldwell, Sec.  
J. R. Glass, Farmer.

S. A. Lindsey, Co. Judge, V.-Pres. Smith Co.  
Southern Cotton Association,

A. J. McMinn, Farmer and Ginner.

(Letter showing the personal element in the demonstration work.)

Tyler, Texas, April 14, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: I have just returned from Gilmer, and Big Sabdy, on the Cotton Belt, where I met Demonstrators L. C. Mitchell, of the former, and N. C. Kay, of the latter place, and took notes on their work. \*\*\*

I remained with each of these men an hour or two and discussed the whole farming situation, special, local and general. I believe in the value of close personal touch among the workers in any co-operative work. As I said to you at Shreveport, I want to cultivate and am cultivating the acquaintance and friendship of each of many men to the end that they may be won and permanently held to the cause of better farming and the up-building of the country. The idea has occurred to me that it would be a good thing to have a rally of our classes of farmers at some accessible point, say Pittsburg, at the proper time, where you and other advanced farmers could meet them and have a general interchange of ideas, views, experience, etc. My plan is to talk it up, not as a thing already agreed upon, but as something that we may conclude to have, and to determine whether a sufficient attendance can be secured. If you will give the word of authority I would



give it the widest possible publicity and, from my present view, believe we can secure good results from such a meeting. My desire is to set East Texas on fire in the interest of our work. I have another plan I want to broach to you later. I believe that this is the acceptable year of the Lord in the work you have been set to do in the southwest.

It is especially true in my field. As never before, farmers and all classes of society are stirred on the subjects that belong to our work. And you will excuse me for saying that in their awakened interest men are everywhere asking me about you. You know you cannot exclude the personal element from our work, and they make inquiries about you as the head of this work. It all springs, not from the critical spirit, but from kindly interest and out of good will to your work. But, unfortunately, I do not know much along that line and I wish to ask that you give me all the revelation of yourself that your modesty will permit and that you may think to be consequence to your work. Of course my inquiry is limited to that.

Hoping that you may not think this inquiry springs from mere curiosity, and that the other matters will be of interest to you, I am most respectfull,

Your friend and co-worker,

Ed. W. Smith.

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Cooper, Texas, April 5, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: I have learned that there is a disposition in some portions of the esat to limit or discontinue the work being done by the agricultural department and I trust that it will in no way affect the work being done in this section of the country. I feel that our people are just beginning to realize the wonderful help you are giving them in your demonstration department, and a desire for better seed and better cultural methods are



being manifested all over this country, and the work you have done in the boll weevil district is manument of the greatest importance. I wish to add my indorsement of the work and would regret to see any reduction in it.

Very respectfully,

James A. Smith,

Cashier Delta National Bank.

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Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: Anyone reviewing our co-operative work and farm conditions generally for the past several years can but note the marked improvement among our agriculture classes with reference to their financial betterment and methods of farming.

In the first place, three years ago there were not 5 per cent. of the farmers who did **any** deep fall plowing: today fully 50 per cent. break their land in the fall and a good per cent. of these give more or less winter cultivation. This applies more especially to those who own their farms.

Secondly, while there were practically none who gave their lands intensive cultivation prior to 1903, there are a great many being added to the list annually who believe in and practice intensive cultural methods, advocated by the Department as a preventative or offset to the boll weevil, and very effectually.

In the third place, prior to 1903 there was not 10 per cent. that gave special attention to the selection of seed. Now all are a little particular in their seed selection and fully 75 per cent. are using the very best to be had, and a fair per cent are engaged in breeding their corn and cotton up to a high state of excellence. You will notice great improvement in the selection and use of up-to-date implements and the attention they are giving to the improvement of their homes; in fact it looks as though farmers were beginning to realize the value of farm life.

I think the Agricultural Department is engaged in a great work in



Texas, and while great good has been and is being and accomplished through the co-operative plan, I think the demonstration method, now being pursued, will bring much greater results. The Government's furnishing improved seed free imposes a certain amount of responsibility and obligation upon our special demonstration farmers that causes them to use more care in carrying out instructions successfully, thereby insuring a wider influence among their neighbors.

I think to the work of the Agricultural Department is largely due the constantly growing favoritism to the diversification idea, very few "one-crop" farmers left; a generally better taking care of the soil is noticeable throughout the country, a great interest, not only in better farming, but in the raising of better stock on the farm and having something to market of all farm products.

Pardon me if I add that I think quite a responsibility rests upon the Special Agents in charge of this work, and I think great care should be used in their selection, both as to their ability and integrity; men in whom both the people and the Department can have confidence in their doing their duty faithfully.

Yours very respectfully,

G.A.Hall, Special Agent.

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Dr. S.A.Knapp, Lake Charles, La.

Dear Sir; Herewith my report for the week ending April 14, 1906. I have visited and obtained 25 co-operators in the following localities: Arnaudville (St. Landry Parish), Breaux Bridge, Parks, St. Martinsville, Cades (St. Martin parish), and Youngsville (Lafayette parish). Those localities are somewhat behind the northern part of my district, some cotton being not planted yet, and part of the corn just up. This is due to the lack of drainage, which did not permit of early preparation of the land. Some improvements are very noticeable since last year, part from our work there and part from their experience last season.



In Arnaudville and Breaux Bridge, as also in Youngsville, where last year more time was devoted to our work, the farmers are improving greatly their methods and also their seeds, and I expect very good results from our co-operators.

On Sunday, and thanks to the kindness of Rev. P. Morin, I was given opportunity to address the congregation after mass, to which assisted about 300 persons, including at least 75 farmers. Subjects treated: our mission, drainage, fall breaking of land, best varieties of cotton, intensive cultivation and diversification.

While I did not keep them more than ~~one~~ hour, I am satisfied that at my next visit we will be able to hold a larger meeting.

On Monday I was called at the plantation of Dr. Martin by his son, lately out of state university, where he attended a course of agriculture. His being young was somewhat against his being listened to by renters and share croppers, and my having been on the plantation last year had given me the confidence of his people. Last year I had to advocate: 1st, drainage; 2nd, more drainage, and 3rd, still better drainage, for a wet or dry year. I was glad to see that ~~my~~ advice has ~~srrved~~ served his purpose, as the place is today in much better shape than last year. Owing to Mr. W. O. Martin taking charge but late in February, very little work was done in winter, outside ditching. I talked to the people for about one hour and gave them a good impression on the change necessary to keep up with progress. I also had a talk with Mr. Martin, concerning the gradual means to employ to come to better results.

Respectfully yours,

L. Perrin.

Note:--The territory traveled by L. Perrin is almost exclusively settled by French and it is custom to hold meetings of general interest on Sunday.

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(The following letter from Arkansas gives present conditions, as we have just inaugurated the Demonstration work in that State).

Little Rock, Ark., April 16, 1906.



Dr. S. A. Knapp, Special Agent in Charge,  
Lake Charles, La.

Dear Sir: In reply to your letter of March 27, 1906, regarding present conditions of farming operations in my territory.

Question 1. To what extent have the people in your territory adopted fall plowing and used winter cultivation as best preparation for soil?

Answer. About 5 per cent.

Question 2. How many are using intensive cultivation?

Answer. About 7 per cent.

Question 3. How many are using improved seed for Cotton and Corn?

Answer. About 5 per cent.

Question 4. How many are using fertilizers?

Answer. About 10 per cent.

Question 5. How many are using improved implements?

Answer. About 5 per cent.

This is the present condition as I find it now. Inclosed you will find a note from Judge H. D. Bradford, Commissioner of Agriculture, self explaining.

Yours very truly,  
Anton V. Swaty, Special Agent.

Little Rock, April 16, 1906.

Mr. A. V. Swaty, Special Agent.

Dear Sir: I have examined your estimate in regards to condition of our farming operations in this state and will say that your per centage is as near correct as can be obtained.

Yours truly,  
H. F. Bradford, Commissioner of Agri.

( Letters from a co-operator showing the interest taken).

Belcher, La. , March 23, 1906.



Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: I am inclosing a sketch and memorandum of the three plats I intend to work under your instructions this season.

You will note I have no cotton near the cotton plat, as alfalfa is on one side, and two corn plats on the other. I will not have and other corn planted near these plats either.

I took a copy of the special corn instructions, you sent Mr. Wemple, and want to try for a big yield of corn. The ground is in fine condition. I never saw this stiff land as mellow and loose, just like ashes.

If not too expensive, I would like to try the nitrate of soda on one plat of corn anyway. Could you tell me about how much it would cost per acre to put some on one plat? You will note on the cotton plat I put, February 10th, 400 pounds of rotted cotton seed per acre, and today, March 23rd, 200 pounds phosphate per acre.

I hope to plant the cotton in about ten days, or two weeks, perhaps sooner.

I have a fifteen acre cut of five year alfalfa land, that I have in Rowden cotton now. It was broken in November, with a four mule disc plow, disc harrowed in December, rows layed off six feet with middle splitter in January. March 1st, I bedded this cut with eight inch turning plows and twelve inch middle splitter. Harrowed with "A" harrow, March 20th and 21st, and planted March 20th and 21st with Mr. Bill's riding planter.

I don't count this cut in my "Uncle Sam" plats, but will report on the outcome if you wish, as it would give you an idea of the value of alfalfa as a fertilizer, with the cultural methods.

I started planting cotton March 20th, and hope to get through by April 1st. Am planting King's, Shine's and Rowden's on 750 acres or more this year.

I am almost afraid to plant the seed you sent this early, as I would hate to lose them, and the ground is in such perfect condition, though I would wait until about April 1st.

We had thick ice here Tuesday and Wednesday, temperature about 27 degrees,



so it is rather early to risk seed yet, especially very fine ones. The freeze cut down a good deal of corn, but we are hoping it will come out again.

Hope this long letter will not over tax your patience.

Very truly yours,

(Signed) Ellison M. Adger.

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Belcher, La. April 24, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: I have your special corn instruction, but I had put out some fertilizer before I received same.

I have two plats corn, No. 1 of 4 1/4 acre, has 750 lbs. rotted cotton seed pae acre under drill, applied to land February 10th, (about one month before corn was planted.)

MO. 2 has 10 large 2-H. Wagon loads of stable manure per acre put on land just before corn was planted.

Very little of this manure was ever exposed to the weather, in fact most of it came from under the mules feed shed.

I would like to have you advise me if you think necessary to put any more fertilizer on this land, you will note I have <sup>not</sup> applied and Phosphate to either. I ran a "A" 2-H iron tooth harrow over the corn as weather conditions permitted after corn came up to a fair stand, and replanted the skips with a hoe.

Yesterday and today I am running round the corn and cotton plats with spring tooth cultivation to break crust as we had a fine rain on the 20th. Have a nice stand of cotton up on Gov. plat also, and never saw this stiff land in such fine condition, and never got as good a stand with such a small quantity of seed.

When the land is not well prepared it sometimes took 75 lbs. or more per acre to get a stand.



Do you think it necessary to apply any more fertilizer to my cotton plat? It has about 400 lbs. rotted cotton seed per acre, under bed February 10th and 200 lbs. phosphate about ten days before planting cotton.

I thought the rotted cotton seed would answer for the Cotton Seed Meal, but have a complete (commercial) fertilizer I could apply to it if you think necessary. I have a fine stand of cotton every where and started to cultivating same last week. Also chopping a little this week, but the nights are almost too cool to push chopping yet. We had to replant a good deal of corn, as we tried to be too early this season.

However I just struck it right with my Gov. plats and have a nice stand, and it is growing right off.

I trust you will be able to visit this part of the State sometime and see what we are doing. Would be pleased to have you make headquarters here with me while you are in this section.

Very truly yours.

Ellison M. Adger.

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Wichita Falls, Tex., April 12, 1906.

Dr. S. A. Knapp, Special Agent.

Dear Sir: The improvement in agricultural methods and conditions in Northwest Texas within the last three years has been so great that the evidence of it is apparent to the most casual observer.

Northwest Texas was settled chiefly by farmers from the older sections, fleeing from high priced lands, worn out soil and the dreaded boll weevil, and attracted by a virgin soil where homes could be obtained at comparatively low prices. Their success with this fresh soil and patriotic zeal for their new homes caused the public generally to arrive at incorrect agricultural conclusions. It was a common belief that the soil was so rich that it would never need fertilizing, that rotation of crops to maintain fertility of soil was wholly unnecessary, that with sufficient rain bountiful crops would be grown anyway, be the seed and the cultivation ever so poor; and on these



premises nearly all farming operations were conducted. These conditions have contributed largely toward the very low general average of farm crops in the south.

A movement for better agricultural methods was inaugurated when it became evident that the cotton industry was threatened with ruin by the boll weevil. The old methods, under weevil conditions, meant certain ruin, and, as it was early known that the weevil could not be exterminated, better farming became a necessity.

That success has attended this educational movement for better farming is proven by many facts, a few of which I will mention.

In the preparation of the soil for a new crop a very large majority of the farmers plow early and deep as soon as this year's crop is off the land, where formerly it was the custom to plow just before planting or at any time most convenient. Thorough frequent cultivation of crops is fast becoming the rule, where formerly the destruction of weeds was considered the sole purpose of the cultivator. Rotation of crops and the use of fertilizers for the purpose of maintaining careful and increasing the fertility of the soil, is receiving careful consideration by farmers, where a very short time ago it was not thought of, in fact, many farmers resented the idea that their lands would ever require fertilizers.

In no particular is the good effects of the educational work of the department of agriculture more apparent than in the increased demand among farmers for the best seed obtainable. The idea of the any kind of seed would do is fast becoming obsolete and in its place the feeling is common that good seed is a necessity if profitable crops are to be grown.

In arriving at these conclusions I have not depended entirely on my own observations, but have consulted others whose lines of business are affected by these changes. Several leading farm implement dealers along the Ft. Worth & Denver City Ry. in the wheat belt, report that while a few years ago many carloads of implements which plowed the land and seeded it at the same time were sold, now there is no demand for them, while the demand for harrows and other tools which pulverize the soil has increased manyfold.



Agents of the Ft. Worth & Denver City and Rock Island railroads report several car loads, as well as numerous small shipments, of commercial fertilizer to points on their lines within the last year, little or none ever having been shipped before.

Leading seed dealers report a greatly increased demand for alfalfa seed and the seed of other legumes, as well as for better and more carefully selected seed generally.

Bankers report an increased number of farmer depositors and their financial standing is of the best.

As the aims, purposes, and results of the department's work is becoming known it is approved and appreciated by all.

Respectfully yours,

W. D. Bentley, Special Agent.

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I heartily endorse and concur in the statement set out in the above letter by W. D. Bentley, Special Agent.

R. A. Dunbar,  
County Judge, Hall County, Texas.

Grundy Bros, Real Estate.  
Memphis, Texas.

N. H. Long, Farmer.  
Newton, Texas.

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We take pleasure in testifying to the correctness of above statements.

Bank of Chillicothe,  
By W. E. Oliver, Cashier.

J. A. Kemp,  
Pres. City Nat'l Bank of Wichita Falls.

A. H. Carrigan,  
District Judge, Wichita Falls.

W. M. McGrayer,  
Cashier First Nat'l Bank, Iowa Park.

W. R. Ferguson,  
Cashier First Nat'l Bank, Iowa Park.

J.D. Avis,  
Co. Com. Pre. No. 1, Wichita Falls.



T. C. Thatcher,  
Implements and Vehicles, Wichita Falls.

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We endorse every statement made by Mr. Bentley.

Wichita Mill & E. Co.  
By Frank Kell, Pres.

C. H. Boedeker,  
Pres. City Nat'l Bank, Bowie, Texas.

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My observations in this section lead me to believe that the statement above set forth by Mr. Bentley is entirely correct.

Walt. Worley,  
Editor Bowie Cross Timbers.

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I heartily endorse the above.

R. L. Morris,  
Merchant and Banker, Chico, Wise Co., Tex.

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I heartily endorse the above.

G. A. Wheeler,  
Cashier Ringgold State Bank, Ringgold,  
Montague Co., Texas.  
J.O. Bryan, Real Estate and Farmer, Ringgold, Tex.

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I endorse statements in foregoing letter.

S. A. Denny,  
County Judge, Clay County, Texas.

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Ft. Worth, Texas, April 23rd, 1906.

Dr. S. A. Knapp, Lake Charles, La.

My Dear Doctor: Mr. Bentley has shown me his letter to you on the general conditions throughout the Panhandle country. I agree fully with Mr. Bentley's statement, and believe that he has covered the ground as well as it is possible to do.

It is very difficult, and I might say, impossible, to form any idea of the percentage of farmers who have been benefited by the teachings of your



methods. There has been a gradual improvement from year to year. In passing over the line I have noticed these improvements and have talked to the people whom I have met, and while no one can form an idea as to the percentage, all agree that much good has been done,

Very truly yours,

W. F. Sterley, General Freight Agent.  
"The Denver Road."

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Houston, Texas, April 23rd, 1906.

Dr. S. A. Knapp, Lake Charles, La.

Dear Sir: I have just returned from a week of travel through Southwestern Texas, with which section I have been familiar for many years.

Knowing that the work of the U. S. Department of Agriculture the past two years, under your direction, has accomplished much in this section, I was yet surprised and delighted to see how generally the farmers have adopted and are practising the methods recommended.

The improvement in general farm methods within two years has been such as to excite comment from even casual observers.

The most noticeable improvement is in the preparation of the land for planting.

Fall and winter breaking, 4 to 8 inches deep, is becoming quite a common practice. To conserve moisture many farmers also winter cultivate with harrow or disk, and more of them will do so hereafter, as the value of this course was very clearly shown this spring at seeding time.

In hundreds of miles of travel I saw few farms that did not show evidence of what would heretofore have been unusual care in the preparation of the land. The farmers who have clung to old methods, without attempt to change, are few. Also they have as a rule lost money, or, at least, made none the past two years, while their more progressive neighbors have prospered.

I found everywhere a lively appreciation of the value of improved seed, and many farmers last year for the first time followed with considerable care approved methods of seed selection.

Altogether I believe that in all this territory the average farming of



today is better by at least 50 per cent. than that of three years ago.

Yours truly,

J. A. Evans, Special Agent.



Cr

Lake Charles, La.,

July 30, 1907.

Doctor R. T. Galloway,

Chief, Bureau of Plant Industry,

Department of Agriculture, Washington, D. C.

Dear Sir:

Permit me to submit the following outline of the Farmers' Cooperative Demonstration Work, of which I have charge in the Southern States. So many requests have been made for a full explanation of the methods employed in this work that I believe it will be wise to print this presentation at your earliest convenience.

Allow me to remain,

Yours truly,

Special Agent in Charge.



## THE FARMERS' COOPERATIVE DEMONSTRATION WORK.

The Farmers' Cooperative Demonstration Work is a system by which the simple and well established principles of successful farming are directly taught to the men on the farms.

