

October 16, 1959

MEMORANDUM

To: Dr. U.J. Grant

From: A. Colin McClung

Subject: Field trips and discussions of the Soils and Forage Crops projects with Drs. Baird and Crowder.

In accordance with your request, I would like to summarize my activities on my recent trip to Colombia. As you know, most of the month of September was spent visiting the various experiment stations at which work of the Soils and Forage projects is in progress or is planned.

The first days, September 8 - 14, were spent at Tibaitatá going over experiments with the soils group there and in a field trip to Espinal with Baird, Crowder and the Agronomo who will be responsible for projects at the new station.

The period from September 15 - 19 was spent in the Cauca Valley, mostly at the Palmira station, but with one trip to visit experiments on the red soils which occur on the fringes of this valley.

The week of September 21 was devoted to the higher altitude region starting with the Obonuco station at Pasto, traveling to Ipiales and then going by air to Popoyan.

The final week, September 28 to October 2, included visits to the Medellin station, the La Selba sub-station and the old and new farms at Monteria. Thus we were able to visit all of the major stations at which work on soils is in progress and also saw all of the zones in which work is planned except the Llanos.

Since the principal purpose of my visit was to become familiar with the program with the view of making the transfer of project leadership as smooth as possible, particular attention was paid to personnel questions. I met and talked with all the soils personnel except Jairo Gomez and Genaro Diaz who are studying in the United States at the present time. I was also able to

establish contact with several students at Palmira and Medellin who are working on thesis problems with the respective soils projects, with Experiment Station directors and with several agronomists not directly working on D.I.A. projects.

Dr. Baird and I discussed a number of organizational changes, of which the most important was the proposed appointment of Carlostadio Sanchez as sub-director of the Soils program. It was recommended that he continue to familiarize himself with the soils work on a country-wide basis during the coming months with the view of moving to Bogotá shortly after I move to Colombia. I was impressed with the ability and enthusiasm shown by Sanchez, and with the confidence which the other agronomos seemed to place in him. I will look forward to working with him.

The scholarship program for other agronomos was discussed in some detail. Where possible, it seems desirable to broaden the base of the program by encouraging these students to specialize in various aspects of soils. The possibility that Gildardo Marin might study Soil Chemistry under Dr. N.T. Coleman at North Carolina seemed particularly interesting. That Ramiro Guerrero consider specializing in Soil Morphology and Classification at Cornell also seems desirable. It is anticipated that I will work closely with these men when I first go to Colombia in order that I may be better able to advise with them during their study period which might start in September 1960.

Plans were discussed for Jairo Gomez, now studying at Iowa State College, to become Chief of the Soils section at Palmira when he returns.

Projected work on irrigation and soil moisture relationships was discussed, and plans for the establishment of laboratory facilities at Tibaitata were gone over. It is anticipated that Genaro Diaz, now studying at the University of Georgia, will be in charge of this work, and that Dr. G.G. Williams of that institution will come to Colombia to advise on the program during its initial phases. If possible, it seems desirable that I visit Diaz and Dr. Williams during the period when I am in the United States preparing to move to Colombia to discuss the program with them in more detail.

Dr. Baird and I discussed in some detail the question of increasing the efficiency and usefulness of the laboratories at Tibaitata and Palmira. There appeared to be a need for more work

of the type now being done and at the same time development of other services. More minor element analyses, for example, are needed to possibly explain observed field responses and to extend results to larger areas. Re-examination and improvement of methodology seems desirable with closer coordination of techniques used in the two laboratories. As a step toward improving the quality of laboratory work and to bring the chemists more directly into the Soils program, Dr. Baird has been considering sending one or both of the lab chiefs to Mexico for advanced training. I suggested to him that it might be possible to obtain the help of Dr. W.L. Lott, now Chemist for the IBEC Research Institute in Brazil, on this matter. If he were to come to Colombia and work in these laboratories for three to six months, I believe his advice and instruction could be invaluable to the local chemists. Dr. Baird, who had known Dr. Lott as Professor of Chemistry, N.C. State College, specializing in instrumental analysis, was very enthusiastic over this possibility and planned looking into it further. I have mentioned it to Dr. Lott since returning to Brazil, and from his comments see no reason why it cannot materialize if it appears desirable.

During these visits, no attempt was made to outline new work but rather the emphasis was on becoming familiar with the existing program. Nevertheless, a number of problems were discussed which might form the basis for new projects. The need for improving soil test correlations with crop response is well recognized in the Colombian program, and at least two existing projects involve comparison of methods. A country-wide integrated field program might well become a major part of these studies. It might be desirable, for example, to select experimental fields throughout the agricultural regions of Colombia on the basis of soil test levels of plant nutrients. Comprehensive fertilizer experiments, probably using one of the new statistical designs for studying response surfaces, established at these locations would serve as a means of correlating the soil test data with crop response. Corn at the lower altitudes and potatoes at the higher would appear to be the best test crops for a study of this type. Installation of experiments of this type at Monteria and Villavicencio might represent the first step in work of the Soils section at these new stations.

I was shown some exploratory tests on pasture renovation on the steep mountainsides near Pasto. Some of the results here appeared quite promising, and it seems likely that interesting co-operative work could be established on this question.



Further studies on the nutritional problems of maintaining legume-grass mixtures, particularly at the lower altitudes, seem well worthwhile. Establishment and maintenance of such mixtures appear to be an almost universal problem in the tropics, and any successes in this direction could have implications far beyond the borders of Colombia. The problem is clearly more complex than nutrition alone, but this is certainly an aspect worthy of exhaustive study. It seems quite possible that the large returns of plant residues which are often obtained under tropical conditions may result in an accelerated immobilization of certain plant nutrients in soil organic matter, thus creating acute nutritional stresses. Under such stress conditions, the legume, which is usually a less effective competitor than the grass, may gradually disappear. Such effects are, of course, recognized in the temperate zone as well, but the extent to which they are intensified in the tropics may not be fully appreciated.

Poor growth of many crops in the Popayan area presents an intriguing problem in soil fertility and one apparently of considerable economic importance in that area. Further study of the acute magnesium reported in this area should be most interesting. An evaluation of the possible role of fresh volcanic ash in crop production also seems well worthwhile. Apparently, ash falls are noted several times each year. The possibility that this material has a toxic effect on some plants should be looked into. A mineralogical characterization of soils in this area might also be quite useful in the eventual solution of this problem.

The very striking responses of alfalfa in many parts of Colombia to boron applications were pointed out to me, and plans were discussed for laboratory study of soil conditions in relation to these responses. Mineralogical examination of responsive and nonresponsive soils might also be useful in mapping areas of probable deficiency.

Deleterious effects of nitrogen fertilizer on stand and yield of Imperial grass on a red soil at Medellin were pointed out. The possibility was discussed that high soil acidity brought about by heavy applications of ammonium sulfate might be involved in this decline. There appears to be evidence that the minor element status of these soils is sometimes inadequate. Further study might provide a basis for improving pasture productivity on the steep red hills of this region.

Although the above paragraphs by no means include all the points that were gone over in these discussions, I believe they outline the areas that were covered. In mentioning several possible new projects, there is no intention of listing problems of most importance, for no attempt was made to reach conclusions on this. The more important point seemed to be to gain an insight into the project, its personnel and method of operation. Progress in doing this cannot be easily outlined, but I am sure that the time spent with Dr. Baird on those questions will make the transfer of project leadership much more efficient.

ACM:emr

cc: Drs. G.B. Baird ✓  
L.V. Crowder  
A.H. Roseman