UNIVERSITY OF ILLINOIS
AGRICULTURAL COLLEGE AND EXPERIMENT STATION



# Education and Research in Agricultural Progress

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AN ADDRESS

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# EDUCATION AND RESEARCH IN AGRICULTURAL PROGRESS

IN DEDICATING this fine new building for the use of the College of Agriculture and the Agricultural Experiment Station, it seems appropriate to raise the question whether or not these institutions are to continue to play as important a part in the future welfare of the farmer and the public as they have in the past. I am conscious of the fact that, whether expressed or not, this question is in the minds both of my colleagues in the University and of the farmers of the state. As we look back we see achievement; as we look forward, the challenge of opportunity, a challenge which I should like to accept in the name of the faculty of this College, with, I believe, a proper appreciation of the responsibility involved.

May I not ask permission to use the term "research" in its liberal and popular sense, rather than in the narrower interpretation of an attempt to discover immutable laws. The work of the agricultural experiment stations has been rather freely criticized by research workers in the field of the physical sciences because the experiment station worker was not always motivated by the desire to discover an immutable law. The influence of this criticism has been two-fold: First, it has caused the experiment station investigators to scrutinize carefully their projects and methods and to appreciate the importance of a more thoro training for such work. This is well. Second, it has had its influence in not a few instances on the manner in which investigators have interpreted and presented the results of their work. One frequently gets the impression that an author's primary object has been to commend himself to the scientific world rather than to render service to farmers and to agriculture. Do not misunderstand me—it is axiomatic that no experiment station can render the service for which it has been originated and supported without recognizing fundamental scientific truths and methods. What I mean to say is that it cannot accomplish its purpose without ever being conscious of its obligations to reach and teach the man on the land. I am not saying that this tendency is either general or alarmingly serious, but it is a point at which some careful thought needs to be applied.

I look upon this new building and other equipment, and upon the staff of the Agricultural College, as a very tangible expression of confidence of the Board of Trustees, the administrative officers, my colleagues within the University, and the general public of Illinois in the value of this College as a public welfare institution.

Just as the prosperity of the farmer is essential to the general welfare, so I earnestly believe the prosperity and growth of the College of Agriculture and the Agricultural Experiment Station will be of material assistance in promoting the growth and development of this or any university. This has been noticeably true in the past; it will be equally true in the future.

There is no desire on the part of this College to expand beyond a point fully justified by the pressing needs of the interest represented. But no one familiar with the needs of this great fundamental interest and the contributions which these institutions have made, thru agriculture, to the common welfare has any doubt as to their having fully justified themselves. It would be stifling the spirit of research and service and dwarfing to initiative if we were to believe that these institutions have reached the limit of their development. Provision should be made for the growth and development of an institution so vital to the needs of the people when such needs are imminent; and judging from the past, I look forward with confidence that in Illinois such provision will be made.

Let us turn now to a consideration of the question whether these institutions in the future can or will maintain their acknowledged leadership in agricultural thought.

The answer to this question depends upon whether the colleges are prepared for such leadership, or can rather quickly adjust themselves to the more pressing problems growing out of our present agricultural complex. When farmers in very large groups are inclined to turn elsewhere for leadership and assistance, it suggests at least two things: First, that it is well for the college to study its curricula with the utmost care in order to determine whether its students are receiving, both in kind and amount, the training they will most need in order to meet the problems and difficulties of present day agriculture, and to the experiment station to see if its projects for investigation are the ones in which the farmer is most vitally concerned. Second, that there are certain kinds of assistance and service needed by farmers which the agricultural college, its experiment station and extension service, cannot and should not be expected to furnish. Fortunately, the farmers in this state are clear-headed on this point. There are emergencies arising out of the farming business which require quick acting remedies, and education and research are not that.

Some day we shall look back to the agricultural crisis following the World War as the beginning of what might be termed a new epoch in agricultural teaching and investigation. This does not at all mean that the progress we have made is to be lost or that the usual agronomic, animal husbandry, dairy husbandry, horticultural, and mechanical problems are, or are likely to become, of less importance. They may in some particulars require even more consideration than they have in the past.

It does mean that we shall need to place much greater stress upon the constantly increasing importance of economics as applied to agriculture.

The struggle of our fathers was largely one with natural forces in an attempt to subdue the land. In a country like the United States, rich in agricultural resources, this pioneering stage is rather prolonged, altho the geography of the pioneer is constantly changing. This stage might be called the home-making period, when agriculture was largely thought of in terms of a mode of living. When farm sites on the frontier became more and more scarce, agriculture became an enterprise, a business, as well as a mode of life.