One of the most serious problems in reform of agricultural methods has been how to influence the farmer to adopt them. The mere dissemination of printed information in however impressive a form has failed to revolutionize farm methods to any considerable extent. The Plant Bureau of the United States Department of Agriculture believes that it has at last devised a plan by which farm management can be readjusted along better lines, in a comparatively short time. This system it has named "Cooperative Farm Demonstrations". That is, the progressive farmers cooperate with the Department of Agriculture in introducing better methods by farm demonstrations in every community. The effect of a field demonstration in a community is immediate and positive and reaches all classes.

1st. There is the neighborhood discussion for and against the merits of the plan. Then follows the natural rivalry among neighbors for each to surpass the man who agrees to follow the Government instructions.

2d. General interest is aroused, close watch is kept upon the Government plans, which leads to careful observation and study of Agriculture. Local rivalry is a great incentive.

The teaching by object lessons is more effective where it is simple, direct and limited to a few common field crops, such as cotton, corn, cowpeas and oats, in the South, so that the comparisons may be evident and accepted at a glance. If general success can be secured in these standard crops, diversification follows as a natural result.

The following farm principles are taught until they become orthodox as the Ten Commandments.



1. A deeper and more thoroughly pulverized seed bed. Deep Fall breaking (plowing) with implements that will not bring the subsoil to the surface.
2. The use of seed of the best variety, intelligently selected and carefully stored.
3. In cultivated crops, giving the rows and the plants in the rows a space suited to the plant, the soil and the climate.
4. Intensive tillage during the growing period of the crops.
5. The importance of selection in the improvement of seed, and how to select and store.
6. The soil must be filled with humus. How to use legumes, barnyard manure, farm refuse and commercial fertilizers.
7. The value of crop rotation and a Winter cover crop on Southern farms.
8. How to do more work in a day on the farm by using more horse power and better implements.
9. Increase the farm stock to the extent of utilizing all the waste products and idle lands of the farm.
10. Produce all the food required for men and animals upon the farm.
11. Keep an account with each farm product and know from which the gain or loss arises.

Thorough soil drainage is understood in all cases.

The foregoing well known general principles are taught by object lessons in a progressive way.

#### The Practical Organization.

To secure the general adoption of this system by the farmers, an effective organization and plan of instruction by object lessons were devised as follows:



1. A general superintendent is selected by the U. S. Department of Agriculture and given a competent administrative office force.

2. Field agents are appointed, having in charge the practical work in one or more counties, strictly under such general directions as may be issued from the central office. The field agent must have thorough knowledge of improved agriculture and should have considerable practical experience in farming in the section to which he is appointed. He must also have the tact and talent necessary to influence men.

To do the most effective work all classes must be reached---the bankers and merchants as well as the farmers, for, in the South, they own many farms, control to a great extent the capital required to make crops and are strong factors in public opinion.

The message a field agent takes to his district is that prosperity will come to the country by increasing the earnings of the men who till the soil through adoption of our progressive system of farming, and that his mission is to prove it by practical demonstration. He invites the cooperation of the farmers for this purpose. A public meeting is called and farmers are induced to test the plans upon a few acres. At first only a few may volunteer but later enough can generally be secured---they should be well distributed.

The environment of men must be penetrated and modified or little permanent change can be made in them. The environment of the farmer is limited generally to a few miles. The demonstration must be carried to this limited area and show how simple and easy it is to restore the virgin fertility of the soil, to multiply the product of the land per acre, to increase the number of acres each laborer can till by three or four fold and harvest a profit from untilled fields by animal husbandry. This instruction to the men on the farms must, to be successful, include the following principles.

1. It must be a direct message delivered personally by one who carries influence. It must be oral, and not written, and sustained by the personal experience of the agent.



2. It must be simple. Teaching agriculture is like that of any other branch---commence at the bottom and give simple, practical lessons on standard crops. In the cotton-producing states, our first instructions include cotton, as the main cash crop; corn, as the standard food for work animals and the basis for more stock on the farm; cowpeas, for food and for renovation of the soil; and oats or wheat as the winter cover crop. When the farmer has mastered these crops he is ready for diversification in any desired direction.

In districts where cotton is not the standard cash crop, instruction is given in whatever replaces cotton as a money-earning crop. The simple lessons at the start should gradually be made progressive till they cover all information necessary to success in Agriculture.

3. The teaching must be by object lessons, and the demonstration to be complete must be worked out by the farmer on his own farm. A government demonstration conducted at government expense and by government experts has little more effect than a book; but what the farmer does he believes.

4. The farmer must be convinced that he will receive a direct and almost immediate gain by following our instructions. The process of changing the environment of a farmer is like that of transforming a farm boy into a scholar. First, the farmer is selected to conduct a simple and inexpensive demonstration. Second, a contract is drawn with the United States Department of Agriculture by which he agrees to follow certain instructions. Third, better seed is furnished him and his name is published in the papers. Fourth, each month when the Government's Field Agent goes to inspect his Demonstration many of his neighbors are invited; consequently, he will almost unconsciously improve his farm so as to be ready for company and cultivate all of his crops better. Fifth, a report of his extra crop is made in the County papers. His neighbors talk about it and want to buy seed. Sixth, he sells the seed of his crop at a high price, his neighbors ask him how he produced it; he is invited to address public assemblies; he has become a man of note and a leader of the people and cannot return to his



old ways. Soon there is a body of such men; a township, a county, and finally a state is transformed.

The field agent must collect and keep a permanent record of all the material facts bearing on the demonstration of each farmer--- such as the soil, how long in cultivation, the previous crop, when the field was plowed, depth of plowing, etc. etc. A copy of these records must be sent to the general office, which is then in position to give intelligent direction. The field agent reports to central office daily by card, supplemented by a full weekly letter.

Quarterly meetings of field agents in a state are held at some central point for conference and instruction. At such meetings two or three of the most eminent specialists in standard crops or soil management are secured for instruction.

#### State Inspection.

The Farmer's Cooperative Demonstration Work covers such a large territory it is necessary that there should be a field agent in each state who may have a certain supervision over the other agents of that state, for the following reasons:

A field agent may be sick or for other reasons be obliged to discontinue his work. In such a case there must be someone familiar with the work to take in charge his territory and instruct his successor. The State Inspector would assist the district field agent in holding meetings at important points. He would make monthly visits to all portions of the state under our system and report to the central office, and do such other work as may be assigned him.

#### Advantages of this Plan of Organization.

There is a large supply of good agricultural information available. The U. S. Department of Agriculture, the State Experiment Stations, the agricultural papers, bulletins and books are replete with valuable information. There is also a vast amount of correct farm practices and of excellent experience and even scientific knowledge among American farmers, scattered and used almost solely for personal gain. Our Farmers' Cooperative



Demonstration Work is able through its central office, where a complete library of practical agriculture is kept, through its field agents and the thousands of cooperating farmers, to gather all this body of agricultural knowledge and make available for improving farm conditions---all taught in a simple way. A better seed bed requires deeper plowing and more harrowing, hence more horse power on the farm. It also includes the production of more economic crops for feedings teams. Rapid and frequent tillage leads to an inquiry for improved implements. Thus the lessons progress and diversify and upon all the widest experience is brought to bear.

#### Seed Farms.

The good-seed problem has been a most difficult one to solve in the South. Very few farmers paid any attention to planting pure seed or keeping it pure when planted, and still fewer tried to improve their seed by selection. Not one farm in one hundred in the South has proper storage for good seed. It is estimated that ninety-nine per cent of all the valuable seeds distributed by the U. S. Department of Agriculture has been lost. Through *the best seeds for a given section are observed and* our field agents, prominent farmers are induced to establish in every county seed farms, where the cultivation of the crop and the selection and storing of the seed are supervised by our field agents under an agreement that the seed produced shall be distributed to the farmers at a moderate price. A general interest is aroused among the farmers to plant a separate seed patch on every farm and carefully select for improvement.

#### The Farmer's Cooperative Demonstration System tested in States infested with the Cotton Boll Weevil.

For a number of years prior to 1904 the Mexican boll weevil had been steadily encroaching upon the cotton producing lands of Texas until it had spread from the Rio Grande to a short distance beyond the eastern boundary of the State, and threatened the entire cotton industry of the South. Where cotton is the sole cash crop



an invasion of the boll weevil, and the consequent loss of the cotton crop brought disaster to every interest, and so completely demoralized financial conditions as to produce in some sections a panic.

The cotton crop had been generally made upon a credit system by securing advances from merchants and bankers. Upon the advent of the boll weevil, confidence in securing a cotton crop was impaired and, in the worst infected districts, almost totally destroyed. Merchants and bankers declined to advance, or advanced in limited amounts, and with great caution. Labor became discontented and sought other sections or states. Tenant farmers unable to obtain advances removed to non-infected districts and property rapidly declined in value.

Here was a demand for immediate relief, and the demand appealed to the entire nation, because the loss of the cotton crop would be a national calamity. In response to this appeal Congress made an emergency appropriation <sup>in Jan'y 1904</sup>. The question then arose as to the method by which immediate relief could be extended. Further experimentation could only be valuable for the future. Farmers are slow to accept printed conclusions based on things they have not seen, and seldom act upon them.

It occurred to the Bureau of Plant Industry that the most effective immediate remedy would be the Farmers' Cooperative Demonstration Work. The Farmers' Cooperative Demonstration Work was inaugurated as a National project in January, 1904,---primarily because of the depredations of the boll weevil in the State of Texas. By the rapid spread of this pest East and North, it had become evident that it would in time invade all the cotton-producing states. This occasioned a general alarm among the cotton planters and in the industrial centers of our entire country. This alarm was not without just cause as is shown by the effects of the boll weevil on the cotton crop of Texas up to and including 1903. The crop losses were not uniform in the infested districts---some sections partially escaped; some farmers under the most unfavorable conditions made a fair crop.



The territory actually worked under the cooperative cotton demonstration plan extends from Spofford, Texas, to Monroe, Louisiana, over six hundred miles east and west, and from Galveston to Channing, Texas, nearly six hundred miles north and south. In order to reach as many farmers as possible before planting should commence, four field agents were employed in Louisiana and thirty-seven in Texas during February, March and a part of April. They were then reduced to two in Louisiana and twenty-one in Texas, which were continued for the season.

Special Field Agents were mainly appointed on the advice of district committees of the prominent business men and farmers conversant with the territory to be worked. The office force consisted of six clerks. More than one thousand farmers' meetings were held and addressed by the general managers or by the field agents. One hundred and twenty thousand envelopes were used, and about three hundred thousand miles of travel performed by the agents in the prosecution of the work.

The total cost, including all salaries, office and traveling expenses, including \$3253.00 paid for cotton seed and fertilizers, from January 27, 1904, until December 1, 1904, was \$38,731.41.

#### Result.

Within sixty days from the opening of the central office, the names of 7,119 farmers in Texas and 242 in Louisiana, a total of 7,361 for both states, were sent to the central office---each agreeing to follow instructions and report.

2d. Many agreed to follow the plans of the Department, but said they preferred not to report.

3d. A still larger number quietly undertook to make a better cotton crop than would be made on our special demonstration farms, and they soon found that they were obliged to follow the same general methods. The total number of farmers in Texas and Louisiana who followed the Department's instructions in the main exceeded fifty thousand.



The Cooperation Plan of making Cotton under Boll Weevil Conditions.

The Cotton Cultural System of the Bureau of Plant Industry.

1st. Destruction of weevils in the Fall.

(a) Burn the cotton stalks early in Fall while the weevils are still upon them.

(b) Burn all rubbish in and about the field which might serve for hibernating quarters.

2d. Immediately after destroying the stalks, flat break (plow) the field one to two inches deeper than usual. This assists in destruction of the weevils and in preparation of the field for successful cropping the following season.

3d. Shallow winter cultivation of the soil, that is, working the land with a toothed harrow or a disc once in twenty or thirty days during the winter, as the weather may permit, to air the soil and destroy grass. The soil should be in excellent condition at time of planting.

4th. Early planting. The object is to hasten the maturity of the crop. The Bureau of Entomology has shown that boll weevils do not multiply till the squares begin to form, and do not generally become numerous enough to destroy the entire crop before the last of July.

In addition to this, early planting has been found generally helpful as against cotton pests, such as the boll worm and the leaf worm. Furthermore, the winter rains generally leave the soil with plenty of moisture, while in the Spring there is liable to be a drouth which may retard germination in late planting.

5th. The planting of early maturing varieties of cotton.

6th. The use of fertilizers, especially, acid phosphate and potash to hasten maturity and increase fruitage, and the use of cotton-seed meal (when necessary) to promote vigor and growth. Soils and methods of application are fully explained. We have demonstrated that a small amount of fertilizer properly applied accomplishes marvelous results.

7th. More space between the rows and greater distance in the row when under boll-weevil conditions. Where the fallen squares are



exposed to the rays of our hot midday sun the infesting larvae of the weevil are soon killed. On general principles, more space to the plant makes a better stalk with more limbs, more bloom, and a higher grade of cotton. The spacing between the rows and in the rows must depend on the soil and variety of cotton. More space should be given to fertilized than to unfertilized cotton.

8th. The use of the toothed harrow. While this belongs to the general cultivation of the soil it is of sufficient importance to form a special division. After early planting the germination is frequently slow and the earth may become crusted. The harrow may be used before the cotton is up to break the crust, and should be used soon afterward to keep the soil loose so the plant will take on rapid growth at once. The crop is <sup>surprisingly</sup> sometimes advanced ~~ten days~~ by the judicious use of the harrow.

9th. Intensive cultivation. Plowing or cultivating deep the first time, and shallow at all subsequent times is an important feature of good cotton production. It destroys weeds, increases the plant food and conserves moisture; consequently hastens plant maturity. Under boll-weevil infection, the cotton crop should be cultivated every week. Some of our most successful cooperators cultivated fifteen times and continued late as possible.

10th. Agitation of the stalks by means of brush attached to the cultivator. Some farmers attach a chain to the tongue, thus brushing the stalks, and smooth poles to the whiffletrees, also a pole to the handles so as to brush the stalks more than once in passing. This knocks off the infected squares. Larvae in the squares that remain on the stalks are pretty sure to hatch. Agitation of the stalks disturbs the weevil and reduces the damage it does.

11th. Picking up the squares that fall. This reduces the rapidity with which the weevil multiplies and is a great aid in saving the crop. Plowing the squares under or even exposing them to the sun is not as sure destruction as picking up and burning.

12th. Controlling the growth of the plant by barring off or topping. Under boll-weevil conditions the main cotton crop must be made



upon the lower and middle limbs. There is no use of a tall plant. As soon as the plant indicates too rapid growth, bar off on each side, thus slightly root-pruning and retarding upward growth. The tendency will then be to throw more vigor into the lower limbs and to put on more fruit. This method is especially valuable on rich bottom lands, where stalks frequently grow six to seven feet high. It should be noted that with the boll weevil no top crop is made, hence more bottom crop must be secured, requiring a low, limby, vigorous plant.

13th. Selecting the seed. Scarcely any item in the cultural system is of more importance than the selection of the seed, where early maturity is of primary importance. The largest, best and earliest bolls from the most vigorous plants should be selected for seed in advance of the general picking, and be kept in a dry place.

14th. Rotation of crops and the use of legumes. Some of the serious difficulties in cotton production arise from consecutive production of cotton on the same land. It reduces fertility, and hence operates against early maturity. With the best of efforts to clear fields of the weevil in the Fall by burning the stalks and deep plowing, some weevils will survive and a few soon infect a field. By planting one half the land to corn and cowpeas and the other half to cotton, as much cotton can be produced as at present and the land gradually restored to its original fertility. The corn and cowpeas will add materially to the income of the farm.

#### Notes on the Cultural System of Producing Cotton.

(a) The possibility of making a cotton crop under boll-weevil conditions is based on three theories:

1st. That the multiplication of the weevils can be retarded so as not to become totally destructive to the crop until the first and middle crops are out of danger.

2d. That the cotton plant can be so bred and selected as to throw nearly its whole life forces into the lower and middle crops.

3d. That the plant can be so hastened by application of the cultural methods that most of the bolls will be developed to the safety point before the weevils are too numerous.



The so-called cultural system may then be divided into two classes of aids.

1. Such as directly tend to reduce the number of weevils or retard their rapid multiplication, as the following:

(a) Burning the cotton stalks in the Fall while the weevils are still at work upon them, and burn all rubbish in the field.

(b) Spring destruction of the hibernating weevils when attacking young cotton before the squares begin to form.

(c) Picking up the fallen squares.

(d) Violent agitation of the cotton stalks when cultivating or plowing the cotton, which should be continued late as possible.

#### Methods which Aid Early Maturity.

(a) Fall breaking (plowing).

(b) Winter cultivation of the soil.

(c) Planting early as practicable the seed of early maturing varieties.

(d) Planting in rows wider than usual and giving more space in the row.

(e) Use of fertilizers.

(f) Use of the toothed harrow as soon as the crop comes up.

(g) Frequent cultivation of the crop continued late into the season.

(h) Barring off to prevent too rapid growth of the plant.

(i) Careful selection of seed and storing in a dry place.

(j) Rotation of crops and use of legumes.

One of the greatest dangers to the subsequent cotton crop is the wintering of large numbers of weevils. We recognize that enough boll weevils may be wintered over by a general failure to burn the stalks early in the Fall to jeopardize the crop the ensuing year. The Fall destruction of the weevil by the universal burning of the stalks at the proper time, that is while the weevils are still at work on the green cotton, is one which encounters great practical difficulties.

1. At such time the bolls are not usually all open and the farmer is naturally inclined to delay destroying the stalks until he can secure the remainder of the crop.



2. Varieties of cotton differ in time of maturity and the same variety may differ owing to soil, moisture, fertilization, cultivation, etc. The planting of early maturing varieties of cotton is not only important as an aid in securing a crop but as a means of destroying the weevil. The early maturing cotton can be gathered and the stalks destroyed before it is time for the weevil to go into winter quarters. As a result he must migrate or die. If all plant early maturing cotton and follow the plan here outlined it would result in almost a total destruction of the weevil or at least greatly lessen its damage.

3. Large numbers of weevils apparently hibernate in adjacent timber, as is shown by their invariably first attacking the fields next the timber. Hence for complete destruction of weevils something more than the Fall burning of the stalks and trash in the cotton field would appear to be necessary. More complete destruction of the weevil will be easier for the farmer when he is better informed of the varying hibernating quarters.

If it is important to destroy the weevils in the Fall, when a large per cent of them would die during Winter in any event, it is still more important to destroy the emerging Spring weevils while feeding upon the young plants. In the same general line is the picking up of the fallen squares. If two or three generations can thus be destroyed it will result in retarding the increase of the weevil and in adding to the cotton crop.

#### NOTES.

##### Rotation of Crops.

The Bureau of Plant Industry in all its instructions seeks to build up soil energy and improve its mechanical conditions. An important factor to this end is rotation of crops, and the increase of the humus by plowing under green plants, especially cowpeas. This builds up the soil and renders it more porous and responsive.

On lands considerably worn it is recommended that cotton be invariably planted on lands which were in corn and cowpeas the preceding year.

