
MINNESOTA'S AGRICULTURE

ADDRESS

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MR. JAMES J. HILL

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The Second Minnesota Conservation and
Agricultural Development Congress,
Minneapolis, Minnesota

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The first business of real conservation is to lift agriculture to the rank of a science well understood and practically applied. This second congress to represent and express officially the interest and support of the State of Minnesota, which has taken a leading place in the development and support of the conservation idea, will find no subject more congenial to its purpose, none more closely related to the welfare of the state, the prosperity of the nation and the advancement of the whole conservation program than some study of farm conditions and the methods by which they may be improved.

Big crop years have their disadvantages as well as their compensations. People read returns from the harvest fields this fall and conclude that soil fertility cannot have been impaired where the yield per acre is

so far above the average. Worse yet, the farmer himself, lulled into false security by the large crop of 1912, unconsciously assumes that this year's experience is likely to be repeated without any special effort on his part. He must be convinced, instead, that seasons like the present are only breathing spaces for rectifying the errors of the past. The lean years will come again. They will be leaner than ever unless the lessons of experience are accepted. No time can be more opportune than the present for a study of the actual situation of agriculture, in Minnesota especially, and the best means of raising it to a higher level of efficiency.

The first thing to note is that it is a falling occupation. The federal census draws the line between rural and urban population at places containing 2,500 people. This indicates the rural population larger than it actually is, since there are hundreds of smaller centers whose population is not strictly rural, and no considerable part of it engaged in farm pursuits. But, accepting that division, here are the facts concerning the population changes in the last thirty years:

	1880	1890	1900	1910
Urban	29.5	36.1	40.5	46.3
Rural	70.5	63.9	59.5	53.7

In thirty years the rural population of the United States has fallen 24 per cent. Between 1900 and 1910 the total population of the United States increased 21 per cent, the urban 34.8 and the rural 11.2. How do we fare here in Minnesota, a state not yet two gener-

ations removed from the pioneer period? Where the rising wave of agricultural population ought to be at its highest point, the tide is almost at the turn. The relative increase of population in Minnesota in the last ten years was as follows:

	1900	1910
Urban	34.1	41
Rural	63.9	59

In the last decade the total population increase of Minnesota was 324,314. Of this total, 238,603 belong to the counties of Hennepin, Ramsey and St. Louis, containing the three great cities of the state, and only 85,711 to the other counties. In other words, while the total population of the state increased 18.5 per cent, that of the three counties mentioned increased 49.5, and that of the entire area outside of them only 7 per cent. The three counties absorbed 73.6 per cent of the whole increase, and the outside territory captured but 26.4 per cent of it. The number of farms, which is in some respects a still more accurate gauge of the condition of the industry, remained practically at a standstill. There were 154,659 in the state in 1900, and 156,137 in 1910; the increase for the ten years being only 1,478, or less than 1 per cent.

Has this virtual arresting of the movement of people to the soil which created the development of the Northwest been offset by better farming and a rise in acreage production? Again the records give an emphatic reply. Since a selected year may happen to be one of either exceptionally high or low production, a com-

parison of ten-year averages gives most convincing results. Here are the average yields for the first and the last ten year periods covered by the official figures of the Federal Department of Agriculture:

		Corn	Wheat	Oats	Barley
1870-1879	Bus.	32.5	14.3	34.0	26.1
1900-1909	Bus.	29.4	13.0	31.7	25.7

For forty years, including a period marked by the greatest advance in other industries, immense growth of railroad transportation, lowering of rates on farm commodities to our principal markets, and all the inducements that should bring men to the farm and increase its output, farm population receives only a small increase, the number of farms remains almost the same, and the acre yield of four principal crops shows a falling off in every case. There are many resources and lines of progress in Minnesota to which the booster's art can be applied truthfully. But the facts just cited, which are striking enough to deserve the attention of all thoughtful people, prove that agriculture in this state is in a poor way. Take Southern Minnesota as a type of the change in progress. In the ten years ended in 1910, the thirty-one counties lying south of the Minnesota River actually lost over 5,000 of their people, a decline of about 1 per cent. In this distinctly agricultural district there were 2,768, or 4 1-3 per cent, fewer farms in 1910 than in 1900. This happened notwithstanding an increase in the same ten years of 75 per cent in the value of all farm property in the same counties.