As agriculture became a business, the economic questions pertaining to the farm multiplied very rapidly and have become more and more difficult for the farmer, for he was neither economically minded nor commercially experienced. Farmers, perhaps more than any other group, are subject to a variety of conditions over which they now have little or no control. A result, according to the president of the American Bankers Association, is that "the farmer suffers from successive periods of prosperity and adversity to an extent and to a degree greater than those dependent upon any other great industry." The conservative economist would put it this way: "It is recognized that farming is a business characterized by a high degree of economic uncertainty."

The farmer himself was first to discover these facts. What *he is now interested in is reliable information that will help him to reduce to the minimum this economic uncertainty inherent in the business of farming.* This is the immediate challenge to the colleges of agriculture and to the federal and state experiment stations.

Limitations of space and the desire to say other things prevent any attempt even briefly to mention more than a few of the more important questions in the field of agricultural economics. I shall not attempt to differentiate between the questions that center around the organization of the individual farm, usually referred to as farm organization and management, and those that have to do with the economic environment of the farmer, or the field of agricultural economics. As a matter of fact, the two are interacting. Thus conditions of economic environment must be kept constantly in mind by the individual farmer when he attempts to decide upon the details of the organization of his farm and his farm management policies; and likewise, the collective effect of the activities on the individual farm have an important bearing on the farmer's economic environment.

Farmers have suffered much from the misapprehension of the public as to their wealth and income. As a matter of fact, there are still a very considerable number of people who impute a degree of affluence to the farmer which is unwarranted in the light of the facts.

Land tenure, both from the standpoint of general welfare and the most efficient and satisfactory relationship between landlord and tenant, is a question of growing importance in this state. The mechanism of credit, from the standpoint of the needs of agriculture and the extent and kind of credit which can safely be employed by farmers, is a subject for more careful inquiry. More than to any other agency, training in the use of credit by farmers has been left to the local banker, who in many instances has not assumed the obligation or has not had the courage of his convictions or the knowledge of agriculture to be a wise counselor. Those who have been capable and willing to discharge their responsibility have contributed a service for which they are not likely to receive adequate recognition.

More scientific methods for land valuation are needed for the purposes of purchase, for cost studies, for taxation, and for credit. Much remains to be done in determining the character and bearing of taxation in relation to the farmer's welfare and his contribution to public expenses as compared with the contributions of other classes.

The question of transportation is most certainly one which has a very direct bearing on the farmer's ecomonic environment. When the producer receives but one-half to one-third of the consumer's dollar, it is time for farmers, and for these institutions that serve agriculture, to interest themselves in the problems that center around the marketing and distribution of farm products. Whether or not the farmer will be able to get cheaper transportation, I do not know; agriculture unquestionably needs it, and dependable information which would help the farmer to form an intelligent opinion upon which to act should be available to him. The greatly increased transportation costs suggest not only an interest in cheaper transportation but also a thoro study of the possibility of encouraging the extension of manufacturing industries in Illinois in order to bring consuming centers nearer centers of production. But little has been done to secure complete information concerning the food product requirements of cities, such as Champaign and Urbana, for example, from what sources these products come, and the feasibility of supplying these cities from contiguous producing areas.

Nearly everybody but a disinterested institution for research has taken a hand in informing the farmer what effect various tariff policies have on the farming business. He would like to know the bearing of trade and tariff policies on the prices of farm products and the things he has to buy, but he has been misled so often that it is no wonder that he has grown distrustful and suspicious. Indeed one of the important services of the economist is to correct the misrepresentation and false generalizations which are constantly being made by the ill-informed and the designing propagandist. The farmer will form an intelligent opinion and will act individually and collectively on the basis of that opinion when, and not until, the sources of his information are dependable.

The scope, function, character, and methods of farmers' cooperative organizations, especially those devoted to the marketing of farm products, and the various conditions surrounding the farmers' market need careful and thoro inquiry. These studies should include: first, the machinery of marketing, marketing agencies, methods, and organization, with special reference to their efficiency; second, the technological side of marketing, such as grading, packing, and selection of products, with reference to special markets.