##### Selection of Seed.

The planting of early maturing varieties and the selection of the seed from the earliest and best bolls on the most vigorous and best developed stalks are fundamental principles in growing cotton regardless of boll weevil, and cannot be too closely followed.



### Width of Rows.

Special attention must be directed to the proper distance of rows apart, and of thinning of plants in the rows under boll weevil conditions. There must be width enough so that the sun's rays can reach the earth between the rows, and thus aid in destroying the larvae of the weevil. If, however, extreme space is given between the rows, and considerable distance is allowed each plant in the row, and intensive cultivation be given, there may be enough stimulus imparted to the growth of the plant to actually retard maturity, unless controlled as explained under barring off.

### Frequent cultivation of the Crop Continued late into the Season.

Abundant testimony has come from our cooperators to show that as long as weekly cultivation of the crop with violent agitation of the stalks is continued, the damage done by the weevil is greatly reduced, and that as soon as they are discontinued the weevils attack not only all the squares but the half-grown bolls in increasing numbers.

Violent agitation of the cotton stalks at the time of cultivation is of vital importance. It disturbs the weevil and knocks off the fallen squares. The later this can be continued the better.

It has been proven by our cooperative demonstration work that a good crop of cotton can be raised by following the instructions of the Bureau of Plant Industry in sections the worst infested by the boll weevil and despite its ravages. It is possible that the future may discover some better method of meeting the boll weevil problems, but at present it is the only safe method. Those who speak lightly of the boll weevil as a depredator fail to consider that it has now covered a large portion of Texas, a large portion of Louisiana and four counties in Arkansas. It is annually invading new territory with a column 600 miles long and in numbers sufficient to cover every stalk for thirty miles wide.

It is too late to arrest the progress of the boll weevil by any Legislative enactments, or any zone of non-cotton growing territory, or any quarantine regulations.

All attempts of this kind will prove disastrous failures. Cotton can be made with the weevil and the sooner the American farmers face the situation the better it will be for all concerned.



### Corn.

Corn is the main grain dependence for farm stock and can be successfully raised in most portions of the south. Any considerable increase in its annual production would have a marked effect upon the value of the unused lands for grazing purposes and would perceptibly increase the income of the farms. Its importance for annual food and for rotation with other crops gives it a rank next to cotton as a standard farm crop. Notwithstanding, its cultivation has been singularly neglected until the average yield per acre has fallen below the profit line in many states.

The last census report shows the corn yield per acre for 1899 in the following states:

	Yield per acre.	
Alabama	12.8 bu.	\$6.23 value per acre.
Arkansas	19.0 "	7.58 " " "
Florida	9.8 "	4.69 " " "
Georgia	9.8 "	4.93 " " "
Louisiana	16.4 "	7.69 " " "
Mississippi	17.0 "	8.29 " " "
North Carolina	12.8 "	6.38 " " "
South Carolina	9.8 "	5.16 " " "
Texas	21.9 "	6.86 " " "
Virginia	19.2 "	8.50 " " "

Even at the high value per bushel allowed, the corn crop in the above states does not pay a living wage and a fair rent value for the land in a majority of them.

There is abundant proof that large and profitable crops of corn can be made in these states by the use of the best seed and improved methods. The planting of low grade seed in a shallow and impoverished seed-bed is responsible in the main for deficient yields and quality. However, to secure the best results, other reforms must be made, such as better drainage, an adjustment of distances between the rows and the stalks in the rows to meet the requirements of soil and climate, intensive cultivation of the crop, the use of cowpeas in the corn, followed by a winter-cover crop where practicable, etc.



Our Farmers' Cooperative Demonstration Work gives instruction along all these lines and the results have been most encouraging. Our investigations show that not one per cent of the lands in the south planted to corn are plowed deep enough at breaking, have sufficient humus and have the proper tillage to make the best crop. Seed is so generally defective that only about one-third of so-called good seed is suitable for planting, if maximum crops are expected.

Along such practical lines our Farmers' Cooperative Demonstration Work is conducted with the object of increasing the corn crop in the South Atlantic and Gulf States at least three fold per acre without additional cost. A system of seed selection for improving the quality and increasing the yield and methods of storage for preservation of vitality are outlined.

Detailed instructions on all the above are given on application.



### Economic and Renovating Crops.

Much of the farming in the south is simply a succession of inherited bad practices, persistently followed without regard to the uneconomic results. Corn, as above stated, requires a strong well-tilled soil and upon thin lands, deteriorated by bad management, the yield soon drops below a remunerative average. Such lands will, however, profitably produce other crops of great value for the sustenance of farm stock. Lands that are now producing ten bushels of corn per acre will with much less labor produce the following:

	bu. corn
Cowpea hay, 1-1/4 tons per acre = in nutritive value	30.9
Peanut hay, 1-1/4 tons per acre = in nutritive value	23.75,
and in addition, 25 bu. peanuts worth \$6.25.	

On rich lands that under good culture will produce 40 bu. of corn per acre and over, satisfactory results can be secured by planting cowpeas between the rows of corn. In the main, on poor hill lands corn culture should be discontinued, unless highly fertilized with stable manure or compost or the soil be placed under a thorough system of renovation.

Even on rich bottom lands rated to yield 40 bushels of corn per acre, if sown to alfalfa frequently five tons of hay can be produced in a season on one acre; equal in feeding value to 105-1/2 bushels of corn. In addition, the cowpeas, peanuts and alfalfa rapidly enrich the soil and leave it in excellent mechanical condition for the ensuing crops.

It is along such lines that great economics can be practiced and valuable reforms wrought out for the betterment of rural conditions and <sup>for</sup> solving the problems of the farm.

The foregoing are only some of the helpful lines undertaken for rural uplifting. The results have far exceeded our expectations. The farmers and all classes have accepted the work gratefully and have cooperated to the best of their ability in every undertaking. The results have been a surprise even to the most sanguine.



Extent of the Work under Congressional Appropriations.

During the fiscal year 1906-7 there were employed in Texas prior to March 4, 1907, 11 field agents; in Louisiana 4, and in Arkansas 2. After March 4, 1907, the field agents in Texas were increased to 19; in Louisiana to 8 and in Arkansas to 6; and one supervising field agent was appointed for Texas and one for Louisiana and Arkansas. Total field agents for Texas, Louisiana and Arkansas 35.

The office force consists of one person in charge, one general assistant, and four clerks and stenographers.

In Texas there are 1,357 demonstration farms; in Louisiana 770; in Arkansas 71, making a total in all of 2,198 demonstration farms. It will be noted that most of the agents for Arkansas were appointed too late to establish demonstration farms. They simply aided cooperators.

Total cooperators in Texas, Louisiana and Arkansas 3,500.

Total appropriation for 1906-7, \$39,000.00

Additional appropriation, available  
March 4, 1907, 40,000.00

The Farmers' Cooperative Demonstration Work Extension.

In order to extend the Farmers' Cooperative Demonstration Work into territory for which there were no Congressional funds available, the General Education Board of New York generously offered to pay the cost of such extension, stipulating only that the work should be conducted according to the regulations of the Department of Agriculture. Under this agreement demonstration work has been carried on in Mississippi, Alabama and Virginia the past year, and arrangements have been made to further extend the work into the Carolinas and Georgia commencing October 1st, 1907. During the past year seven field agents have been employed in Mississippi, five in Alabama and two in Virginia. For the ensuing year, commencing October 1st, 1907, the General Education Board has appropriated the sum of



\$69,000, for demonstration extension work in the States of Mississippi, Alabama, Georgia, the Carolinas and Virginia.

The relation of the General Education Board to this Demonstration Extension Work has been that of deep interest and an unselfish benevolence. No cooperation work could be more helpful and harmonious.

Summary of Work.

Field agents in Mississippi,	7
" " " Alabama,	5
" " " Virginia,	<u>2</u>
Total,	14

Demonstration Farms.

Mississippi,	356
Alabama,	369
Virginia,	<u>50</u>
Total,	775
Cooperating farmers,	3,000

Total appropriation for extension work,  
in field, for year terminating October  
1st, 1907, \$28,500.

Salary of General Assistant, 2,400.  
\$30,900.

Plan of Cooperative Demonstration Work for 1907-8.

Number of field agents, Department work,	32
Number of local agents, Department work,	130
Number of field agents, Extension Work,	30
Number of local agents, Extension work,	<u>120</u>
Total field agents,	312

Number of demonstration farms, Department work,	3,000
Number of demonstration farms, Extension work,	2,800
Total cooperating farmers,	12,000

Congressional Appropriations, available 1907-8, \$72,000.

Extension Appropriations, available 1907-8, 69,000.  
Total, \$141,000.



### Results Accomplished.

Our field operations extend over such a vast territory it is difficult to state results in a concrete way. Thousands of letters are on file in our general office giving the Farmers' Co-operative Demonstration Work credit for great increase in the crops and for a general uplift along all lines affecting the farm. They are too numerous to punlish. The following condensed partial statement for 1906 will convey some impression of the general value of the work.

Name of Special Agent in charge of special demonstration farm.	Number of special demon- stration farms reported on.	Average increase in yield per acre over surrounding farms. Cotton (Lint).	Average increase in yield per acre over surround- ing farms. Corn (bushels).	Value of increased yield per acre of cotton, at 10 cts. per lb.	Value of increased yield of corn per acre at 50 cents per bushel.
A. V. Swaty, Little Rock, Ark.	14	163 lbs.	22.7	\$16.30	\$11.35
W. F. Procter, Houston, Texas.	20	209	11.3	20.90	5.65
J. L. Quicksall, Waco, Texas,	18	100	6.0	10.00	3.00
L. J. Berryman, Palestine, Texas,	11	252	13.1	25.20	6.55
C. W. Boyce, Eagle Lake, Texas,	7	84	----	8.40	----
W. D. Bentley, Wichita Falls, Tex.	15	215	8.2	21.50	4.10
E. W. Smith, Tyler, Texas,	15	195	----	19.50	----
D. R. Caldwell, Temple, Texas,	11	269	----	26.90	----
H. E. Savely, Greenville, Miss.	116	181	18.0	18.10	9.00
J. E. Adger, Grenada, Miss.	14	206	22.5	20.60	11.25
W. M. Bamberge, Jackson, Miss.	39	300	23.0	30.00	11.50
L. H. Featherston, Homer, La.	37	275	15.6	27.50	7.80



Name of Special Agent in charge of special demonstration farm.	Number of special demonstration farms reported on.	Average increase in yield per acre over surrounding farms. Cotton (lint)	Average increase in yield per acre over surrounding farms. Corn (bushels)	Value of increased yield per acre of cotton, at 10 cts. per lb.	Value of increased yield of corn per acre at 50 cts. per bushel.
J. E. Wemple, Grand Cane, La.	14	225	12.6	\$22.50	\$ 6.30
F. A. Hilley, Shreveport, La.	19	247	20.5	24.70	10.25
P. Perrin, Dossman, La.	79	200	----	20.00	----

It will be noticed that in figuring the value of the increased yield per acre of cotton, the seed is not taken into account. In most instances the seed from these farms were sold, at prices ranging from 60 cts. to \$1.00 per bushel, to neighboring farmers, so that the actual profit per acre to the demonstrator was much greater than shown in this table.

The following is a table showing comparative shipments of cotton at seven places consecutively taken along the line of the Houston and Texas Central Railroad, in Texas, from 1903 to 1906, inclusive.

	1903	1904	1905	1906
Waller, Texas,	1,000	1,700	2,200	3,500
Bremond, Texas,	1,100	2,200	3,500	7,000
Kosse, Texas,	1,362	3,459	4,380	7,500
Thornton, Texas,	1,200	3,570	4,400	8,500
Groesbeck, Texas,	3,483	6,089	6,226	12,500
Mexia, Texas,	6,000	8,600	12,600	16,000
Wortham, Texas,	<u>1,800</u>	<u>3,500</u>	<u>4,500</u>	<u>10,000</u>
	15,945	29,298	37,806	65,000

Gain in 1906 over 1903.

39,055 bales, at \$50 per bale,                      \$1,952,750.00  
Add value of seed and the total would be  
over two million dollars.



We have, therefore, in all about 9,500 farmers working under instructions and reporting directly to the central office or the field agents. It is conservatively estimated that for each farmer reached directly in this way, more than 25 others are reached indirectly, through the demonstration and cooperative farms and by meetings and through the press. Directly and indirectly, more than 250,000 farmers have been brought in touch with the demonstration work the past fiscal year.

#### Meetings.

Hundreds of farm meetings have been held during the past year by the agent in charge and the field agents. The total attendance at these meetings has aggregated many thousands, and great interest in better farming has been manifest.

#### Newspapers.

As a means of reaching thousands of farmers with whom our agents do not come in personal contact, we have, during the past year, made systematic use of the newspapers. Every bulletin or letter of instruction sent to cooperators has also been furnished to about 1,000 county newspapers, and by most of them published in full.

The hearty cooperation of the press has been of great value to the Demonstration Work.

Respectfully submitted,

S. A. KNAPP

Special Agent in Charge.



UNITED STATES DEPARTMENT OF AGRICULTURE,

Bureau of Plant Industry,  
Farmers' Cooperative Demonstration Work,  
Washington, D. C.

Field Instructions for

Farmers' Cooperative Demonstration Work.

Commercial Fertilizers - Their Uses and Cost.

Since the prime object in the use of all commercial fertilizers is to increase the production, they must be used either to supply plant food directly or to so act upon the soil that a larger amount of its nutritive elements may be at the disposal of the plant. In actual practice most commercial fertilizers combine both effects. All the substances required by plants ~~and except three~~ are abundant in most soils ~~except three~~, nitrogen, phosphoric acid and potash. Nitrogen, so necessary to the growth of plants is found abundantly in the atmosphere but it can not be used by plants in that form. It must be combined with other substances. Its familiar combination is known as ammonia. Nitrogen combines with a great many substances, but it is always trying to escape from them, and it is because it is so difficult to <sup>be</sup> held in these combinations that it is expensive. The chief function of nitrogen in plants is to promote growth, but it is also of very great importance in the perfection of fruit.



Since nitrogen enters so largely into the composition of plants, it follows that everything of vegetable origin is a valuable source of this substance. This should be thoroughly appreciated. When vegetable matter is burned upon the farm, the nitrogen is released from its combination, and escapes into the atmosphere and is lost. On the other hand, if this vegetable matter is returned to the soil, when it decays, the combined nitrogen is placed where it is available for plant food. The forms most important to the farmer of the South in which nitrogen is available are cotton seed meal, bone meal, the products of the slaughter pen in what is known as tankage, the nitrate of soda and the sulphate of ammonia.

Next in importance as a plant food is phosphoric acid. This substance, or rather phosphorus of which it is a compound, is familiar to all in phosphorescent wood and the common match. It is largely required by the plant for growth, but is absolutely essential in the perfection of seed, and is a great factor in hastening the maturity of the crops. It is the presence of phosphoric acid and potash in wood ashes that makes them valuable as a fertilizer.

Phosphoric acid is also found combined with lime, in bones, and in rock. In these forms it must be treated with acid in order to be taken up rapidly by plants and thus treated it is changed into two forms, reverted phos-



phoric acid, and soluble phosphoric acid. The former is soluble slowly in water or weak acids, such as are found in the soil, while the latter is readily dissolved by water. These two are called available phosphoric acid, because the plants can use them. The most accessible form of phosphoric acid to the farmer is known as acid phosphate. This is the product of the treatment of the insoluble rock phosphate with acid, and thus treated contains the phosphoric acid in all three of the above forms. Potash is more directly effective in the perfection of fruit, but it is rarely very deficient in soils and especially the soils of the Gulf States. It is found in abundance in ashes, and is there known as lye: commercially it is the most cheaply obtained in the form of kainit.

#### What to Buy.

Since the elements of plant food above mentioned are required in different quantities by different plants, and since the soils vary in their supply, it is well for the farmer, to know what his soil and plants need before investing his money in fertilizers. A great many have <sup>the</sup> ~~an~~ *impression* idea that the chemist can analyze a soil and answer these questions. This is not the case, however, and if he could a farmer can not afford to send for a chemist every time he wants to plant a field. The practical way for the farmer to determine these facts is to observe the



growth of the plants on the land. If the plants grow very rapidly, and made an abundance of leaf and stalk it is evidence of a good supply of nitrogen. If there is not a proportionate amount of fruit it is a sure indication that the soil needs phosphoric acid. On the other hand, if the plant grows slowly, has not a good color and matures its fruit before it reaches a fair size, it indicates that the soil requires nitrogen. It is now settled that as a rule most of the soils of the South are deficient in both nitrogen and phosphoric acid and some in potash; so when we buy commercial fertilizers we buy them for their content of these substances. If the farmer has saved all his manures and has grown cow-peas abundantly, as he should, he will rarely have to buy nitrogen.

#### How to Buy.

Commercial plant-food, called fertilizers, is never sold pure but in combination with other substances. These substances with which they are combined are of no value to the farmer, but simply add to their weight. The laws of nearly all of the States now require that on each sack of commercial fertilizer shall be stamped just what plant food it contains. This composition is given in percentage which means, in a hundred pounds of the fertilizer, there are so many pounds of the particular substances; for example. A certain fertilizer is offered for sale, on the sack of which is branded the following:



Nitrogen,	3 per cent.
Soluble phosphoric acid,	6 per cent.
Reverted phosphoric acid,	4 per cent.
Available phosphoric acid,	10 per cent.
Potash,	2 per cent.

Translated into terms of pounds this means that in a sack weighing 100 pounds there are:

Three pounds nitrogen.

Six pounds soluble phosphoric acid.

Four pounds revertible phosphoric acid.

Ten pounds available phosphoric acid.

Two pounds potash.

Making a total of 15 pounds of plant food in the 100-pound sack. When a ton of such fertilizer is bought the purchaser secures nitrogen 60 pounds, soluble phosphoric acid 120 pounds, reverted 80 pounds and potash 40 pounds. Notice that what is called available is the sum of the soluble and reverted. In this fertilizer we obtain three things that are of use, 3 pounds nitrogen, 10 pounds phosphoric acid and 2 pounds of potash to the 100 pounds.

If cotton seed meal, acid phosphate and kainite<sup>9</sup> are used to make this fertilizer it will require the following amounts for one ton of the mixture:



	Pounds.	Price per Ton.	Cost.
Cotton seed meal	690	\$25.00	\$8.65
Acid phosphate (15 per cent available)	1108	15.00	8.31
Kainit	202	12.00	1.21
	<hr/> 2000		<hr/> \$18.17

In some cases in a guaranteed analysis there is inserted a line giving the equivalent of the nitrogen in ammonia. Ammonia is nothing but nitrogen in combination with another substance of no value, consequently as in the former instance there is nitrogen, phosphoric acid and potash. Inserting the ammonia in the formula is apt to deceive one who does not know the distinction. What is necessary is to buy fertilizer in accordance with the analysis. Remember that it is the pounds of plant food that is wanted, and not just a sack of stuff, the majority of which is of no value. Since it costs just as much in freight and to handle this filler, as it is called, it is manifestly to the farmer's interest to buy the fertilizer that contains the greatest amount of plant food. Taking acid phosphates as an example, we find that there is a great variation in their composition. Some run as low as 10 pounds available phosphoric acid to the 100, while others contain as much as 14 to 15 pounds. As phosphoric acid generally sells at about 5 cents per pound the former



would be worth 50 cents a hundred, whereas the latter would cost 75 cents. But it will cost as much in freight and to handle the former as the latter, while in the latter we actually get 50 per cent more plant food. In buying then it is economy to take high grade goods, although they cost a little more. An average sample of cotton seed meal contains:

Nitrogen,	7.5 per cent.
Phosphoric acid,	2.5 per cent.
Potash,	1.5 per cent.