Men are being wasted in the city who are needed in the country. The lives of those who are fixed by choice or necessity to the soil are to some extent wasted because consumed in unintelligent and ineffectual efforts. The soil is being unskillfully treated and is returning a diminishing product, although it has been demonstrated that this product might be greatly increased. There is nothing in the whole range of the conservation principle or its application to material interests so serious as this call for a restoration of this primal asset and fundamental industry, without which civilization must decline, wealth vanish, and the life of man sink to a much lower plane. The young people of the farm are drawn to the city. The man who took up a claim years ago sells it at a high figure and retires to enjoy a few years of mental and physical dry rot in the nearest town. The immigrant stops in the metropolis, or remains in the factory, the packing-house or the mine. Back of it all lies one dominating reason. The choice of occupation is determined for the average man, other things being equal, by the prospect of pecuniary gain. That lure takes the boy and girl to the city. Farm property is valuable and its total large, but farm profits are often uncertain and usually small. Financially considered, farming pays the highest rate of all the principal employments for capital borrowed and the smallest return on capital values. It will be necessary to reverse the order of these figures, to make farming more highly and steadily remunerative, before there will be any large growth or even stability in the total

of farm population.

In addition to the natural handicap which agriculture has carried, an artificial burden has been put upon it by legal discrimination. The law guarantees to the manufacturer relief from competition below a certain point. It tells the farmer to go ahead, help himself and "devil take the hindmost". For a tariff on any agricultural product of which we ourselves export a big surplus cannot affect the price of it by the smallest fraction of a cent. Now compare the results of the two methods of treatment. The number of farms in Minnesota, as has been shown, increased but 1,478, or less than 1 per cent, between 1900 and 1910. But the state-aided, protected industry of manufacturing in all its branches saw an increase of 35.87 per cent in the ten years from 1899 to 1909. The number of farms in the whole United States increased less than 11 per cent in the last ten years; the number of manufacturing establishments increased over 24 per cent in one-half that time.

The history of civilization shows how the choice of occupations varies with the rate of profit. It is neither desirable nor possible to aid the farmer by the same method applied to build up manufacturing. All pretence of that is the foolish talk of politicians straining their consciences for a vote. What, then, can be done? Conservation will amply justify itself if it shows how the profits of agriculture may be so increased that it will attract enterprising and ambitious young men and women, and hold men on the farm instead of driving

them away in discouragement. Exactly what remedies will effect this change of status, and how are they to be applied?

Some minor suggestions have been made and pressed upon the public which may first be noted and disposed of. President Taft advised, in a letter to the governors of the states, and has since amplified and emphasized the idea, that land credit be enlarged and made more available. The idea has much to commend it. He estimates the annual interest charge carried by the farm at \$510,000,000, and the average rate of interest at $8\frac{1}{2}$ per cent, as compared with rates of from $4\frac{1}{2}$ to $3\frac{1}{2}$ in Germany and France. But, accepting these figures as a fair measure of the situation, they still represent merely one symptom of a disease. It is the disease, and not the symptom, with which we must contend. When the things have been done that should be done, this evil will correct itself. Capital moves surely toward the safest and most remunerative fields for investment. That rates on farm loans are still too high is not due so much to a deficiency of provision for farm credit as to the bad management of the industry itself, which makes it a poor credit risk. If a man is so using his acres that he is able to eke from them only a bare living, what basis has he for credit, though billions of capital were available? We shall see presently how vastly different is the condition of the German farmer and his standing as a borrower. Realized or prospective profits and ability to pay are the builders of easy credit and low rates. The argument for artificial en-

largement of credit runs in a circle and returns to its starting point. When the value of the collateral—which is the land and what it produces—reaches a proper figure, no artificial encouragement will be needed. Assistance by state or nation will do less to extend the farmer's credit than an increase of farm profits.

Those who compare the land credit systems of France and Germany with ours and assign to them all the difference between interest rates in the two fields omit the principal factor, which is the difference in production per acre. It makes a big difference in both cash and credit resources. A man who is growing 13 bushels of wheat per acre, and getting fewer bushels every year, cannot borrow on the same terms as one who is getting more than twice that crop from his land and regularly increasing the amount. Some tremendously interesting facts in this connection are given in a report on the Sugar Beet Industry, printed as a Senate Document within the last few months. Its charts show that, omitting fractions, the wheat harvested per acre in Germany rose from 17 plus bushels in 1879 to 30 plus in 1909, while in the United States it was going from 13 plus to 15 plus. The percentages of increase during these thirty years in the principal crops of the two countries were as follows:

	Wheat	Rye	Barley	Oats
Germany	77.	96.8	67.	85.9
United States	14.4	11.	1.25	5.6

Of these four cereals combined, the United States in 1909 produced 1,947,065,000 bushels, from 88,944,000

acres. Germany produced 1,373,000,000 bushels, or about 30 per cent less, on 34,378,536 acres, an area 60 per cent less. The beet sugar advocates argue that sugar beet cultivation raises the average production of all other crops raised in the same district. The figures show this to be true. It is due, however, not to any virtue in the beet, but to the fact that it cannot be grown successfully without deep plowing, frequent harrowing and a general resort to more intensive cultivation. That will insure large crops of anything where the soil is not sterile. Whatever the valuable and suggestive sugar beet statistics may prove in other respects, they establish conclusively, by such comparisons as that between the United States and Germany for the last thirty years, the practicability of doubling by better methods the acre yield of all our principal farm products. The true remedy for lack of capital at reasonable rates is the substitution of modern for antiquated, and correct for mistaken agricultural methods.

Another favorite theory of the time is that farm profits are kept low by the increased cost of living. But the rise in prices of commodities produced on the farm adds to the increased cost of living. Here are some prices of farm products; the first figure in each case being the highest New York or Chicago price in 1905, and the second being the highest figure reached in the same market during 1912, up to October 1: Live hogs, \$5.65 and \$8.85; Butter, 22 and 32; Eggs, 35 and 42; Cheese, $13\frac{1}{4}$ and $16\frac{1}{2}$. Grain prices have risen also, though not so much, while hay went from \$11.50 per

ton for baled timothy to \$18.00. The heaviest tax on the farmer, as on all the rest of us, is very significant, on the other hand, because it furnishes the principal and most neglected explanation of the increased cost of living. This is the tremendous rise in all kinds of wages. There is an actual national shortage of labor. Immigration is still large, but it is being partly balanced by the annual return to Europe of those who have got together their little fortunes and are returning to the old home. Those who stay here do not go to the farm, as they did thirty or forty years ago. The native-born American is ceasing to do actual manual labor on the land. So some part of the crop is lost every year because help cannot be obtained on any terms. Three dollars a day has been refused this season for unskilled labor. No matter what the wage, the cry is always for more men. Wages are the most important element in the cost of production, and must enter into the formation of prices and regulate or destroy profits. The fallacy that wages may be advanced indefinitely without a corresponding rise of prices is perhaps the commonest assumption in the discussions of the day.

Except where unfair and arbitrary conditions are enforced by law, wages and prices vary exactly as the two terms of an equation. Any marked and continuous change in one affects and is reflected by the other. A bulletin of the Federal Department of Labor shows that, in the thirteen years from 1894 to 1907, the average wages paid in 4,169 establishments rose 31.6 per cent. The wages of farm labor, according to the Federal

Department of Agriculture's reports, increased from \$18.33 per month for men without board in 1890, to \$27.50 in 1910; and for labor with board from \$12.45 to \$19.21. The increase is about 50 per cent. Within the last two years there has been another almost unprecedented advance. If prices had not risen correspondingly, the farms must have gone untilled and the factories been silent. Taking an average of the prices of fifteen principal articles of consumption from 1890 to 1899 as 100, the average for the United States in 1911 was 146.9. By June, 1912, it had climbed to 158.1. The relative prices of the articles of food used in workmen's families had risen to 143 in 1911, and to 154 in June, 1912. The index numbers used by commercial reports show that general prices were 43.6 per cent higher in 1911 than in 1896. All these figures unite to prove that the rise of prices and the rise of wages have corresponded very closely.

Much may be done to aid the farmer by equalizing prices between him and the city consumer through cooperation in distribution. It speaks ill for the intelligence and organized ability of the United States that we are still far behind most other countries of the world in this particular. While the profits of the middleman are often exaggerated, they are for the most part economic waste. On October 3, of this year, eggs were selling in a town only forty miles distant from St. Paul for 20 cents a dozen, while the St. Paul retail price was as high as 35 cents. The butter prices on the same day in the two places were 28 and 32 cents per pound. The

town referred to is surrounded by a fine dairying country, and great attention is given to that industry. On October 3, milk was selling there at 10½ cents per gallon, the freight to the Twin City was 2 cents per gallon, and the retail price of milk in St. Paul was 8 cents per quart. Such discrepancies could not exist if the machinery for co-operative collecting and marketing were supplied.