We should know better than we do what our land resources are and what part of these resources should be utilized for each of the three basic uses of land—crops, pastures, and forests—and whether the existing types of farming are adapted to prevailing conditions. This may at first thought seem unimportant from the standpoint of Illinois agriculture, and relatively speaking, it may be, but there are nevertheless some real problems centering around this question even in Illinois. Speaking generally, much of the hardship experienced by farmers the country over is rather directly traceable to the misdirection of agricultural expansion. Both the national land policy and the activities of private agencies have pushed into cultivation land which was not and is not needed for crops and which is not adapted for farming. The result has been the demoralization of the range industry and almost countless instances of deprivation of deluded settlers who were inveigled into these barren regions.

Population growth and agricultural expansion are inseparable. We should know what the demand for increased agricultural production is likely to be and its relation to greater intensity of production. In an attempt to determine the probable future course of agricultural expansion, it will be essential to work out the relation between the greater cost of a more intensified agriculture on the more important types of soils, and the resulting product.

It is not claimed that economics, even agricultural economics, is a panacea for all agricultural ills. I have stressed this matter because it needs greater emphasis than it has yet received in any agricultural college or experiment station. Just as during the last twenty-five years the physical sciences have been of very great service in stimulating more intelligent agricultural production, so in the next twenty-five years economics will significantly serve agriculture by indicating in what direction lie more profitable production and the more efficient marketing and distribution of agricultural products, to say nothing of a better understanding of important public questions. Out of all of this will ultimately develop a better public policy. In serving agriculture, the physical sciences have gained rather than lost by the contact. It will be so with economics. In its contact with economics, agriculture will help to democratize economics just as it has democratized science. The general public does not yet realize either the extent or the rapidity with which this is already taking place. This will take place more rapidly

in agriculture if the agricultural economist will become as familiar with the vernacular of the farmer as he is with the vocabulary of the economist.

The farmer is being constantly reminded that he should put his energy and activity on the factors of production which are largely within his control, and that he is not doing so well as he might. No well-informed man would undertake to dispute the fact that the farmer is not doing so well as he might, yet this is simply admitting that the farmer is no worse than other groups. It is probably true that no other group has tried harder and made more progress in keeping down costs of production than has the farmer, and while he has shared in the benefits from such a policy, the public has certainly been advantaged by it. I weigh my words when I say that no business calls for a higher order of scientific and technical training than the business of farming. This sort of training has made an efficient food producer of the American farmer as compared with farmers of other countries, but one of the bitterest lessons he has had to learn is that important as efficient production is, and as essential as it will always continue to be, it will not in itself make the individual farmer nor farmers as a group prosperous. Neither efficient production on the one hand nor efficient marketing on the other, but a proper emphasis on both, will aid in promoting a more profitable agriculture.

Let us turn briefly to the subject of soil fertility. This is universally recognized as an agricultural factor of basic importance. Marked progress has been made, particularly in Illinois, in determining how the fertility of our soils may be maintained. A very considerable number of farmers in Illinois are giving the matter serious consideration, but as compared with the total number of farmers, the number of those who are actually maintaining the fertility of their soils is negligible. It certainly is not for the best interests of public welfare that the soils should be depleted, yet no nation has succeeded in preventing it. As a matter of fact, most sections of our country have sadly neglected the care of their soils and have taken it up at last, not in order to maintain fertility, but to make possible the profitable production of crops. This all goes to show that until very recently, at least, we have done a poor job of husbanding our agricultural resources.

Accelerated production, which the public has interpreted as a wonderful advance and achievement, cannot continue indefinitely without being disastrous to public welfare, for the public, no less than the farmer, will have to pay the bill. From the soil fertility viewpoint, the history of American agriculture to date has been one of exploitation. Several years ago a point was passed, unobserved by the general public and by farmers themselves, when further exploitation of the land meant exploitation of the people on the land. I am not blaming farmers for exploiting the land. Neither am I blaming other groups for exploiting

the farmers, nor the farmers for permitting themselves to be exploited. Much of this has been more or less unconscious. Only where it has been conscious and preventable is it inexcusable. It is not my purpose to attempt to fix the blame or responsibility. It is much more important to recognize the fact and leave to agricultural education and research the determination of the extent and effect of these conditions, and the methods of ameliorating them. The exploitation of the soil comes mainly from three groups: first, those efficient and intelligent producers who wilfully neglect the fertility of their soils for the sake of immediate gain; second, those who are inefficient producers and either know no better, or knowing, are too indifferent to care; and third, those who care and know how, but cannot figure how they can maintain the fertility of the soils of their farms and survive financially. Perhaps if we should attempt to classify farmers with reference to these groups, we might learn something of real value.