A hundred pound sack will therefore contain the following amounts of plant food:

Nitrogen,	7.5 pounds.
Phosphoric acid,	2.5 pounds.
Potash,	1.5 pounds.

The phosphoric acid may be considered as available, as the fermentation renders it so.

#### How to Use Commercial Fertilizers.

From what has been said above, and since commercial fertilizers act in two ways, i.e., perform the double functions of supplying food direct to plants and of rendering available plant food already contained in the soil, their most economical use is as supplements to the home supply of manure. It is not possible to permanently improve a soil by the use of commercial fertilizers alone.



In order to effect a permanent increase in the soil's production, commercial fertilizers should always be used in connection with stable manure, green manuring and rotation of crops. By green manuring we mean that a crop of vegetable matter, preferably cow-peas, or clover, should be turned into the soil at least once every two years. We should also ~~be able to~~ have our soil in the best mechanical condition, and give the best of cultivation. The question of the right amount of moisture is a very important one, for the best results cannot be obtained with either too much or too little. For plant production it is absolutely necessary to have a supply of decayed vegetation - humus- in the soil.

The final question is, how and when to apply the fertilizer.

Where quantities of from 200 to 400 pounds are to be used, the fertilizer is best applied from a week to ten days before the time of planting. With these quantities apply as follows:

After the bed is thrown up, open same with a furrow down the center, being careful to open it at least 1 to 2 inches deeper than it is intended to put the seed. Distribute the fertilizer either by hand or with a machine in this furrow, mix it with the soil, running a bull-



tongue at least twice in the drill, then close the drill with a harrow and reopen for the seed, or drop with a planter, being careful that the seeds do not come in direct contact with the fertilizer. This mixing of the fertilizer with the soil and preventing direct contact with seed is very important. If the seed and fertilizer are in contact the vitality of the seed will be wholly or partially destroyed and the result will be a poor stand. If the fertilizer is not mixed with the soil, the crop is apt to fire badly with the first dry spell. If larger quantities than those mentioned are to be used, then it is well to put one portion in the drill and at the first working of the crop barr off a light furrow on both sides of each row and apply the balance, covering it with subsequent cultivation. Soils and plant requirements vary so much that it is not possible in a general article of this kind to tell just what mixtures to use. As a rule our farmers will find cotton seed meal and acid phos. the best fertilizers and unless large quantities are to be used they better mix these themselves. Very poor soils will do well with a mixture of two parts by weight of cotton seed meal and one part of acid phosphate for corn. The same soil would require equal parts of meal and acid phosphate for cotton. On better soils, especially soils that have grown cow-peas the year previous, or to which



stable manure has been recently applied, the latter mixture would do for corn and then it would suit cotton were we to use two parts acid phosphate to one of cotton seed meal. On the richest soils very little nitrogen is required and three parts of phosphate to one of cotton seed meal would be about right. An intelligent use of commercial fertilizers is important. When used in this way they are a valuable aid to the farmer, and are a great factor in assisting him to fight the boll weevil, but it will not do to depend upon them alone. If this is done he soon pays the penalty in a failure of the crop. While soils do deteriorate when we depend upon commercial fertilizers alone this deterioration is not so much due to their impoverishment by the action of the fertilizer as to the destruction of vegetable matter. A soil devoid of vegetable matter is unproductive, no matter how much plant food it may contain. Such soils are exceedingly subject to the effects of drouth. Therefore in order to derive the greatest benefits from the use of commercial fertilizers it is necessary to use barnyard manures and green crop manures abundantly, with thorough tillage.

S. A. Knapp,

Special Agent in Charge.

Farmers' Cooperative Demonstration Work.



2  
✓ Work Among The  
Colored People

21 was mainly

✓ Through the influence of Dr  
H B Grissell Post Hampton Va Institute  
and Dr Booker T Washington <sup>programs</sup> & Tuskegee  
Institute Ala that Agricultural  
work was inaugurated for the colored

Where large sections of country are  
mainly tilled by colored farmers owning  
their lands it seemed advisable to appoint  
Colored Agents In Virginia there were  
four: in Alabama 2 and in Mississippi  
one In all other cases the white Agents  
look after the colored farmers and do it  
faithfully



2 In the main the colored farmers  
responded as readily to the demonstration  
work as the white. In Ala & Miss the  
<sup>colored</sup> agents are graduates of the Tuskegee  
Institute; in Virginia they were mainly  
graduates or have attended the Hampton  
Institute.

The following report by  
T M Campbell district agent is a  
faithful presentation of the work  
among the colored  
and its results.



FARMERS' COOPERATIVE  
DEMONSTRATION WORK.

Truckee Institution  
Sept - 23 1908

I am Sir, Allow me to submit the following report

1. The Demonstration Work is advancing very rapidly. I feel safe in saying that 45% is the minimum of the farmers who have adopted the intensive method of farming in my territory.
2. The farmers in my territory have come into ~~better~~ possession of better breeds of hogs, a better breed of cows, and also for the past two years they have raised more chickens than ever before. I am safe in saying that prior to the introduction of the Demonstration Work only 25% of farmers practiced the above and now 33% is the lowest.  
*A team & wagon donated by Tom Martin of Jasper*
3. The Jesup Agricultural Wagon has played a prominent part in the Demonstration Work. ~~40% prior to its introduction and now about 50%.~~ I fitted up the wagon with a portable garden and drove to various meeting places as indicated on "Demonstration Map" and here gave concrete illustrations of how gardens should be made. A store-keeper informed me the other day that he sold more vegetables for eating purposes, such as cabbage, potatoes, peas, onions etc., in three months last year than he had sold all of 1908. This is due to the fact that in every meeting the farmers are urged to grow better gardens.
4. In my territory the percentage of pasturing is very low since farmers generally let their stock "run out" after the crops are gathered and "tie them out" while the crops are being made. Prior to the beginning of the Demonstration Work there were about 10%, now 12%.
5. The farmers in my territory are just beginning to leave the "old rut" of buying corn and hay to tide them over the cultivating period of their crops. Prior to the introduction of the Demonstration Work the average was as low as 7%, now it is about 12%.  
*[of farmers who raised enough corn to eat thru through the season]*
6. The small farmers are showing a marked improvement in the matter of getting out of debt. Allen Hall of Tuskegee, Ala., R.F.D. 1, --12, tells me that ~~he~~ last year was the first time he has ever got out of debt, says it is due to the fact that he attended the farmers' meetings and carried out the instructions given there. Messrs. W.H. Commins and Thos. Pugh of Notasulga, Ala. sold enough butter, eggs and vegetables to buy the necessary things ~~from~~ from the store, thereby saving the high price charged for advancement. About 10% of the farmers are out of debt.



UNITED STATES DEPARTMENT OF AGRICULTURE,  
BUREAU OF PLANT INDUSTRY,  
WASHINGTON, D. C.

FARMERS' COOPERATIVE  
DEMONSTRATION WORK.

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7. The increase~~xxx~~ of teams has not been so perceptable ,for ~~asxxx~~ as a general rule the small farmer tries to keep a pretty good mule or horse ,even at the expense of some other very important phase of farm management .But with reference to tools and farm machinery ,the work has accomplished great results-an increase at least of 28% .

8. The rural school condition in my territory has been greatly improved ,yet I find that the schools which I touch directly ~~were~~ some better than the average to begin with. The early varieties of cotton have aroused great enthusiasm, the people all over my territory have been and are now clamoring for new seed ~~xxxxxxx~~ Messrs. E.W. and B.W. Washington of Cross Keys, Ala. (both Demonstrators) had picked out twenty bales of cotton by the 7th ,of Sept., from seed introduced by the Department .Mr. Jackson Donner of Warriorstand, Ala. , informs me that every man in his community is trying to buy ,borrow or beg cotton ~~seed~~ of him. He says further that he thinks he has the best varieties in the State of Ala., Viz Cook's Improved and Tool's Prolific .

9. I have given considerable time to the matter of ~~discouraging~~ encouraging the people to improve their live-stock since I have been doing the Demonstration Work .I constructed a crate on the Jesup Agricultural Wagon for the purpose of carrying the best breeds of live-stock, such as Berkshire and Poland China pigs, Jersey and Short -horned calves out to the farmers' meetings and showed them just how they could improve their herds. I am glad to say that the farmers have purchased better live-stock, from the Tuskegee Institute and other places, especially Berkshire hogs.

10. The farmers are canning a large quantity of fruit and vegetables .At the most of our farmers' meetings we have had exhibits of home canned vegetables and fruits. The increase is about 40%

11. In our community meetings we have what is known as the inspecting committee, to go around and criticise the homes in general, in this way we keep the subject of applying white-wash and paint ever before them. The farmers are building better houses, applying more paint and white-wash than I have ever known them.

12. The effect on bettering the high-ways and construction of telephones is not very appreciable yet, but in my territory there has been more mail boxes put up within the past two years than ever before .A great many farmers put them up purposely to receive the mail from the Department.



UNITED STATES DEPARTMENT OF AGRICULTURE,  
BUREAU OF PLANT INDUSTRY,  
WASHINGTON, D. C.

FARMERS' COOPERATIVE  
DEMONSTRATION WORK.

13.

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~~I do not think the Demonstration Work has caused the price  
of land to advance~~

24.

The degree in which the tenants have been purchasing farms is capable of being perceived, I recall to mind instances while travelling, where there was no Demonstration Work, where tenants sought information as to the possibility of buying farms within the bounds of my territory in order that they might have the advantage of the agricultural instruction furnished by the Department.

*T M Campbell  
District Agent*



# Union Hardware Co.,

(Incorporated.)

WHOLESALE AND RETAIL DEALERS IN

*Shelf and Heavy Hardware, Farming Implements, Harness,  
Wagons and Buggies, Sash, Doors and Builders Material.*

*Question No 8*

HOPE, ARK., Sept , 24 , 1908

Mr. J. J. Moore ,

*District Agent*

Hope , Arkansas.

Dear Sir :

In answer to Question 8 of the interrogatories submitted by the Secretary of Agriculture I ~~will~~ <sup>cotton</sup> Will say that the opportunity for lengthening the school term from the effects of planting the early maturing <sup>A</sup> recommended by you will be increased by at least 50%.

The first bale of the present crop that was sold in this city and the first bale that was shipped from this State to the Memphis market this season was raised by George Dismuke , an old negro , a customer of mine and one of your cooperators. This was the Mebane Improved cotton recommended by you .

Farmers and merchants are well pleased with your work and the seed that you recommend.

Very truly yours .

*J. M. Haregan, Co*



Extra copy of the address  
delivered before the Third  
National Conservation Congress,  
Kansas City, Mo. - Sept. 1911.

For Mr. Kuapp.



## What the Demonstration Farms Have Done for the South.

The great problem of to-day is the application of existing knowledge to existing conditions, the conversion of the storage battery of knowledge into the active energy of common practice. This is true in almost any line of human endeavor but especially so of agriculture. We may safely say that there is not a State in the Union where there does not exist to-day a body of knowledge of the best methods of agriculture sufficient to revolutionize the farming and double the production per acre of that State, provided this knowledge could become known to and practiced by farmers universally. It is a lamentable fact that in the majority of communities the best methods are practiced by the few and the common method of the many is such as is little calculated to build up fertility of soil or increase production.

The fundamental basis for every rural improvement is an increased earning capacity on the part of the farmer. Such an increased earning capacity is dependent upon a greater production



per acre at a less cost; the accomplishment of more work in a day by the use of modern tools; the saving of all hand labor; and the production of all supplies upon the farm.

It will be readily conceded that if every farmer practiced a systematic though simple rotation of crops for the purpose of maintaining fertility of soil; if he selected his seed carefully for high production, both in quality and quantity; if he practiced the best methods of cultivation of the crop and the best economies in carrying on his farm operations,- the agriculture of this country would be immensely improved.

The difficulty in any part of the country has not been with those who have been most interested in agriculture. There are, and always have been, in every community men who have made a pronounced success of their farming operations. At the same time there have been and still are in every community a large body of average and poor farmers and tenants who are doing no better and even worse than was done forty years ago. The poor we have with us always is conspicuously true of the poor farmer.



Many methods have been tried and many forces have been at work upon this problem. All have been helpful and each one has contributed its share toward the general development which has gone on. And yet all have realized the difficulty of reaching the average farmer who is not sufficiently aroused, either through poverty, lack of initiative or lack of energy. The bulletin or other agricultural writing is a valuable adjunct in the solution of the problem. While it helps, it does not accomplish. It lacks local application. It can not answer all questions. It is like the text book, difficult to learn except th under the personal guidance of a teacher. As well expect the would-be mechanic to read up a bulletin on the saw, hammer and plane and then go forth to construct a modern dwelling.

Institute and short course are valuable but often fail because of lack of personal guidance during the application of the lesson and because of failure of a large body of farmers to attend.



The Agricultural College is the keystone in the arch of our modern Agricultural Education. It trains those who should lead, educates scientific investigators and necessary experts and exercises a most potent influence in agricultural thought. It can educate but a relatively small per cent of the farmers generally and can not reach the great masses sufficiently to change custom or form new practices.

The Experiment Station is a great factor in the solution of new farm problems and a necessary factor in keeping agriculture up to date, seeking new truths in the realm of science and placing them in the storehouse of our agricultural knowledge.

During the past seven years there has been in operation in the Southern States a system designed to meet this very problem. The Farmers' Cooperative Demonstration Work of the Bureau of Plant Industry of the United States Department of Agriculture was designed as a system of carrying the body of knowledge of the best methods of farming to the average farmer on his own farm and of securing such an active cooperation on his part as to bring about the



adoption of the better method. "Its aim is to place a practical object lesson before the farm masses, illustrating the best and most approved methods of producing the standard farm crops and to secure such active participation in the demonstration as to prove that the farmers can make a much larger average annual crop and secure a greater return from their toil."

The Farmers' Cooperative Demonstration Work does not supersede or replace any of the great forces that are working in the field for the benefit of the farmer and should not be so regarded. It is an additional and powerful factor in arousing interest in agriculture and disseminating agricultural knowledge in such manner as to secure the adoption of modern methods. It makes active the existing knowledge of agriculture, by reaching out after the average farmer, instructing and guiding him until knowledge becomes common practice. To this end field agents have been selected with special reference to a thorough knowledge of improved agriculture and with practical



experience in farming in the sections to which they have been appointed. The field of endeavor of each active local agent is generally a county and it has been found by experience that the most successful agent is the one who has a farm of his own in the county and has already demonstrated that he is a progressive and successful exponent of the best methods of producing crops; in other words, one who has the confidence and respect of farmers among whom he is to work. State and District Agents are employed for the purpose of instructing and systematizing the work of local agents. With the general force of the administrative office maintained at the Department, from which printed instructions are sent to the farmers with whom the cooperation is carried on, the careful and systematic supervision of the work of the field force is brought about. The local agent secures farmers distributed through his county to undertake to cultivate a portion of their farms under the instructions of the Department. The Department furnishes the instruction, while the farmer furnishes the land, teams, tools, labor and seed, though in many instances the



Department assists him in securing better seed and occasionally distributes seed for the purpose of introduction of better varieties.

The most important feature of the system is the visit of the local agent to each demonstration farm regularly once or twice a month during the year, and his constant accessibility to those who need his advice. He often sends word ahead of his coming and holds in this way many meetings in the field among the crops discussing problems and giving personal direction and advice.

These demonstration farms are to be distinguished from what are ordinarily termed demonstration farms. The demonstration farm of the ordinary sort, as known in other parts of the country, where one farm in a county is taken and carried on with funds supplied from the State, county or other source, is greatly to be distinguished in its influence on the public mind from the demonstration farms as carried on by the Department in the South. Instead of one demonstration farm in a county, carried on at



great expense, we have anywhere from 25 to 300 demonstration farms in a county carried on at small expense to the Department and with relatively greater influence upon the mind of the average farmer, for the simple reason that the work is done under ordinary conditions by the very man who has theretofore been doing in many instances a poor grade of farming. The effect is immediate and positive and reaches all classes. "The teaching by object lesson is more effective where it is simple, direct and limited to a few field crops such as cotton, corn, cowpeas and small grains in the South, so that the comparison may be evident and accepted at a glance. If general success can be secured with these standard crops, further diversification follows as a natural result."

In the past seven years this system has been inaugurated, systematized and perfected into a great institution with a force of nearly 600 field agents giving direct instructions to practically one hundred thousand farmers and sixty thousand farmers' boys. The success of the work is known to the public generally.



In a recent issue of "The Prairie Farmer", an agricultural paper edited at Chicago, Illinois, appears an article which outlines this very system as a new and untried plan. The National Soil Fertility League, as outlined by the author of that article, is nothing more than the Farmers' Cooperative Demonstration Work, created and successfully developed for seven years by the late Dr. S. A. Knapp of the Department of Agriculture. We are glad to see the light penetrate.

The instruction taken to the farmer through this system is collected from the knowledge which has been acquired by the experts of the Department of Agriculture, what the State Agricultural Colleges and Experiment Stations have demonstrated to be the most successful and practical methods, and what the best and most successful farmers of the South have tested and proved to be the best practices upon the farm. And also such practical knowledge as is obtained by the traveling agents of the Demonstration Work who visit and have knowledge of the localities of each State. Meetings of agents are held and everything possible



is done to train the local agent for his peculiar work and to render him as efficient as possible. At these meetings not only experts of the Department instruct, but the faculty of the Agricultural Colleges are invited and participate in the meeting.

The average farmer of the South is a good deal like his brother in any other section of the country; he is a natural doubter. He has always been suspicious of the expert and skeptical about the advice given by those whom he calls "book farmers." During the seven years of experience in this work it has been found that one year is sufficient to convert a doubting farmer of the average or poor class into a believer in the efficacy of the best methods. To such a man the work done by his own hands is a revelation. The average production per acre on the demonstration farm under the instructions of the Department is practically one hundred per cent greater than the average production per acre of similar land tilled under ordinary methods. In many instances the increase has been as great as 400 per cent. Such a revelation results the second year in increasing



the area of the farm cultivated under the instructions of the Department and as a rule the third year sees the method advocated by the Department extended to the entire farm.

Primarily, the work was started for the purpose of demonstrating to the cotton farmers of the South that cotton could be raised under boll weevil conditions. It has done this, and is still doing it, as the weevil progresses. But incidentally there was another problem closely connected with this. The economy of the agriculture of the South was based on the one-crop system.