In most parts of Europe farmers long ago organized for distribution. Their helplessness here is discreditable. It causes an enormous aggregate money loss. In every large city in the country people pay every year exorbitant prices for table articles that could be transported to their doors for a small sum, while tons of these same articles are rotting in the fields or being fed to hogs within one hundred, fifty or even fifteen miles of them. Any kind of organization that should bring demand and a steady supply in farm products together with certainty and adapt each to the other with intelligence would benefit both parties more than any possible reduction in the cost of transportation, clothing, groceries and lumber, the extension of agricultural credit or all combined. All of these remedies, however, are but palliatives of the trouble that affects the farm. Were they all applied, agriculture would still remain an invalid industry until it learns to extract from the soil, by modern processes, the rich potentialities stored within it.

I have stated many times and to many audiences, within this state and outside it, the essential things

that must be done to conserve the soil and at the same time give to its cultivator a large and increasing return. I shall therefore only recapitulate on this occasion the practical steps which I hope will soon be as familiar and as well accepted everywhere as is the multiplication table. They are all summed up in the term, "intelligent, modern agriculture". This means rotation of crops; thorough and repeated cultivation; chemical soil analysis to discover in what elements of fertility, if any, it is deficient, and supplying them; the keeping of live stock and the liberal use of barnyard manure; the selection of only the best products for use as seed, and a careful test for germination before planting; then always more and better cultivation. In this way the yield may be made sure and profitable beyond our past experience in this country. What has actually been done to improve corn yields in Wisconsin and other states, is instructive. The statistics of comparative production here and abroad give some measure of our neglected opportunity.

Many years ago I stated that the average crop of the principal farm products of the United States might be doubled, judging from the yields obtained in other countries, a comparison of soils and a contrast of methods employed. The highest authorities not only accept this conclusion now, but point to possibilities still more surprising. It has been as well established in demonstration fields and by intelligent farmers as it is that an engine of a given horse power can do a given amount of work. What, practically, does this mean?

It means that we could add billions of dollars every year to the wealth of the country, and at the same time leave the soil better than we found it. It means the end of such records of failing yield as Minnesota has made during twenty to thirty years. It means progress and comfort and wealth now undreamed of for the farmer. It cannot and must not be neglected or postponed.

The fear lest so great an increase in production might provoke a decline in prices is mostly groundless. In every other line of production an increase in volume and even a fall of price have been accompanied by larger profits for the producer. An intelligent direction of industry will do the same for the farm. Instead of raising the wheat yield to the suggested maximum over an annually enlarging acreage, let more of the coarser grains be grown and fed to live stock. Here is a profit and a use for all the increased output of the land likely to be realized. Of cattle other than milch cows there were fewer in the country on the first of last January than there were twenty years before. The total has been declining since 1907, and is now 14,000,000, or 28 per cent less than it was five years ago. Only within the last two years has the number of hogs exceeded that of twenty years ago. Although this season of bountiful crops assures plenty of feed for live stock, prices continue high. The Chicago quotations for the best cattle on October 4 were \$10.75 to \$11.00 in 1912, as against \$6.25 in 1905. Hog prices at South St. Paul were \$8.45 to \$8.85 in 1912 and \$4.85 to \$5.35 in 1905. Large profits are to be made by converting into pork

and beef the added product of the land; while at the same time its fertility will be maintained by the manure from cattle and hogs. Live stock play an indispensable part in the profitable adjustment of farm industry to the new regime. Such to my mind, is the very summit and crown of the conservation idea. Upon its realization ought to be concentrated the energy, enthusiasm and determination of this body and others dedicated to the same purpose all over the country.

These theories of improved agriculture and its value are borne out by the actual practical results obtained by the Great Northern Railway Company on the demonstration farms it has maintained during the last year for the instruction of farmers and the agricultural advancement of the Northwest. We employed an expert to superintend and direct the work. We selected five acres from each of 151 ordinary farms in Minnesota and North Dakota last season. We agreed with the owner of each farm to give him the product of this plot, and to pay him eight dollars per acre for his work on it, on condition only that he farmed it exactly as directed. Then we had all these demonstration farms handled on the lines just laid down. We were not then in a position to make a chemical analysis of all the soils because we were not equipped for the work. But we supplied to each tract, as nearly as we could ascertain it, the elements of fertility required to enable it to grow a good crop. We saw that only tested seed was used. We made sure that the ground was cultivated properly. The proof of the pudding is the eating; and the vindi-

cation of the modern agricultural idea is the thresher return and the elevator receipt. Returns have been received thus far from 69 of the 71 farms in Minnesota on some or all of their crops. The average yields per acre for 1912 from the farms in Minnesota are as follows:

		Wheat	Barley	Oats
Great Northern plot	Bus.	30.31	44.70	72.20

Returns have been received from 77 of the 80 farms in North Dakota, showing these average yields per acre:

		Wheat	Barley	Oats
Great Northern plot	Bus.	31.30	49.90	78.60

The highest yields per acre from Great Northern plots in the two states, are as follows:

		Wheat	Barley	Oats
Minnesota	Bus.	42	63.10	97.75
North Dakota	Bus.	43	78.40	137.60

The average wheat yield of Minnesota this season is probably about 17 bushels per acre. This may be compared fairly with the 30.31 of our demonstration plots, and the gain in both cases be assigned, on the one hand directly and on the other indirectly, to the new methods employed. This is but the beginning of an educative process which will be carried out on a larger scale next year.

The great merit of modern scientific agriculture as exhibited in the work on these farms is its extreme simplicity. The only technical step in the whole process is soil analysis. It is not necessary that the farmer should be a college graduate or a highly educat-

ed man. He can send a sample of his soil to the nearest agricultural college, all of which ought to be equipped to comply promptly with every such request that may be made upon them. He can select his seed, test it himself, cultivate his ground properly and do all the rest just as well as the expert. We don't have to wait until the old farmers die off before agriculture can be improved and modernized. With a little of the right kind of instruction they can handle the new methods with their own hands on their own land as expertly as they do the new machines which now gather the crops once harvested by hand. It is the duty of all the agricultural colleges, of every educational institution in which any agricultural instruction is supposed to be given, to take up and push more practice and less theory. It is the duty of the state and the nation to conserve the liberal cash appropriations they already give by insisting that these be used to encourage this educational work on the farm and to provide it with such men and resources as will extend it to every county and to every township. It is for them to rescue a partially discouraged and declining interest, by showing it how it may come into the heritage that nature has guarded for her children.

We cannot postpone this duty to the next generation. This year's wonderful crop must not blind us to the underlying facts of the real situation. Because for once weather conditions so conspired as to produce a large return, the plow may not be left in the furrow or the old ways clung to as good enough. We must save

our soil from such deterioration as it has undergone in the last fifty years. We must increase the product of our land in preparation for the increased demand that has already made itself felt. We must recognize the farm as the cornerstone of national prosperity and of national character itself. We must see in improved cultivation not only a road to riches, but a bulwark of our free institutions. The work now being done with the younger generation has its place, but we cannot wait for that. We must take the farmer just as he is, send instructors to him and show him by results actually won by his own hands, on his own land, what he has lost and what he stands to win. It is possible in this way, within a few years and with the material at command, to restore soil fertility, regenerate an industry and enrich a nation.

This is real Conservation. It is not a temporary fad, not a method of serving personal ambition or local interest, but a system of harmonious co-operation between the laws of man's environment and his liveliest anticipation and most joyous activity. If we are to begin with the foundation of our building, instead of constructing a gilded dome and then looking about for walls on which to place it, we will accord to other branches of conservation all they deserve. But until we shall have enriched and utilized the soil, and fixed in every mind the conception of man's right relation to and treatment of it, our main duty will not be fulfilled. Not in extending foreign trade, not in multiplying great factories to be filled with the cheapest and

poorest human material that other lands can furnish, not in heaping together intrinsically worthless forms of wealth, but in establishing the commercial possibilities as well as the intellectual and moral values of the right care of our one priceless and imperishable possession—the soil—lies the highest aim of labor and of life.

With something of that prophetic insight which seems to remain to man even in his lowest estate, the people of our huddled population centers have applied the most bitterly ironic expression they could coin to those thoroughfares where are congregated all the garish and offensive symbols of the idleness, estentation, decadent mentality and moral corruption that eat forever at the vitals of this century's civilization. Not there, never there, but among cool woodlands, by still waters, through fields burdened with a bounty which nature yields unceasingly to those who have come under the pleasant rule of her laws and learned the lessons that she has put for ages before unwilling minds,—up to the gate of the farmstead where alone man can ever really find the full message that this life holds for him,—thither runs The Great White Way.