A very practical hindrance to the general adoption of programs of soil maintenance is the fact that as long as fertile lands exist here or elsewhere, there will be plenty of men who will exploit them. As long as men exploit them, the products of such lands will come into competition with the products of farms operated with the high purpose of husbanding the resources of the land for posterity.

Agriculture suffers much from the exodus of capable young men and women leaving the country for the city. It suffers more from the competition of the inefficient farmer who, until very recently, has been inclined to remain on the land. In most farm families there are certain of the boys who show greater native ability and promise than the others. There was a time when these were selected by the proud mother and father as suitable raw material from which, with proper education, professional men might be developed. These promising youngsters were then educated for the law, medicine, or the clergy. The dullard of the family remained at home to farm, the implication being that he was not smart enough to do anything else. There came a time, however, in the history of the United States when there was complaint that agriculture was claiming the country's best. But again the tide seems to have turned and concern is rather freely expressed that many of our best boys and girls are leaving the country for the city. It is estimated that approximately a million and a quarter of people have left the farms of the country during the present agricultural depression. Registration in agricultural colleges over the country has shown a falling off of approximately twenty-five percent during the same period. The general impression is that the inefficient farmer is the first to leave the land under such conditions, but we should not forget that the very conditions that have forced the inefficient farmer from the land may likewise influence the farm owner who has his money invested in the farming industry to dispose of his holdings and invest in what appear to be

more profitable enterprises. It has taken no little courage on the part of college students to start or continue a course in agriculture in the face of conditions surrounding agriculture, and it is no wonder that many have weakened. It should not be assumed, however, that there are not plenty of young men who would prefer farming and life in the country to anything else as long as they can see a reasonably good chance of maintaining on the farm a standard of living that will not put out the fires of a more abundant life inevitably kindled in the heart and head of every college man and woman.

When agricultural distress is abroad in the land, the farmer is advised to change this or that practice in order to improve his condition. This is probably helpful advice since colleges, agricultural experiment stations, and extension services are among those who extend it, but the farming business is not susceptible to quick change and easy adjustment. The farmer himself has learned that ordinarily by the time he and his fellow unfortunates make some of the so-called adjustments there is another crop of adjustments about due and perhaps the latter may even point back over the same road he has traveled to the same place from which he started. Experiences of this kind have caused a certain degree of conservatism among farmers that some have interpreted as a lack of progressiveness. As a rule, the older a farmer gets the less inclined he is to try new ways. This must not be construed as meaning that he has grown less progressive; it may mean that he is growing in wisdom. The more experienced a farmer becomes, the surer he is that the farming business is one in which he cannot afford to paddle out into uncertain depths with a leaky boat.

The college of agriculture and its experiment station serve in the field of agriculture much the same purpose as do the medical school and clinic in the medical world. The agricultural college should attempt to prepare its students to make a proper diagnosis of an agricultural situation in order to know what are the real causes of the conditions that seem to place farmers at a disadvantage, and, having determined the causes, to show how these difficulties or disadvantages may be overcome or eliminated. An institution of standing does not attempt to teach remedies until they have been determined and demonstrated by the most careful experimental methods.

The more serious an agricultural situation the more difficult is the diagnosis. Just as in medical practice, when it becomes necessary to deal with a particularly baffling case it is necessary to keep the patient under observation for a considerable time, so in agriculture it may require months, even years, to get at the root of a trouble, and then more time to work out painstakingly the remedy or solution. Again conditions develop that are, or at least seem to be, so chronic or inherent that there is little if anything that can be done save to make the patient as comfortable as possible and to let the disease run its course. It is

recognized that this is an unfortunate fact, but I feel sure that if there is any one thing to be guarded by an institution more jealously than another it is a reputation that when the institution speaks it speaks with authority. Putting it another way, the agricultural college and experiment station, here or elsewhere, cannot afford to become the quack doctor of agriculture.

Earlier in this paper I expressed the conviction that there are certain kinds of service needed by farmers that neither the agricultural college, the experiment station, nor the extension service can be expected to render. By this I refer to the need of farmers for organization. Other well established industries long ago recognized the desirability of organization and group action. There is no industry in the country as helpless as an unorganized agriculture, and not until farmers more generally appreciate the value of organization can they hope to make much progress in improving their economic status. Limitation of time prevents any attempt to define the function of farm organizations. I only wish to make the point clear that it is recognized that there is that need. It is as much the business of the college of agriculture to teach the agricultural students the function of such farm organizations as the farm bureau, the grange, and the others, as it is that the college of commerce should teach their students the function of the associations of commerce. The one is as essential to the best interests of the farmers as the other is to trade and industry.