It was cotton, <sup>cane,</sup> rice or tobacco, as the case might be. Under such a system and especially with farming done on the credit basis, it is not surprising that when disaster came in the form of a pest or the great depletion of soil, there followed poverty, ruin and abandonment of farms. Diversification and the production of home supplies was not only necessary in order to correct this economic system but also to enable the farmer to adopt such a system of rotation as would build up the fertility of the soil. Thus it became important to demonstrate with other crops beside cotton,



and the opportunity of teaching a simple system of rotation for building up soil fertility was at once presented. Corn was necessary for the production of home supplies and it was a very easy matter to spread wide the system long practiced by the best farmers in the South, of planting cowpeas in the corn and thus add humus and restore nitrogen to the soil. It was but a step from this to the teaching of the use of winter cover crops. On account of the long seasons in the South it is possible to prepare land in the fall and plant a diversity of crops which will grow during the winter, hold the soil from washing with their root system, prevent the leaching out of fertility by rains, and at the same time be adding humus, that most necessary element for all Southern soils. For the great problem of Southern agriculture is humus, and again more humus. With winter oats, winter rye, wheat and barley, with vetch and some of the clovers, it is possible to introduce a system which will keep the land covered with some growing crop a large part of the time and prevent untold depreciation by washing and leaching.



Incidentally, the local agent carried a great deal of other valuable information to the farmer. He obtains from him as he goes on his monthly rounds, the problems which confront the demonstrator or his neighbor and then, if he does not know the remedy himself, promptly obtains the same from the Department or Experiment Station and delivers it to the farmer in person so that the farmer has a ready means through personal contact of obtaining the answer to almost any question with which he may be confronted. He learns the lesson so well known to all Southern conservationists, that deeper plowing, the incorporation of more decaying vegetable matter of humus, proper contouring and terracing of hillsides will largely prevent the great washing or erosion of soils so often seen in the South and so rapidly bringing devastation in many of its hill sections. Not only this, but he is taking the lesson to the farmer from day to day that it is better to put the hillside into grass land or pasture as fast as he can get into live stock. These and many other lessons, too numerous to mention, are being carried daily by these six hundred agents in the South from farm to farm in such a personal and helpful way as to



secure their general and permanent adoption. If but ten farmers visit every one of the hundred thousand farms that are being cultivated under the instructions of the Department, the widespread influence of the movement can be readily understood.

The results obtained have been beyond expectation and are to be tabulated as follows:

First,- Districts devastated by the boll weevil have been rapidly restored to practically normal production of cotton, but usually the resulting necessity of the production of home supplies has reduced the acreage in cotton but increased the average production per acre.

Second.- There has been a large gain in the production of home supplies in the South. The corn crop of the States of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Arkansas, Louisiana and Texas increased by 158,000,000 of bushels in the year 1910 over that of 1909, while the average production per acre in every State in which the demonstration work has been carried on has increased during



the past few years. The State Of Mississippi alone increased its corn crop by practically sixty per cent, and its production per acre 23 per cent. I could recite to you numerous instances of counties where formerly hundreds of thousands of dollars were sent into other States for the purchase of corn where not a dollar of money is now expended for corn outside of its own border. Through the use of the cowpea and peanut, velvet bean, soy bean, vetch, crimson and other clovers, there has been an immense increase in the production of hay and a corresponding decrease in the importation of the same.

Third,- a great improvement in the use of modern farm tools and the use of more and better teams. In no section of the country has there been created such a great demand for better plows, more harrows and better tools for cultivation as in the South. In many sections of the South the ordinary harrow and the disc harrow were absolutely unknown before the introduction of the Demonstration Work. In hundreds of instances the Local Agent of the



Demonstration Work has taken with him on his trips his own team and samples of better tools in his wagon, permitted his demonstrators to see and use the same, illustrated the better grade and more rapid work possible with the better tool and thus readily convinced where the mere verbal recommendation would have failed.

Fourth,- the greatly increased use of leguminous crops for restoring nitrogen and humus to depleted soils. The livestock industry in the South is so comparatively small that there is no adequate supply of barnyard manure for use upon the land. Lacking manure on account of lack of livestock, the Southern farmer must learn to utilize such crops as Nature has provided to supply his deficiency in this regard. Through the influence of the Demonstration Work, coupled with the hearty cooperative work of the agricultural colleges and other agricultural forces in the South, the planting of cowpeas in the corn is rapidly becoming almost universal, while the use of velvet beans, soy beans, vetch and crimson clover in some sections and the small grains as humus-producers and for grazing in other sections, has greatly



increased. Deeper plowing, the adding of humus, the use of legumes, together with a system of shallow cultivation which serves to conserve moisture during the hot summertime when the South is liable to periods of drouth, rapidly builds up these soils to a high state of fertility. The difference between 15 bushels of corn per acre and 60 bushels is the difference between very little profit per acre and a paying investment. The difference between 400 pounds of seed cotton and 1,200 to 1,500 pounds of seed cotton per acre, is the difference between a bare existence and independence. At the same time, these differences indicate the distinction between land which is constantly being mined of its fertility and land which is receiving such treatment as to increase its fertility. One of the great problems of the South is the excessive use in some sections of commercial fertilizer. The only solution for this expensive practice is to be found in the building up of fertility by proper farm practices.

Fifth,- Another marked result of this work has been the rapid increase in the livestock industry in the South. The



moment the Southern farmer commences to appreciate the fact that he can raise corn and that he has such magnificent crops as cowpeas, peanuts and the other legumes named, and rape, rye, barley, etc., which may be used for grazing purposes, he at once becomes interested in the raising of hogs, in dairying, in the keeping of cattle, and the production of his own mules.

Sixth.- Another result has been and is the changing of tenant farming into ownership farming. The man who has been farming so as to just come out even at the end of the year, whose crop is mortgaged before he starts his season's operations, who is constantly menaced by years of crop failure and whose knowledge is not sufficient to enable him to produce an average per acre necessary to net a reasonable income is generally not very hopeful and is devoid of desire to advance from the position of a tenant to an owner of soil. Even if he had the desire, under such circumstances the change is impossible. The moment he becomes a demonstrator and commences to acquire the necessary knowledge to produce a larger average per acre, to pay his debts and get on



a cash basis, that moment he becomes a potential owner of land, and wide observation and the study of this problem in the South leads us to believe that the Farmers' Cooperative Demonstration Work is one of the most potential factors in converting the better class of tenants into responsible owners of soil.

Seventh.- It is noteworthy that in every section where this work has been carried on for a number of years, its influence coupled with the prosperous times we have been enjoying and the high prices of farm crops, has resulted in large increase in deposits in banks in the name of farmers.

Eighth.- It has greatly assisted in breaking down the prejudice of the ordinary farmer against what is termed "book farming" and has served to awaken a wide-spread and enthusiastic desire upon the part of the farmers generally throughout the South for greater agricultural knowledge. It has supported and encouraged the Agricultural Colleges and Experiment Stations, the Institutes and the agricultural press, and the awakening of every farmer it has touched has resulted in an increasing influence



on the part of these great forces. Where demonstration work has been done, there is the influence of the College of Agriculture and Experiment Station greater and the Institutes more generally attended.

Let me give a few figures and striking instances showing difference between Demonstration method and ordinary method in the several States.

In 1910 the average production per acre of corn in southern States where this institution is at work was as follows, comparing the averages of the demonstration farms with the average of the State taken from the Bureau of Statistics' figures:

	Demonstration Farms.	Average of State.
Virginia,.....	46.5	25.5
North Carolina,....	43.4	18.6
South Carolina,....	41	18.5
Georgia,.....	35.4	14.5
Florida,.....	23	13
Alabama,.....	41.4	18
Mississippi,.....	41.6	20.5
Arkansas,.....	36.8	24
Louisiana,.....	35.2	23.6
Oklahoma,.....	24.1	16
Texas,.....	32.8	20.6



In cotton the figures based on the average production of seed cotton per acre were, for 1910, as follows:

	Demonstration farms.	Average of State.
North Carolina,.....	1332	681
South Carolina,.....	1249	636
Georgia,.....	1298	522
Florida, .....	572	330
Alabama,.....	1220	474
Mississippi,.....	933.5	519
Arkansas,.....	915.3	525
Louisiana,.....	785.5	390
Oklahoma,.....	708.1	585
Texas,.....	710.4	447

Severe drouths explain some of the figures in western territory.

Thousands of instances might be given showing the way it gets hold of individuals. Just one for sake of illustration:

Mr. J. O. Neal, of Lincoln County, Mississippi, lives five miles east of Brookhaven on a poor piney woods farm that five years ago sold for \$1.00 per acre. His financial condition may be understood from his own statement that in 1908 he



was badly in debt, owing the merchants of Brookhaven something like \$800.00. Previous to this time Mr. Neal seldom made enough corn and hay to last him longer than March first, and frequently has made the statement and fully believed that his land was not "corn land." Up to this time he had taken no papers and read no agricultural bulletins.

In 1908 the Demonstration Work was inaugurated in Lincoln County. Mr. Neal, with a labor force consisting of himself and two sons, was at first skeptical, and as a first demonstration worked only  $5/8$  of an acre in cotton, from which area he gathered 500 lbs. of lint cotton. Naturally such an extraordinary yield begot in Mr. Neal a much higher respect for the "Government Method" of doing things, and he responded to the stimulus by agreeing to follow our methods on his entire farm in 1909. He did so, with the result that despite the very bad season he averaged on his entire crop of cotton between 1,100 and 1,200 lbs. per acre, against high neighbors' average of from 300 to 400 lbs. per acre. In addition, he made on his farm 500 bushels



of corn and on one "Special Demonstration" acre he made 152 barrels, each barrel shelling considerably more than 56 lbs. of grain. From this one acre alone he sold sufficient high-class seed cotton to finance his entire crop for 1910,- about \$300 worth.

Before 1908 Mr. Neal felt that he could not spare his children to go to school. In brief, his debts have now (1910) all been paid and he is running strictly on a cash basis; his daughter is in Whitworth College at Brookhaven, and his sons ride in to the city High School. And where formerly he read nothing relating to the business and science of farming, he is now a close student of the Government and Experiment Station bulletins and is a regular reader of five agricultural papers. He says it pays, and he carries the evidence.

One of the striking features of the work is the fact that the cost is so insignificant as compared with the benefit conferred. The total expense of getting the instructions to each farmer instructed who is actually visited on his own farm by some



local agent, runs from \$10 to \$25 per farm per annum. The resulting benefit to the farmers in increased production each year over the average runs into the millions of dollars annually.

A feature of the work which indicates most emphatically its progress in public opinion is the financial assistance rendered by the people among whom the work is being carried on.

The first influence of the work in any community is upon the individual man, upon the demonstrator with whom the work is first undertaken. The second and third years it begins to get hold of a county and to mold public opinion, and but a few years are required before it becomes a factor of strong agricultural influence in the State. The truth of this statement is best shown by the fact that in the States of Virginia, North Carolina, Alabama, Mississippi, Arkansas, Texas, within the past year laws have been passed by the Legislature, authorizing counties to appropriate money directly for cooperation with the United States Department of Agriculture in the Farmers' Cooperative



Demonstration Work. And in the States of Virginia, North Carolina, Arkansas, and Texas, practically every county in which the work is being carried on contributes one-half of the salary of the local agent. The States of Virginia, South Carolina, Alabama and Florida have made direct appropriations for cooperation, that in Alabama being most worthy of note for the reason that it has brought all agricultural forces in the State into harmony and placed in that state an agent in every county, making the best organization we have yet been able to secure. In most of the States there is a direct cooperation with the Agricultural College in certain features of the work. To sum up, for every dollar expended by the National Government for this work in the South, practically an equivalent sum is contributed by some other State, County, association or individual.

The General Education Board also contributes money to extend the work inot Southern States not yet covered by direct Government appropriation.



In the early stages of the development of the work, communities were found where it was impossible to move with sufficient rapidity on account of the reluctance of farmers to engage in the cooperation, due to their lack of confidence that it would result in any benefit. This fact resulted in the organization of the Boys' Corn Club movement. Boys' Corn Clubs had been in existence in some States prior to their inauguration under the Demonstration Work of the Department, but for the purpose of molding public opinion and the showing of these reluctant farmers who were loath to engage in the work that there was something in it, clubs were systematically organized in the South through the efforts of the agents of this work but directly in cooperation with the school system of the different States and counties. Prizes were awarded by public-spirited citizens, always based upon the production of the largest yield at a minimum cost, and through this system the better method of raising corn in the South has been rapidly disseminated. This part of the movement



has served several purposes: First, it has broken down prejudice in various communities against new methods; second, it has absolutely demonstrated the possibilities of the South for the raising of corn; third, it has served to crystallize public opinion regarding the teaching of agriculture in a practical way through the public schools; fourth, it has been a potent influence in interesting the young men of the South in farming and preventing their leaving the country for urban avocations. Its marvelous results are too well known to need comment here.

The time allotted to me is too short to permit of a full presentation of this subject. In presenting it to you I am deeply impressed with the possibilities of such a system for solving many of the problems of conservation of soils and soil fertility. As I said in the beginning, if we could secure the adoption by all farmers of the best methods known for building up fertility, for increasing production and for saving the washing of soils, it



would revolutionize the agriculture of this country. A relatively small amount of money compared with the benefit to be conferred would place an active agent in every county. The future is going to demand a higher standard of ownership of land. It has long been recognized as a principle of law that although ownership is in one sense absolute, yet it is qualified by certain rights of the public. If the great interests of the public so demand the State may, by the exercise of the right of eminent domain, take my farm or any part of it for public use. If I so operate upon my farm as to produce a public nuisance detrimental to the health and general welfare of the public, the public may come upon my farm and abate the nuisance and restore the premises to a healthful condition. These and many other instances which might be given serve to illustrate the fact that the ownership of soil is qualified by the superior right of the public. As the population increases in the future, as unoccupied lands become occupied and there remains no more land for the



extension of our increasing population, the ownership of land is going to be a matter of more and more interest to the public generally. While it carries with it its rights, it is likewise going to have its correlative duties, and looking at the matter from the standpoint of the far future, the public is to-day and will be increasingly in the future, interested in the fertility of every acre of land. The moral if not the legal duty exists upon the part of every owner of land to leave it better than when he found it. This can not be brought about without the wide dissemination of the knowledge necessary to accomplish it. The food problem of the future is going to demand such a standard.

Such is the work of the Demonstration farms of the South. The agents engaged in this work are men of the highest ideals and the most genuine self-sacrifice. They are fast helping to build in the South a great agriculture. As their work progresses they need and receive the cooperative efforts of all other agricultural workers. As the farmer grasps the possibilities



of agriculture from demonstration, he at once becomes the patron and supporter of the College, the Institute, and the agricultural press. It converts the agricultural drone into the worker; the hopeless into the hopeful; the non-progressive farmer into the progressive.



\*  
What is the next step to be taken -  
better highways and consolidation  
of rural schools. The <sup>need of better</sup> highway  
~~problem~~ is too apparent to require  
discussion here. When rural  
schools were first established in the  
United States education in the country  
was elementary. As the demand for  
higher education became common,  
the attempt was made to graft  
on to the common schools higher  
branches until frequently a teacher  
in the country has 30 or 40 classes  
in one day. Under such conditions  
thoroughness is impossible. In the  
rural school the township  
should be the unit. One good, graded  
rural school instead of 6 to 9 half  
equipped, half taught, wholly neglected  
neighborhood schools, where the  
traveler is in doubt whether the  
building is a dwelling without  
tenants or a barn without fodder  
and where a few months of schooling  
to ease <sup>the</sup> parental conscience and  
where the principal object is to  
teach the science <sup>how to</sup> of study ~~books~~  
without acquiring an education.  
This consolidated rural school will be  
better equipped, better managed and  
better taught. It is the only way rural  
education can be made creditable and  
adequate to the requirements of



these ends, no more potent influence has been found than an intelligent, prosperous and contented body of thrifty small farmers. States and the National Government have aided by the gift of lands for homes; by the promotion of rural schools and free mail delivery. ✕

I have tried to make clear the importance of an education in common things for common people, as opposed to the exceptional and the remote and the extraordinary. If we have no more time than necessary to become perfect in the knowledge of one country, let that country be our own. Study the history, the language, the soil, the climate, the animals, the birds, the plants and all the conditions that make for home success and comfort. If still there be inclination, leisure and means, then extend the researches into foreign lands. We are on the wrong line. We have tried to master ancient history without knowing modern. We have attempted to translate the classics and have failed for lack of English; our ten-story buildings without foundations or lower stories have not proven good air structures. A great nation is not the outgrowth of a few men of genius, but the superlative worth of a great common people. Few will attempt to controvert this statement. Our differences appear when we undertake to outline a course of study essential to the making of a great common people. We are agreed, however: That to meet our highest ideals each individual, in all the classes, occupations and professions of our commonwealth must be strengthened and developed in his lifework to the extent of his capacity. Chemistry, botany, entomology, biology, mechanical conditions of the soil, plants,



(C) 1

I have attempted to show that there <sup>are</sup> ~~are~~ forces in the field for the readjustment of rural conditions if vitalized and brought into service. There is always <sup>an</sup> ~~an~~ <sup>ever</sup> ~~ever~~ <sup>ready</sup> ~~ready~~ <sup>to</sup> ~~to~~ <sup>be</sup> ~~be~~ <sup>found</sup> ~~found~~ <sup>to</sup> ~~to~~ <sup>attack</sup> ~~attack~~ <sup>strongholds with the raw militia</sup> ~~strongholds with the raw militia~~ <sup>and to storm</sup> ~~and to storm <sup>impregnable fortresses with guns that would not crack a</sup> ~~impregnable fortresses with guns that would not crack a~~ <sup>camp tent</sup> ~~camp tent~~ <sup>It has taken centuries to establish the schools</sup> ~~It has taken centuries to establish the schools~~ <sup>we now have,</sup> ~~we now have,~~ <sup>with a little readjustment they will</sup> ~~with a little readjustment they will <sup>do the work required for agriculture</sup> ~~do the work required for agriculture~~ <sup>even in this</sup> ~~even in this~~~~~~

In this readjustment of schools ~~to~~ <sup>to</sup> include agricultural instruction in agriculture there is danger that we may eliminate branches of great value and necessary to the rounding out of the rural teacher in his obligations to human society. For after all in moulding men by the processes of education there is something more than just fitting them for a vocation. The aim should be to make a greater common man and unless this can be done more vocational training will be a failure because of the narrowing of his social lines, the dwarfing of his sense of obligation to the state and a semi-paralysis of his moral sense. <sup>For</sup> ~~the~~ <sup>main</sup> ~~main~~ <sup>object</sup> ~~object~~ <sup>of all education</sup> ~~of all education~~



To the extent that agriculture  
can be taught in the public  
schools without seriously  
deranging our present cur-  
riculum it should be  
introduced. It will be  
helpful. It is not, however,  
a remedy. It is too slow.

The successful teaching  
of agriculture in the public schools  
can not be  
generally inaugurated  
within 10 years. It may take  
nearly that time to train  
the teachers for their work  
and it will take 15 years  
more before those boys will  
become men and get control  
of enough farms to materially  
affect the nation. What will  
take place before that time?

In the next 30 years the population  
of the United States will nearly  
double. It will be settled  
whether the lands shall be owned  
by the many or by the few.

The ultimate owners of the land  
will govern the country.

It has been suggested that  
a campaign of education be  
undertaken by the agricultural  
press, farmers institutes and by



UNITED STATES DEPARTMENT OF AGRICULTURE,  
BUREAU OF PLANT INDUSTRY,  
WASHINGTON, D. C.

FARMERS' COOPERATIVE  
DEMONSTRATION WORK.

Farmer 2

Educate the youth - too slow

Educate the farmers by  
lectures - papers are not  
effective

Communication

1. Better crops

2. Trains & trails

3. Diversity for safety & for profit

4. Use all the land

The readjusted farmer



a

10 7/8

21- Should be emphasized that ~~the~~ such a consolidated rural ~~school~~ is the whole thing, the complete education for our masses. 21-2. The primary school, the high school, the college, the university, the agricultural college and the school of technology for the great majority of our rural population.

Evidently the course of study should include thorough instruction in the fundamental branches of education <sup>on an English</sup> followed by lessons in practical mechanics, agriculture, domestic arts and home making. All these branches should be taught by doing the things under investigation and simply using a book afterwards for explanation. A simple, sensible & practical kitchen, provided with all modern conveniences and utensils to do household work rapidly and economically with practical lessons in economic providing and plain cooking for the girls, would be of inconceivably more advantage to the average girl than a smattering of French or German. A carpenter's shop for a farm boy is better than a chemical laboratory. H.E. better



A mistake of the age is the attempt to build a higher civilization by beginning at the top - English - Masses ignorant words of infancy - The masses raise the children

As well raise a house by Jack Saws under the shingles or that water by throwing a blaze on the surface

Our problem to make education universal - Greatness universal common



System  
 Order  
 Method  
 Economy  
 Thrift -  
 Energy Prompt & Thorough

---

School of best methods  
 Agri Colleges work & should  
 be to determine the best methods  
 The largest yield at the best  
 quality at the least expense  
 Every County should  
 have a Training School



6

3 Great Errors in  
Education

1<sup>st</sup> Education must commence  
at the top

2 One kind of education for  
all

3 That the education of the  
masses should be literary  
and scientific

(a) Education for the masses  
must first be education &  
training in the arts



10 1/2

and the homes will be attracted to the school house and the mother will absorb as much from the teacher as the daughter.

When rural schools were first established in the United States, education in the country was elementary. As the demand for higher education became common, the attempt was made to graft on to the common schools higher branches, until frequently a teacher in the country has thirty or forty classes in one day. Under such conditions thoroughness is impossible. In the readjusted rural school the township should be the unit. One good graded rural school is better <sup>than</sup> six to nine half equipped, half taught, wholly neglected neighborhood school, where the traveler is frequently in doubt whether the building is a dwelling without tenants, or a barn without fodder, and where a few months of schooling is given to ease the parental conscience, and where the principal object is to teach the science of how to study books without acquiring an education. This consolidated rural school will be better equipped, better managed and better taught. It is the only way rural education can be made creditable and adequate to the requirements of country life. The consolidated rural school must do for the country what the High School has

10 1/2-13-



Reports made by the State Agents of the Farmers' Cooperative Demonstration Work to the Honorable James Wilson, Secretary of Agriculture.

While the State Agents of the Farmers' Cooperative Demonstration Work were in Washington, (Sept. 1, 1908.) arranging some details of their work for the year 1908-9, they called upon Secretary Wilson and in response to inquiries made by him the following facts were brought out.

Mr. T. O. Sandy, Burkeville, Va., State Agent, reported that the Farmers' Demonstration Work was commenced in Virginia in January 1907. Up to this time it had been exclusively conducted in the counties south of the James river, where tobacco was the staple cash crop; under the effect of which farmers had deteriorated in production capacity and value till many were on the market a short time since at three to eight dollars an acre- Most of the hay and corn for the work animals was imported. Two hundred and thirty two thousand dollars worth of hay was imported within a radius of a few miles of Burkeville in one year for home consumption. The average yield of corn was five to ten bushels an acre.

Secretary- "How much hay or corn did your demonstration fields produce?

Mr. Sandy- "On my demonstration farm the yield of hay was four to six tons of hay or seventy-five bushels of corn an acre. One of my demonstrators raised eighty-five bushels an acre. The



effect of this was to increase the number of demonstration farms from twenty-seven last year to nearly twelve hundred this year; to stop the importation of hay just as fast as lands can be prepared and seeded to grass."

In reply to a question by the Secretary as to the effect of this work upon introducing diversification in farming and upon the price of lands, Mr. Sandy stated that nearly all lands about Burkeville had doubled and some had advanced three fold since the demonstration work commenced. Soon as the farmers found they could produce hay and corn profitably they wanted to engage in dairying and stock raising so as to use their idle lands. He stated that a creamery and an ice plant had been built this season at Burkeville with the pledge of a patronage of one thousand cows; the bank is advancing funds to purchase many of the cows. Commercial dairies are springing up in adjoining counties."

The Secretary- "What effect has this had on the improvement of home conditions?" Mr. Sandy- "Immediate, because the estimate of farm life was changed. It had been thought that farming in Virginia could not be made profitable. Many moved away and nearly all ceased to spend much money in farm improvements. As soon as they saw the demonstration work they commenced to improve. Eleven farmers in one section put hot water heating and sanitary closets into their houses the past season."

The Secretary- "I should like to hear from each State Agent.



Mr. W. F. Procter, Tyler, Texas in charge of the Demonstration Work in Eastern Texas said in substance. "My territory includes about sixty counties- all infested with the boll weevil. The soil is mainly a sandy loam, well drained and well wooded, making an ideal section for the hybridation of the weevil. I will mention two examples of our work. The weevil had caused such loss of cotton in Harrison Co., that the crop in 1906 was less than one-fourth the normal amount. Cotton being the principal cash crop, general depression followed; some farms were abandoned and a general abandonment by tenants threatened. An appeal was made to Dr. Knapp to establish the Farmers' Cooperative Demonstration Work in Harrison Co., in an intensive way- The people were asked to raise money for improved seed. They raised one thousand dollars and later increased the amount to seventeen hundred dollars. An agent was sent to the county; three hundred demonstration farms were established- Last year, though exceedingly unfavorable for cotton the increased yield over 1906 was thirty-five hundred bales and this year under the general adoption of the system the increase is over sixteen thousand bales- on a gain of seven hundred and forty-eight thousand dollars, in value, including seed for the year in our county. Sulphur Springs, Holms Co., reports a similar experience this season. The county Agent, Mr. W. L. Bryson, located demonstration farms along the main highways leading to Sulphur Springs for four or five miles out, so that every farmer entering the city could not fail to observe them. Prominent citizens estimated the value of his work this year at two hundred and fifty thousand dollars for the county.



The Secretary- "What effect did this have on the homes"?

Mr. Procter- "Texas farmers nearly always improve their homes and schools if they have the means. If they are not up in this respect with any other State, it is simply because they did not have the funds"

The following State and general Agents took part in this interview.

Mr. W. F. Procter, Tyler, Texas,	Eastern Texas.
Mr. J. L. Quicksall, Waco, Texas.	Western Texas.
Mr. W. M. Bamberge, Ardmore,	Oklahoma.
Mr. W. D. Bentley, Wichita Falls, Texas.	Oklahoma.
Mr. James A. Evans, Shreveport, La.	Arkansas & Louisiana.
Mr. R. S. Wilson, Columbus, Miss.	Alabama and Mississippi.
Mr. E. Gentry, Jonesboro, Ga.	Georgia.
Mr. C. R. Hudson, Statesville, N. C.	North Carolina.
Mr. J. P. Campbell, General Assistant and traveling Agent.	
Mr. H. E. Savely, " " " "	

All agreed in stating that the Farmers Cooperative Demonstration Work was readily accepted by the farmers and aroused among them intense interest in agriculture, especially where field schools were held and the plan of the boys corn and cotton clubs was carried out.

They emphasized the great gains in farm crops under the system of farming taught in the Demonstration Work, and that the immediate effect of these increased earnings was to the betterment of the farm and of rural life.



1. Better seed and some plan for rotation of crops.
2. Better teams and implements.
3. Reduction of debts.
4. Ownership of land.
5. Improvement of home- More comfortably and neatly clad- More fruit- Many farm canning outfits bought, etc.,
6. More months of schooling.
7. General cooperation in improvement of farm stock, etc.

Instances were given where a single demonstration showed the farmers in the Yazoo delta how they could increase their yield of corn from fourteen bushels an acre to seventy, without additional expense. Instances were cited where a single small farmer saved five hundred dollars last year in commercial fertilizers from information derived from an Agent in the demonstration work.

Many farmers are now working cotton without the use of the hoe or plow. Mr. Bamberge brought out this fact clearly and showed its great economic importance.

Mr. Savely called attention to the effect of Field Schools, that they were very influential in promoting home improvements, that such meetings were occasionally held on farms of colored men as well as white.

Mr. R. S. Wilson gave illustration of the rapidity with which practical information along agricultural lines spread through a district- As the result of ten months work in Congressman Hobson's district a majority of the farmers were tilling their lands better; they were raising more corn and forage crops and many had adopted the Department plan of Seed Selection.



Mr. J. L. Quicksall spoke of the great improvement in agriculture and the betterment of rural conditions since the Demonstration Work commenced in Central Texas."

Dr. S. L. Knapp- "The southern people are awake- In a number of States the patriotic women are forming rural improvement clubs for the betterment of home conditions. In North Carolina they put a model kitchen on a car and sent it about the States. Congressmen are interested and call for agricultural speakers instead of political".

The Secretary- "What do you find with regard to the merchants furnishing the farmers goods and taking security on the crops"?

Dr. Knapp- "It has been the general custom of southern farmers, whiter in cotton, sugar, rice or tobacco districts to depend on one cash crop and buy their supplies of food and clothing with the proceeds. This is rapidly becoming a thing of the past. All our Agents urge the production upon the farm of all home supplies possible. The result is that the money which formerly went for current debts now goes into home improvements, better clothing, better stock and more schooling. The earlier maturing cotton introduced and made common by our Agents allows six weeks more schooling annually for the children. Rural improvement requires considerable expenditure of money which must be provided by the farmers, through an increase in the products of the farm with a decrease in their cost."

#### More Information.

A large number of inquiries were sent out to ascertain present conditions in the south and the effect of the Farmers' Cooperative



Demonstration Work. They are show great improvement in rural conditions.

Without exception they fully corroborate the claims made for the Farmers Cooperative Demonstration Work. The following are a few of the replies.

Results of one year's work by a live Agent among thrifty Government farmers in Texas.

Giddings, Texas. 9/21/08.

Dr. S. A. Knapp,

Dear Sir:

Growing out of my efforts and the example and moral support of the business men here, thirty cream separators have been bought, by the farmers around here. Over two thousand dollars has been invested in good milk stock (one \$400 bull from another part of the state has been shipped into the county) and about five hundred dollars worth of cream per month finds its way to the creameries. People all over the county are planting winter forage crops and besieging me for all kinds of information. Every one of these people are securing some good pigs to dispose of the milk.

Two business men have volunteered to put in a creamery just as soon as there is cream enough to justify it. They would do it now if I'd let them but it is best to wait a while. Prior to March 1st of this year there was not a separator in this county.



A majority of our German farmers are very thrifty and have a good garden. No visible signs of improvements yet, except in the sowing of turnips, bur clover and vetch for calves, pigs, etc.

All lands in this section are fenced. Possibly 1/2 of 1% have hog pastures of any size.

Corn is selling on the streets at from forty to fifty cents per bu. and hay from five to ten dollars per ton with plenty offering. People tell me that twenty dollars for hay and seventy-five cents for corn have been ruling prices till this year, but the excellent season accounts for this almost if not as much as the improved methods. Regular articles on corn and feed crops were supplied the papers during seed time and hundreds of people are cashing this advice now. Quite a few have added to their team force, equipments, bought additional lands, etc., this year, but prior to 1908 there was not enough work in any one community to tell any decided effects.

Perhaps there has been more good accomplished for the schools than any other outside item. Through addresses to Summer Normals, Teachers Institutes and direct contact with schools, a general awakening is noticeable among our county people. Probably not a rural school in the county of Lee but will increase the salary add to the equipment or lengthen their term of school. This may be attributed to a combination of causes. We come in for our share. One thousand homes in Lee and Washington Counties will be invaded this winter by bulletins and circulars which the teachers are asking as aids to the teaching of agriculture which from now on is made mandatory in Texas. Milam, Williamson, Fayette, Burleson and Bastrop



will all ask for these bulletins for their pupils in agriculture. We claim all the credit for this move.

Two German coach stallions costing three thousand dollars each and one Biltmore Jersey Bull costing four hundred dollars have been added to Lee county's list with two stock companies about completed will soon send a buyer to Kentucky or Tennessee for two standard bred five hundred dollar horses. Over fifteen hundred dollars worth of milk cows have been bought- most of them from beyond the county- by those having begun collecting dairy herds. Any milk cow having any milking qualities brings a good price here now.

I had the pleasure of organizing and conducting a school of farmers- men and women in the art of canning corn and such vegetables as are difficult to keep. One class at Dime Box in the extreme Western part of the county. Much interest was manifested and it only took four days of my time.

It will keep somebody busy here to keep these people from over doing the thing in these new industries. You know a stampede is the worst thing that can befall the new industry anywhere and these people are getting panicky in that direction. This same Commercial Club will take up the question of good roads and seek to get some much needed local legislation looking to a solution of this problem.

These are as briefly as I can state them, the kindred but indirect results we have obtained in this county. We claim only that which legitimately belongs to us. Give the weather, the farmer and the general trend full credit for their share. The other



counties we have worked show signs of improvement but not so marked.

I have no further comment. These are a faithful recital of existing facts, which speak for themselves.

Respectfully yours,

(Signed) W. W. Campbell.

Hope, Ark. Sept. 24, 1908.

Mr. J. J. Moore,

Hope, Arkansas.

Dear Sir:

Complying with your request I beg to submit the following answer to question (13).

The Farmers' Cooperators Demonstration Work and your advise to the farmers and the improved seed that you recommended has won the admiration of the people.

The migration of the cotton boll weevil into this section of the country would have caused land values to decline from (30 to 50%) had not been for the timely efforts put forth by you and the Department that you represent. I am of the opinion that if the work is continued by you in the capacity in which you are now acting that land values will increase from (20 to 25%).



Our people were greatly alarmed by the approach of the boll weevil, but, your labors here have to a large extent relieved the anxiety of the people, and consequently land values have and will remain about normal for this and the first half of next year.

I will gladly aid you in any laudible way to extend and increase the work in this section.

Very truly yours,

(Signed) Steve Corrigan.

Hope, Arkansas, Sept. 24, 1908.

Mr. J. J. Moore,

Hope, Ark.

Dear Sir:

As per your request I take pleasure in answering Question No. 7.

There has been a steady growth in the demand for improved farm implements for the last ten years, and, through the recommendation and advise that you have given farmers we have been assisted in the sale of harrows and other labor saving implements.

Very truly yours,

Hope Hardware Co.,

(Signed) C. F. Wingfield,  
Sec'y. Treas.



Wichita Falls, Texas. Sept. 15, 1908.

Dr. S. A. Knapp,  
Washington, D. C.

Dear Sir:

In reference to your letter asking for information as to the effect of the Farmers' Cooperative Work upon rural conditions, will simply outline certain facts.

First. That as long as farmers are poor and in debt, they can do little more than live and can not be expected to make such progress upward in the matter of better homes and surroundings.

Second. That since the Farmers' Cooperative Demonstration Work began, we have taught a system of agriculture that would certainly increase the profits of the farmer and have taken advantage of every possible agency that would help to induce them to adopt the methods recommended.

Third. That where our work has been carried on longest there has been a general breaking away from old farm methods and there has been, among farmers, great improvement financially and in home conditions.

There is room for great improvement yet. Our work has just begun to be understood and appreciated. The desire to own and beautify rural homes is more general and stronger now than ever before, and as the earning capacity of the farmer increases just that fast will modern comforts and conveniences come to the rural homes of the farmers.

Very truly yours,

(Signed) W. D. Bentley, Special Agent.



Timpson, Texas. Sept. 17, 1908.

Dr. S. A. Knapp,  
Washington, D. C.

Dear Sir:

Feeling an interest in the Farmers' Cooperative Demonstration Work which you and men under you are leading, we take pleasure in saying that we believe a great amount of good has been accomplished in our vicinity since the work was started here. Beyond a doubt new life has been put into the farming industry and our farmers are beginning to farm scientifically.

The honest, energetic farmer has gotten help where he needed it and as a general thing all have lived economically. The result will be that a number of people who have depended upon the public work for a livelihood will have gotten a small start after this year's crop is sold which he has never had before. A good many of the farmers have taken up their notes before maturity. Most of the farmers paper matures October first and we feel that practically all farmers notes to banks will be taken up by maturity.

Numbers of farmers have put themselves in better condition for farming another year. Some have bought new and improved tools, and wagons, and have enough stock to enable them to farm more successfully than this year.



Taking it as a whole we feel that our farmers will be in better shape than they have been for some time. We think that your work has to a great extent created this interest and if this interest continues, farming as an industry in our section will push to the front.

Very truly yours,

(Signed) J. A. Smith, Merchant.

R. S. Shipp. "

E. W. Victory, Grocer.

A. D. Johns, Merchant & Planter.

B. J. Hawthorn, Cashier, 1st.  
Nat'l. Bank.

T. C. Whiteside, President, 1st.  
Nat'l. Bank.

G. W. Trammell, Jr. Merchant.

R. T. Blair, Merchant.

Grand Cane, La. Sept. 21, 1908.

We the undersigned certify, that the farmers of this community have taken more interest in the improve methods of farming, and especially in the use of improve implements, they are using at least 5- or 75% more of these improved implements.

Cook & Douglas Co., Ltd. Farmer & Merchant.

Hicks and Richardson Co., Ltd. Merchants & Planters.

G. W. Peyton, Merchant and Planter.



Wichita Falls, Texas. Sept. 18, 1908.

Mr. W. D. Bentley, Special Agent,  
City,

Dear Sir:

In answer to your inquiry in regard to condition of Wichita  
County Farmers:

During the past three or four years we have with pleasure noted  
a growing disposition on the part of farmers to improve their homes  
both in appearance and conveniences. As a class they are getting  
out of debt, and their condition is in every way very much improved.