One of the most hopeful signs is that farmers are learning that they cannot safely continue to act without reference to what other farmers are doing, both at home and abroad. They are learning that neither the individual farmer nor his organization is able to get much needed information from dependable sources, and that he must rely upon agencies set up either by his own organizations or by the state and federal governments. There is yet much to be done to perfect these agencies for gathering reliable information and in teaching farmers how to use it. At present the effort of the experiment station should be directed toward a careful inquiry as to the kind of agricultural statistics needed, the best method of securing them, and what agencies should be relied upon to perform the work. While this information would be interesting and helpful to some extent to the individual farmer, its greatest value will come when, and not until, farmers learn to act collectively.

Agricultural organizations make it possible to bring about a more intelligent and sympathetic understanding of the difficulties and problems, as well as the legitimate functions, of organizations representing other groups. Indeed, agricultural organizations cannot serve agriculture in a large way unless they have as one of their definite objectives the promotion of the common good. Farmers are justified in

organizing for the purpose of securing economic justice, but they will destroy their organizations if they use them to promote social or economic aggression.

There is another urgent need in agriculture. The farmer is a growing factor in state and national politics. This is a fact to be reckoned with, and it is as important that the farmers understand what this means as it is for the general public. The effectiveness, in this field, of an organized agriculture is too obvious to need emphasis. I am well aware of the fact that there is a disposition to ridicule some of the farmer members of Congress. Is it not significant that equal pains are not taken to ridicule other incompetents or to extol the merits of capable farmer members? If I were inclined to criticize farmer members of Congress, I should feel less inclined to impugn their motives than those of some of the older members of Congress who, with more experience and consequently with more effectiveness, represent their constituency. The farmer in Congress has been a national joke for half a century, but if the colleges of agriculture of the country do their duty in training their students as statesmen, this joke will cease to be funny, as has the chin-whiskered farmer of the cartoonist.

There are so many definitions of the purpose of education that I shall not attempt to add to them but will use one already stated, namely, that by acquiring an education one acquires the ability properly to evaluate men. There is no question but that this ability is sadly needed by all organized groups. With the increasing necessity for farmers' organizations it is essential not only that agricultural leadership should be developed but also that farmers develop the ability to recognize it when it exists. An agricultural college, thru the proper training of its students, may materially contribute to both these desirable ends.

In its approach to the educational problems, a college faculty cannot hope to hold its position of leadership in thought and in the moulding of an intelligent public opinion unless it has the zeal and enthusiasm of the investigator. Strange as it may seem, and as inconsistent as it is, there is too much of an attitude in educational circles that there is nothing new under the sun and that an experiment in education is a most dangerous thing. The logical result is that many educators first stop expressing and later apparently stop having ideas for fear of disturbing the status quo. If we were as zealous and as open-minded in studying the life history of our students after commencement day as we are the life history of creeping and crawling things, we should make more rapid progress in education.

It is well that the student be trained to meet the so-called practical problems of the farm, but it is even more important that he be taught how to meet the questions that grow out of his relations with himself and his fellow men. For one thing, the student himself needs to change his conception of education from looking at it as a keen-cutting tool of

advantage, to a serious preparation for service. It is probably true that from the single standard of getting ahead financially, particularly in a big way, the farming business cannot now, and may not ever, justify taking it up as a life work. However, unless this country and the men and women who compose it rather speedily reject the getting of gold as their god, we shall see our much touted American civilization crumble. The farmers may, if they will, lead the way, and no group could design a finer purpose.

Sometimes I wonder if the fires of that fine American idealism have been put out. They have been smothered by materialism, but underneath, here and there in the open country, they are still smouldering. May not the students and graduates of this College be the kindling and their voices the wind that shall fan these smouldering and charred remnants into a blaze that will burn its way into the hearts and consciences of men, to the end that there may be engendered a proper appreciation of the moral and spiritual values of life?

It is well to dedicate a new building to agriculture and research, but this will avail little unless those who teach and those who learn dedicate their lives, tho it may mean sacrifice, to the end that agriculture may be placed on a basis that will give the country boy and girl an equal chance with the boy and girl in the city, and the men and women who live by the land a more abundant life.