There is also a disposition to give their children better  
education and to this end new school houses have been built and com-  
petent teachers are in charge. Our farmers do not need the sym-  
pathy of any other class of citizens. We feel that considerable  
credit is due your Department for promoting and encouraging the  
farmers in their efforts to better their condition. We sincerely  
hope the good work will be continued.

Yours very truly,

(Signed) T. J. Taylor, President  
Farmers Bank and Trust Company.

T. C. Thatcher, Cashier.



The Crenshaw Home. An example of home improvement by a Wise Co. Texas. Demonstration Farmer.

The home of Mr. M. L. Crenshaw eight miles southeast of Decatur, in Wise Co., Tex. is a model of what may be accomplished by industry and intelligent effort by a farmer of small means on a small farm of average fertility.

Mr. Crenshaw has been one of our demonstration farmers for four or five years, and has made money and used it to improve his farm and made it an ideal rural home.

Three acres in orchard and garden furnish the family fresh fruit and vegetables for nine months in the year with plenty to can for winter and some to sell besides. This garden, with the cows, pigs and poultry raised and kept on the farm feed and clothe the family the entire year. All the cotton money is surplus.

A wind-mill with an elevated tank furnishes water for house and barnyard use, as well as pumps water to irrigate the garden during dry spells. I inclose a picture of Mr. Crenshaw's home, showing windmill, tank and back part of house etc., The house has bath and other modern conveniences? The rural carrier brings his mail to the door and he has telephone connection with a majority of the farmers of the county as well as connection with the Decatur exchange at a nominal yearly assessment.



Mr. Crenshaw keeps up the fertility of his land by rotation of crops, manure and cowpeas. This is an eighty acre farm. Similar land in this section sells for twenty to fifty dollars per acre. Mr. Crenshaw's farm is not for sale.

Mr. Crenshaw is a middle aged man with wife and several children. He has been a conscientious demonstrator since the first, reading the Department bulletins and adopting plans advocated wherever they seemed likely to be profitable on his farm. Nearly all the improvements and conveniences have been added to this farm within the last four or five years, most of the work being done by himself and family.

Very truly

(Signed) W. D. Bentley, Special Agent.

Henrietta, Texas. Sept. 17, 1908.

Mr. W. D. Bentley,  
Wichita Falls, Texas.

My dear Mr. Bentley:

In reply to your letter of the 15th inst., I wish to say that there has been a wonderful improvement in the rural schools in Clay Co., within the last two or three years. Improvement in every way; longer terms, better attendance, better buildings and better equipment, and above all (and because of these things) better and more real school interest on the part of both pupil and patron. Especially within the past year have these things been strikingly noticeable. Nearly every school house in Clay Co., has either been repaired and



painted, inside and out, or a new, up-to-date house substituted for the old one. This is certainly encouraging.

I do not know to whom or to what the credit is due for all this educational interest and enthusiasm, but it is surely here, and it is making itself seen, felt and heard.

Not only have these good times come to the schools of Clay Co., but they have come to the homes, and fire-sides of the people themselves. An air of happiness, prosperity and contentment pervades the whole county. Farmers live better than they did a few years ago. They have better homes, and more around them, therefore happier and better contented.

Sincerely yours,

(Signed) J. S. Holaday.  
County Supt. of Schools. Clay Co.

Columbus, Miss. 9/18/08.

Dr. S. A. Knapp.

Washington, D. C.

My Dear Dr. Knapp:

The outlook for the work in Miss. is very good, the only thing that we have to guard against now in Miss. is getting in an embarrassing position on account of more counties offering to cooperate with us than we will have fund to meet them half way.



We shall probably get financial aid for the work in some eight or ten counties provided the matter is properly presented to the Board of Trade of the larger towns in the state. I will also submit full report of plans for Alabama work on my return to Washington.

Very truly yours,

(Signed) H. E. Savely, State Agent.

Terrell, Tex. Sept. 2, 1908.

Dr. S. A. Knapp; \$5.

In including this report of conditions affecting our work and affected by it in this country I desire to state that it is somewhat difficult, on account of a series of poor crop years before the Co-operatind Work was inaugurated here, to arrive at an intelligent conclusion as to what the exact results of the work have been. Conditions affecting the farming population are improved here this fall fifty per cent, but a portion of this improvement is to be attributed to better crops. However, the work we have done here has had more to do with the making of the abundant crops with which we are blessed than any other factor. We have had great difficulties to contend with from the very beginning of our work, but we have conquered and the real results of it will show up this fall in a manner that will be convincing to even the most skeptical, if there were any skeptics here.



The people are coming to understand that this work is not intended merely to improve the cotton business, but to uplift the farming class in many ways. It is proving an encouragement to education, better farming methods, the creation of home comforts, the raising of better live stock and, in short, is making of the farmer a more contented individual, a more useful citizen and a more intelligent and well rounded out man. The work is constantly growing bright indeed.

As I have stated in answer to the questions propounded a most gratifying improvement of the public highways has been made, the school term has been considerably lengthened and, with the extensive culture of early maturing varieties of cotton which is rapidly coming, the children of the farmers will enjoy for better educational advantages.

Trusting that I have given the foregoing pages a synopsis of the work which will enable you to form an estimate of the progress that is being used, I am,

Very truly yours,

(Signed) T. E. Terrell, Agent.



Dr. S. A. Knapp,

Washington, D. C.

Dear Dr. Knapp:

Your recent letter asking for a report giving the effect of the Farmers' Cooperative Demonstration Work has had upon the betterment of rural conditions, has been received. You will find my report below:

About 8% raise all of their own feed. A much larger per cent raise plenty of corn, but very little hay is grown. There has been a noticeable increase in the production of hay, about 25% increase. I talked with the largest dealer in feed stuffs and farm tools of Tupelo, and I was told that they handled 50 cars of feed stuffs this past twelve months. 22 cars of hay; 16 cars of corn; 12 cars of hay. (Asa W. Allen & Co.) I was told by the bookkeeper of the Hoyle Grocery Co., a concern doing a retail trade capitalized at \$5,000.00 with a surplus of \$4,000.00 that they sold feed stuffs to the amount of \$7,000.00 since last November. There are several other concerns doing as large a business as the last named, besides there are three wholesale groceries that I have not seen. I will try and see them later.

The teams and tools have increased to a noticeable extent. Asa W. Allen & Co., Tupelo, Miss. tells me that their sales of farm tools have increased fully 15% in the past twelve months.



A great many break their land with two horse plows. A great many section harrows, walking cultivators have been sold.

The rural schools have been are being improved. Within the past year Tippah, Prentiss and Lee counties have organized Rural School Improvement Associations to devise plans to improve the school houses and school grounds. Lee and Prentiss counties have organized Boys Corn Growing Clubs, last spring. The county Superintendent of Education in Tippah Co., has taken up the matter and he wants to cooperate with us and organize a Corn Club for next year. Not a great deal has been done toward lengthening the school term. I find the teachers that I meet with are taking interest in our work.

I have talked "Farmers' Clubs", explaining how they could cooperate in buying, selling, and how they could pursue a systematic study of agricultural subjects best suited to each locality. More interest is being taken in better stock. I know of several instances where several farmers have clubbed in and bought Acid Phosphate and Cotton Seed Meal and mixed their own fertilizer. In this way, they got the 16% of Acid Phosphate that was not on the local market. They thus began to study what needed and paid more attention to the guaranteed analysis. They accomplished two things, better buying and learning what fertilizer they needed.

I talked with several farmers last week about putting in rye as a winter cover crop, and I noticed that they immediately began planning to club in and order the seed.



I have noticed a dozen or more canning outfits. I have seen quite a lot of tomatoes, beans, potatoes, peaches and other fruit that were canned this last summer. Mr. Robt. M. Boyd, Houlka, Miss. had us to sample a can of tomatoes and they were as nice as any canned tomatoes that I have ever eaten. In some cases several families use the same outfit. I am not able to give any percentage increase as I was not here and do not know anything only what I saw this year.

I have noticed in my travels that the tenant houses that are being built are much nicer and better finished than the older ones. Nearly every new tenant house has a brick chimney, while the old style houses have old time mud chimneys. The houses of the owners are built on very much better designs than formerly. They have more style and convenience about them, and a good many are nicely painted. a few whitewash their fowl houses and other buildings, but not many.

Quite a lot of roads in Alcorn Co. are being graded and gravelled. Besides this, this county gave \$300 to supplement the funds for putting in a local agent in that county. Two members of the Board of Supervisors were demonstrators this year.

In Tippah and Lee counties, quite a number of local telephones lines have been put in. In some instances, several local lines are connected by a sort of switch board.

There are a great many rural routes for the delivery of mail which aids in getting our literature to the farmers promptly. Since some have taken up work with us, they appreciate the convenience of free delivery of the mail.



I have tried to stimulate an interest in better home conveniences. I find occasionally in hold Demonstration meetings where a man has cut down an old hedge near the plat. Uncle Harp Stewart in Tippah County, when he learned that we expected to hold several meetings on his plat, cut down an old fence that was grown up in bushes. This, of course, causes people to look at his plat more closely.

I expect to have each local agent to select several farmers along some public road near each other, and give them special attention and try to induce them to clean up their entire farm that bounds the road.

Yours truly

(Signed) H. D. Tate, District Agent.

Wichita Falls, Texas. Sept. 18, 1908.

Dr. S. A. Knapp,  
Washington, D. C.

Dear Sir:

I inclose a letter from Prof. J. S. Holliday, Co. Supt. of Schools of Clay Co., Texas, as an answer to questions No. 6 & No. 8. These same conditions described by Prof. Holliday applies in the other counties where our work has been carried on from the first.

Prof. Holliday has been personally acquainted with our work in Clay Co., Tex. from the start and he is one of the agencies I have tried to use to make our work in Clay Co. beneficial to the people.



He has worked hard to bring about the conditions he pictures.

Respectfully,

(Signed) W. D. Bentley, Special Agent.



Evergreen, Ala. 9/19/08.

Prof. H. E. Savely,  
State Agent,  
Columbus, Miss.

Dear Sir:

I herewith hand you my report as per your request of Sept. 15th. Answers to the questions are numbered similar to the inclosed list of questions.

1.- My district includes the counties of Conecuh, Butler, Monroe, and adjoining counties.

Nearly every farmer this fall has selected his seed cotton in the field according to instructions sent out from the office of the demonstration work. Some of them have made individual selections of stalks and are actually engaged in breeding their cotton after scientific methods, and practically all of them throughout my district are culling their seed by picking the largest bolls from the most desirable stalks. I have taken up much time in giving specific instructions as to selecting their seed. They are also taking much interest in selecting seed corn, and are following our bulletin #A-63. The corn crop in this section is the best I have seen in years and every demonstration farm, especially in Conecuh County, will average at least 25 bushels to the acre,



The farmers have adopted most of the methods of preparation and cultivation advocated by the Department, which is shown by the appearance of the Demonstration Farms.

Our farmers have made wonderful progress along all lines, but the most striking improvement made is in the selection of seed. I am sure that no other agency than the Demonstration Work brought this about.

The following figures were given me by the Wild Bros. Hdw. Co., Evergreen, Ala.

Seasons 1905-06-----	Disc plows sold-----	0
" 1906-07-----	" " " -----	18
" 1907-08-----	" " " -----	60
" 1907-08-----	one hundred percent more sold than formerly.	
" 1907-08-----	twenty-five percent more walking plows than formerly.	

During the past season, larger and better horses and mules were brought into this district and some interest has been manifested to the breeding of mules. The small cotton mule is the thing of the past, and our farmers are buying high-priced mules, paying four hundred dollars per pair. During 1907 more thoroughbred horses were imported into this district than in the past forty years. Much interest is also being taken in the raising of cattle, especially the dairy breeds.

5----- The farmers and citizens of Evergreen have contributed \$50.00 in cash for prize money. \$25.00 of this money



will be given to the demonstrator or cooperator who shall make the largest yield of cotton on his demonstration farm. The demonstrator or cooperator who raises the largest yield of corn will receive \$25.00.

The most important step taken by the counties in this district is the improvement of country roads. In Conecuh County the citizens have voted a \$100,000.00 bond issue to build sand-clay roads from Evergreen to the important towns in the county.

Manufactures, railroads, immigration, schools, colleges, etc. have all been great factors in developing our resources and building up cities, but I do not believe that any other agency of civilization, in so short a time, could have changed the economic equilibrium of the rural population of this section of Alabama like the Farmers' Cooperative Demonstration Work.

THE DEMONSTRATION IDEA. The Board of Control of the district Agricultural Schools have, in most cases, converted the school farms into demonstration farms. They have decided that Dr. Knapp's method of teaching the farmers can be applied to better advantage on these school farms than the so-called "Research Work" which has been attempted on small funds. The Agricultural School Farm at Evergreen has been converted into a demonstration farm and the Prof. of Agriculture is conducting a demonstration according to our methods. The Agriculturalists at all the District Agricultural Schools have discontinued most of



experimental work and have placed the farms on a paying basis by conducting demonstrations.

The Bay Minette Land Co., Bay Minette, Ala., has employed a graduate of the Mississippi A. & M. College to conduct a large demonstration farm on their land during 1908-09. All this proves that the demonstration spirit is taking hold of keen business men who have recognized its value as a means of selling real estate.

The people no longer regard the work as theoretical, or experimental, but now realize that it is practical and profitable and should be adapted by all progressive farmers.

It is impossible to enumerate all the advantages of the Farmers' Cooperative Demonstration Work to this district, but I think it is safe to say that the two items of preparation of the soil and seed selection, have saved our farmers many thousands of dollars, and will justify the extension and continuance of the Farmers' Cooperative Demonstration Work in Alabama.

Respectfully submitted,

(Signed) J. C. PHELPS.,  
District Agent



GEORGIA,--

THE FARMERS' COOPERATIVE DEMONSTRATION WORK.

--oOo--

It is the mistake of the world to withdraw the opportunities for education from people at the age of sixteen to eighteen years. Education should never cease, and it never can cease if we keep pace with the progress of the world. Daily a great volume of knowledge is evolved and a body of great value. There should be some way in which this can be taken to the people authentically and delivered in a manner that they will accept. To consider the doors of the school-house closed and turn men and women loose at sixteen or eighteen years of age, to acquire what they please and how they please, whether good or bad, valuable or worthless, is perhaps the crime of the ages. But we will confine our suggestions to the farmer. After he has completed his ordinary common school education, what does he need? First, he is in need of some scientific aid and this should be furnished by the Experiment Stations. It may seem at first that this is a trifling matter but let us pause a moment.

1.- There is a difference of four to five hundred per cent between the ordinary methods of crop production and the best methods.

2.- There is a gain of four to five hundred per cent in the best pasture over the average, and of three hundred per cent



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in the best meadow.

3.- There is a net gain of three to four hundred per cent in feeding a balanced ration, over the ordinary methods.

4.- There is a net gain of two to four hundred per cent in abundantly and properly forcing early maturity for beef and pork.

5.- There is a gain of two hundred per cent in producing the most economic crops over the average plantings.

6.- Even in curing hay there is a gain of two hundred per cent in the best method over the ordinary method.

7.- There is a gain of two to three hundred per cent between the ordinary method and the best method of improving the farm.



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All these problems should be worked out by the Experiment Stations and delivered to the people in bulletins, short courses, newspaper articles, etc. After this has been done-- which unfortunately it has not been - what then? How many are reached upon this plan? In some states one farmer in a thousand; in other states possibly one in five hundred. How about the remainder? And how about the thousand and one things that the Station says nothing about and has not attempted the solution of? From an economical standpoint the State can not afford to let the people continue in their ignorance. Happily there is a system of education that can reach all the people. It is known as the Farmers' Cooperative Demonstration Work and its aim is to place a practical demonstration before the farm masses, illustrating the best and most profitable methods of producing the standard farm crops and to present to them in the attractive way of an object lesson many lines of valuable knowledge in such a manner as to secure their active participation and to prove to the farmers that they can do much better than they are now doing, if they try. This work has already shown that there is no necessity for the general deterioration of farmers and the common poverty of the rural masses. Let us first explain the details of the plan of organization.



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The Farmers' Cooperative Demonstration is conducted by a Special Agent in Charge, who reports directly to the Chief of the Bureau of Plant Industry of the United States Department of Agriculture. There are five general assistants, a full Office force and a corps of Field Agents, classified according to territory as State, District and Local Agents. The Local Agents are appointed mainly on the advice of local communities,-- of prominent business men and farmers conversant with the territory to be worked. Each Agent has in charge the practical work in one or more counties, strictly under such general directions as may be issued from the Central Office at Washington. The Field Agents are selected with special reference to a thorough knowledge of improved agriculture and practical experience in farming in the sections to which appointed. District Agents are expected to have not only a knowledge of scientific agriculture but to be practical farmers and to have had considerable experience in the Demonstration Work. State Agents are strong and capable men who have shown their ability to carry out the instructions of the Central Office over a larger territory and they are specially qualified for the work by the possession of that tact necessary to influence men.

The term "Demonstration Farm" is used to designate a portion of land on a farm that is worked strictly according



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to instructions. This is visited by the Agent as often as once a month if possible to see that the instructions are being carried out and to give any further advice necessary. A "Cooperator" is a farmer who agrees to work a part or all of his farm according to instructions.

The Farmers' Cooperative Demonstration Work now covers portions of twelve states, employs three hundred and seventy-five traveling Agents, has many thousand Demonstration Farms and potentially influences, through Boys' Corn Clubs, Field Schools and Cooperators, a much larger number than are classed as "Demonstrators". At the present time it has close cooperation with six Agricultural Colleges, assisting the latter to make field demonstrations. It also cooperates with State and County Superintendents of Public Instruction in demonstrations for Boys' Corn Clubs. This work is supported by Congressional appropriation, by liberal contributions from the General Education Board, by County aid and by donations from Boards of Trade and private individuals. It is a real rural school for the man with the plow. It may be regarded as a system of adult education, given to the farmer upon his farm by means of object lessons in the soil, prepared under his observation and generally by his own hand. It is arranged in a series of lessons. The first year or the primary lessons instructions are given in how to prepare the best seed bed; which is the best variety of



seed and how to secure it; the best method of cultivation; and the use of better teams and tools to secure more economic production. It generally requires two or three years to thoroughly impress these first lessons. The farmer rarely does the whole that is required of him the first year; the second year he comes much nearer and of course reaps a greater reward in the harvest. Then he begins to think that it is due to some particular thing, instead of distributing the gain to all of the better work done, and usually he considers that it is in the seed and his neighbors appear to think so and they will offer him four or five dollars a bushel for the seed, thinking that the seed will make the crop. Thus it requires another year for him to become disabused of this conception. The next series of lessons is as follows:

- 1.- Demonstration in conserving and enriching the soil by the use of legumes and winter cover crops. This involves some simple crop rotation and the turning under of green manures, also the prevention of soil waste by erosion.

- 2.- The value and use of barnyard manure and commercial fertilizers, and how to apply them.

- 3.- A simple method of farm drainage.

After these have been mastered, then a third series is taken up, which relates to the better pasture and meadow, and how to secure them; the most economical grain crops for work animals



or to produce flesh, as a supplement to the pasture and meadow grasses.

4.- Economical farm improvements, both as to the kind of fences and buildings and the material to be employed; how to make it durable, etc.

It is necessary, in the instruction of adults on the farms, to note that men are very differently impressed. Some men give heed to whatever is going on in the world; some to what is taking place in their own country; others only give heed to what occurs in their own County. But the great masses pay too little attention to a matter outside of their own town or even their limited neighborhood. Therefore in order to reach the latter class it is absolutely necessary to place a Demonstration in almost every neighborhood. On this method the illiterate are just as easily influenced as the educated because it is done in a way that they take in knowledge, namely,- by observation and by doing the work themselves. It is generally easy to secure some leading farmer in a neighborhood to try an acre. If he does not believe in it he will try that much some times in order to prove there is nothing in the plan, according to his judgment. As soon as he consents to become a demonstrator nearly all his neighbors begin to see quietly if they can not excel in crop production



and this in itself is an arousement and an education . Then by means of publication in the local papers and by calling attention to the crop and by holding field schools or field meetings at a demonstration plat and inviting the neighbors to be present, a public sentiment is created in favor of better farming, the result of which is almost astonishing.

The Farm Demonstration Work is susceptible of very great expansion and possibly ought to be expanded because it is just as important that women should be taught the things that are of vital importance in the management of their household affairs as it is that men should be instructed, for women are the great dispensers of the incomes of the farm. They manage the food and the clothing of the world. We attempt in an indirect way to influence, as far as possible, the betterment of the home. No greater mistake in economics can be made than the policy that is now pursued, the failure to apply modern improvements to the easy and rapid discharge of household duties. If it is necessary to equip the farm so that it may produce more economically it is of still greater importance, in my judgment, to equip the home so that the work can be done more easily and more economically and then the good housewife can look after, with some pleasure, the family garden, the products of the poultry and of the dairy, and her duties in helping furnish the income will, in many cases, be



equal if not superior to what the man earns in the field.

Besides the general education of the men and women there is another class, that is the boys and girls. It is a most serious problem before the American people,- how to so train the boys and girls of the farm that they will see some value in the soil and become attached to it so that after they have received an education they will return and dwell upon the land and try to work out their future successfully by wresting greater profits from the soil. The Demonstration Work has taken up the Boys' Corn Club plan on the principle known to all teachers that if a boy or girl succeeds in one study so as to stand at the head of the class they are quite apt to finally be good in nearly all the studies. So, if a boy can succeed in making a large corn crop he will naturally think that he can succeed in making a large crop in other cereals and will try to learn how. But the large crop is not all. The greatest result in the Boys' Corn Club work is to convince the boy that the farm has great value and to attach him to it. This is done by the cooperation of the teachers and County Superintendents who do the organizing. The Department of Agriculture furnishes the instruction, and the boys acquire a knowledge of some definite plan, they measure their ability to succeed with other boys and so the work progresses. It is one of the most hopeful lines of



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agricultural education in the country.

There are quite a number of intelligent farmers that must be taught. A careful observer will note the variation in crops from year to year, frequently amounting to almost fifty per cent in some states, and he entirely attributes it to a difference in season. In a sense this is correct but he fails to apprehend that it is really in the man. If the man had known how to prepare his soil and use the best seed and cultivation he would be able to make a good crop in almost any season. Then there is another influence among farmers. Some way,-we can not tell how or why,- a wave of pessimism or of doubt will pass over the people. Some one will say "We are not going to make any corn (or cotton) this year. No, it isn't a good year for it." It is astonishing that any body would believe it on such testimony but nevertheless it gains credence and as it travels it gains influence until finally hundreds of farmers went half try. We have specific instances where thousands of farmers the past year plowed up quite a per cent of their cotton crop because they beliyed they could not make a crop; and hundreds of thousands of acres more would have been plowed up had it not been for our strenuous efforts.

Now, this wave of pessimism affects not only the farmer but it effects the banker. They discuss it in the back room



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of the bank,- that it isn't going to be a very good crop year and therefore they must not loan so much money; they must be more cautious. And just the time the people need more money they get less. Again and again in the past few years we have met this tide of depression and rolled it back by stern and energetic words.

It seems too that the farmer is considered the legitimate prey of all sorts of fakes. Some seed that is of little or no value is sold at a high price, and wonderful tales told of its success, etc. It is singular that the farmer accepts it but he does and untold losses occur almost every year. Our Demonstration Work stands for tried seed; for conservative methods; for things that have been proven and are helpful to the people. Generally there are two view-points from which to regard the Farmers' Cooperative Demonstration Work. The superficial viewpoint is that it is simply a method of increasing corn crops and adding more to the corn crib. The real viewpoint is that it is a system of adult education, carried to the farmer on his farm and its correctness proven by the results as tested upon the soil. He can not doubt them because he works out the problems himself and receives the reward. But this is not the only result. Success in one line and encouragement lends not only ability to do better things but the courage to do them and the farmer becomes a



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broader man. He readjusts his home, he remodels his farm, he tries to do everything in a better way. He is more helpful to the community. He is a better member of society.



## THE FARMERS COOPERATIVE DEMONSTRATION WORK IN THE SOUTHERN STATES.

It is conceded by well informed men that rural conditions in the United States and especially in the South are not only far below the best ideals for country life but below what is necessary to secure the most profitable production of farm crops, improve country homes and schools, promote the best citizenship and generally enrich rural life.

The principal difference of opinion lies in the methods by which this uplift shall be secured.

### MANY REFORMS NEEDED IN RURAL LIFE.

For the improvement of rural life many things are needed:

(1) The improvement of country schools, or, rather, the establishing of real schools for the country. Many leading educators believe that the country school has yet to be conceived and established. It has been said with great force that "the existing country schools are but poorly equipped city schools located in the country."

(2) County or district agricultural schools, in which the main work shall be to impart knowledge that tends to make the successful farmer and the good citizen and to give a training to youth adapted to rural life, in sympathy with toil and in love with the farm.

Several States have taken the initiative in establishing such schools. It is believed by their friends and hoped by all that they may lead to a solution of the problem of the best education



for rural life.

(3) It is also desirable that text-books in country schools shall have for illustrative material incidents and experiences drawn mainly from rural life instead of from commerce, politics, diplomacy, and war.

(4) It will doubtless be found advantageous at times to cooperate in buying and selling, in borrowing money, etc.

(5) The proper valuation of property as a basis of taxation to establish and maintain rural betterments should be considered.

All the improvements required in rural life we see and realize. The purpose of this article, however, is to call attention to a reform which is fundamental to all these things and which must necessarily precede them, logically and chronologically.

#### THE REMEDY OFFERED BY THE FARMERS' COOPERATIVE DEMONSTRATION WORK.

What primary remedy for the improvement of rural conditions ought a republic to propose where all the adult male citizens are expected to exercise through the ballot the functions of a ruler? Evidently it should be one that can directly and immediately benefit all the people. More than nine-tenths of the rural population of the South are limited by their conditions to an education provided by the country district school. What help can be given them that will be immediate and will benefit both parents and children? It must be such that it will reach the farm and appeal to the interests of the farmer. It must find the man and not compel the man to find it. It must be a home remedy.



The only remedy that can be successfully applied to help all the rural people, one that will be effective and immediate, is to increase the net earnings of farmers and farm laborers. The paramount issue now is how most wisely and effectively to aid all the rural people. If each farmer is shown how to produce twice as much to the acre as he now produces and at less cost, it will be a profit in which all rural classes will share and will be the basis of the greatest reform ever known to rural life.

How can the knowledge of better agricultural methods be conveyed to the masses in a way so effective that the methods will be accepted and their practice become common? For many years the United States Department of Agriculture, the agricultural colleges, the experiment stations, the agricultural press, the farmers' institutes, and the national and State bulletins upon agriculture have thrown light upon almost every topic relating to the farm. These have been of great assistance to farmers who are alert and progressive, but the masses, especially in the South, have scarcely been affected. There came a time when it was found necessary to reach and influence the poorer class. The cooperative demonstration plan was then tested.

#### ORGANIZATION OF THIS SPECIAL WORK.

As organized under the Bureau of Plant Industry the working forces of the Farmers' Cooperative Demonstration Work consist now of 1 director with assistants, 10 State agents, and 305 district and local agents. Local agents must be practical farmers and thoroughly instructed in their duties by the State and district



agents. Semiannually State meetings of agents are called for instruction, at which the director or an assistant from Washington is present. Weekly reports showing work accomplished each day are made by all agents to the director.

The campaigns for the ensuing year are planned in September, and active work commences in October by calling public meetings in every district to be worked, at which is shown the great advantage to all the people of increasing the crop yield two, three, or four fold, and it is made clear that this can be done by adopting better methods. In country villages the banker, the merchant, and the editor join with the leading farmers of the section in indorsing the progressive plans of the demonstration work; farmers agree to follow instructions, and demonstration plots of one or more acres are located so as to place a sample of the best farming in each neighborhood of a county or district. There must be enough of these to allow every farmer to see one or more during the crop-growing period. The necessary work on the plot must be done by the farmer and not by a Government agent, because the whole object lesson is thereby brought closer to the people. The demonstrating farmer understands it better because he does the work and his neighbors believe that what he has done they can do.

#### INSTRUCTIONS TO THE FARMER.

Each month during the season instructions are sent to every demonstrator and cooperator, clearly outlining the plan for manag-



ing the crop. In addition a local agent is expected to call on each demonstrating farmer monthly and explain anything not understood in the instructions.

#### FIELD SCHOOLS.

Previous notice by letter is given to all the cooperating farmers (such as are instructed in the work and agree to follow instructions) in a neighborhood to meet the agent on a certain date at a given demonstration farm, where the crop and plans are thoroughly discussed. This is called a "field school" and has been marvelously effective in arousing local interest. At such meetings and on all occasions where the agents meet farmers, the following fundamental requirements for good farming are discussed by the aid of notes sent out from the central office:

- (1) Prepare a deep and thoroughly pulverized seed bed, well drained; break in the fall to the depth of 8, 10, or 12 inches, according to the soil, with implements that will not bring too much of the subsoil to the surface. The foregoing depths should be reached gradually.
- (2) Use seed of the best variety, intelligently selected and carefully stored.
- (3) In cultivated crops give the rows and the plants in the rows a space suited to the plant, the soil, and the climate.
- (4) Use intensive tillage during the growing period of the crops
- (5) Secure a high content of humus in the soil by the use of legumes, barnyard manure, farm refuse, and commercial fertilizers.
- (6) Carry out a systematic crop rotation with a winter cover crop.
- (7) Accomplish more work in a day by using more horsepower



and better implements.

(8) Increase the farm stock to the extent of utilizing all the waste products and idle lands of the farm.

(9) Produce all the food required for the men and animals on the farm.

(10) Keep an account of each farm product, in order to know from which the gain or loss arises.

In the course of these discussions it has often developed that the majority of small farmers had never fully complied with any of these rules. They thought they knew all about farming and charged their small product and failures to the seasons or the land.

These field schools bring about a revolution. A meeting of the farmers of a township called at a home to discuss a field crop and to inspect and compare home conditions can not fail to place local public opinion upon a higher level, and that is the principal opinion to be considered in influencing the farmer.

Instead of expending time and force in molding State, city, and county influences which have but slight practical results in changing rural conditions, the Farmers' Cooperative Demonstration Work makes a direct attack on the men who should reform. It reaches them in a practical way and establishes a different local standard of excellence for farming and for living.

The initial move is an aroused public sentiment in favor of doing better.

#### INSTRUCTION CONFINED TO A FEW ESSENTIAL SUBJECTS.

It is of the greatest importance to confine the work to a few standard crops and the instruction to the basic methods and principles which stand for the best results and to repeat this line of instruction



on every occasion until every farmer works according to some system and knows the methods that make for success instead of charging failure to the moon, to the season, to the soil, or to bad luck. It requires several years to so impress these teachings upon the masses, even when supported by demonstration, that they become the general custom of the country. The first year a few try the plan on small areas; the second year these greatly enlarge the area and some of their neighbors follow their example; the third year possibly 40 or 50 per cent adopt some of the methods, and so work progresses by the force of demonstration and public opinion until its general adoption is secured. No one is asked to believe anything not clearly proved.

#### SPECIAL FEATURES OF THE WORK.

In most of the Southern States the average farmer works with one mule. The cultivation of cotton and corn is a slow process; too much of it is done with the hoe.

To remedy this, resort is had to demonstration. The agent in some cases drives a team of strong mules or horses hitched to a wagon filled with improved implements. At the field meetings this team and the improved implements are used to show how much more and how much better work can be done in a day by having good equipment. It is especially emphasized that cotton and corn should be grown without using the hoe, thus saving one-third the expense. It will be noted that the earning capacity of each worker upon a farm is almost directly in proportion to the number of horses or mules for the use of each. This is startlingly true outside of the rice,



sugar-cane, and market-garden districts.\* In North Dakota each farm worker has five horses, cultivates 135 acres, and has an earning capacity of \$755.62 yearly; in Iowa each laborer has four horses, tills 80 acres of land, and earns \$611.11 annually; while in Alabama each farm laborer has three-fifths of a mule, works 15 acres, and earns \$143.98. In the case of tenant farmers the earning capacity (which is the total product of any crop in the State divided by the number of workers) should be divided approximately by 2.

One of the conditions of securing a greater net income is to stop buying food products and live on what the farm supplies. If greater variety is wanted, produce it. Another condition is to accomplish more in a day.

#### EFFECT OF THE WORK ON THE FARMER.

Every step is a revelation and a surprise to the farmer. He sees his name in the county paper as one of the farmers selected by the United States Department of Agriculture to conduct demonstration work; he receives instructions from Washington; he begins to be noticed by his fellow-farmers; his better preparation of the soil pleases him; he is proud of planting the best seed and having the best cultivation. As the crop begins to show vigor and excellence his neighbors call attention to it, and finally when the demonstration agent calls a field meeting at his farm the farmer begins to be impressed not only with the fact that he has a good crop, but that he is a man of more consequence than he thought. This man that was never noticed before has had a meeting called at his farm; he concludes that he is a leader in reforms.

\* Taken from U S Census Report 1900



Immediately the brush begins to disappear from the fence corners and the weeds from the fields; the yard fence is straightened; whitewash or paint goes on the buildings; the team looks a little better and the dilapidated harness is renovated. Finally the crop is made and a report about it appears in the county papers. It produces a sensation. A meeting is called by the neighbors and the farmer is made chairman; he receives numerous inquiries about his crop and is invited to attend a meeting at the county seat to tell how he did it.

He made a great crop, but the man grew faster than the crop. There can be no reform until the man begins to grow, and the only possible way for him to grow is by achievement--doing something of which he is proud. He is a common farmer. What line of achievement is open to him but doing better work and securing greater results on his own farm? As soon as the man begins to grow he will work for every rural betterment.

In the Southern States nearly one-half of the farms are tilled under the tenant system. In South Carolina, Georgia, Alabama, Mississippi, and Louisiana more than 60 per cent of the farms are worked by tenants. The poor equipment of such farms and the low earning capacity of the tenant appeal strongly for help.

The tenant is urged by the demonstration agent to make a better crop and raise everything necessary for his support. He is shown that as soon as he proves himself to be a progressive and thrifty farmer it will add to his credit. He can then buy upon better terms and will soon own a farm. The landlord is seen and urged to look more closely after his farm; to improve his farm buildings, because this is necessary to the securing and retention of the best tenants; to furnish better implements or assist his tenant to purchase them;



and to insist that good seed shall be used and that there shall be better tillage of the crop. Many proprietors take the deepest interest in having their tenants taught better methods. They call meetings and scatter farm literature, thus creating a sentiment favorable to the demonstration work.

#### RURAL IMPROVEMENT THE NATURAL RESULT OF THIS WORK.

The agents of the demonstration work are thoroughly drilled in progressive steps. When the rudiments of good farming are mastered the farmer secures a great income for his labor. An important part of this greater net earning capacity is good farm economy and greater thrift. Farm economy dictates the production of the largest crop possible to the acre at the least expenditure of money and without impairing the productive capacity of the soil. It also includes the planting of crops of the greatest value to the acre, provided the cost of production is not proportionately increased, and it teaches a more economic support of the family, team, and stock, which is based upon home production of all the foods, and forage crops consumed. For the family more use must be made of milk, eggs, the vegetable garden, and fruits; for the stock there should be better pasture and hay, especially the abundant use of legumes. Thrift demands the proper housing of family, teams, and tools, and the more economic expenditure of the greater gains of the farm arising from greater earnings and more economy. The only way to successfully attack such problems is by an example.

Long-time customs can not be overcome by writing a book. One might as well write a book to teach better sewing. Poor farming is the natural result of a lot of bad practices and must be treated rather as a defect in art than a lack of intelligence.



It is not assumed, nor is it the intention to assert, that agriculture is not one of the greatest of sciences, but at the beginning it must be treated as an art and the best methods adopted.

Then it is shown that this greater income should be applied to the reduction of debt, the betterment of the family and the home, and the improvement of rural conditions. Cooperation is then taught in buying and selling, but cooperation is of little avail in buying if the farmer has no money, and it is impossible in selling if his crop is mortgaged for advances.

The fundamental basis of the work of the Department of Agriculture is to increase the efficiency of the farmer.

If there is a better variety of cotton seed in Georgia or Texas, then the other cotton-producing States should immediately have the benefits. This is precisely such work as the Farmers' Cooperative Demonstration Work is doing in the South. It has been instrumental in the introduction annually of 100,000 to 500,000 bushels of better cotton seed. This has resulted not only in a large income in yield per acre, but an improvement in the staple.

These better varieties of cotton seed are of earlier maturity than the old. This cotton is picked on an average six weeks earlier in the fall, which gives the children six weeks more time for school and allows the farmer to prepare his land for the next season's crop. The old plan was to pick cotton all winter. The loss of cotton and the lowering of the grade by the winter rains made this plan an economic crime, and its debarring the children from attending school caused it to be a social crime. These old methods will soon be a thing of the past.

This is truly a national work, and wherever put in operation



with sufficient intensity to influence public opinion these results have rapidly followed:

- (1) Increased yield per acre.
- (2) The purchase of more and better horses or mules.
- (3) Great increase in the use of better implements.
- (4) General interest in seed selection and the use of best seed
- (5) Home and school improvements.
- (6) More months of schooling.
- (7) Better highways.
- (8) Increase of a healthy social life in the country.
- (9) Intense interest in agriculture.

It is of the utmost importance to the South from economic, social and educational viewpoints that rural conditions should be changed as soon as possible.

The Cooperative Demonstration Work is fundamental but other influential factors must be made effective. The country schools and colleges should be redirected that they may enrich and vitalize rural life. The country church should measure up to its mission of creating and fostering a true social and spiritual life upon the <sup>s</sup>farm~~ers~~ and there should be an aroused purpose and energy for greater accomplishment and to meet the full measure of the highest civic obligation.