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# AGRICULTURAL PRODUCTION AND LAND UTILIZATION

by

A. F. Vass

Professor of Agronomy and Agricultural Economics

University of Wyoming

The dominant characteristic of the American agricultural producer has been to have an abundance of fertile land resources, and doubtless, this is the real reason why he has been the envy of farmers in most other countries. Large production of food per capita has never made a country poor, nor has reduced production made them wealthy. The more a country produces, in proportion to its population, the more its people have and the higher its standard of living; whereas, low production per capita leads to the adverse condition. The larger production per capita of the American over the European farmer has enabled the farmer to maintain a higher standard of living. It is doubtful if this standard can be maintained by decreasing production with a corresponding decrease in the farm population, a thing that is not looked upon with favor at this time.

The production and distribution of agricultural products are the basic and most important industries in America. Just how any marked curtailment in these industries can lead to better conditions is difficult to understand, although the theory that we can work less and have more has a fascination for all of us. Prices of a particular commodity may be forced up or down by curtailing or increasing production. Gold and wool, although they are not synonymous at the present time, are good examples.

The most difficult problem, in this period of readjustment, is the one of getting the products from the farmer to the consumer at a cost that will return a fair share of the consumer's dollar to the producer. Retail prices of foods are, as a rule, sufficiently high to permit a fair return to the producer if distribution costs are in line with retail prices. During pre-war times (1910-1914) the rancher received 60 cents of the beef consumer's dollar, as compared to 44 cents at the present time, while the wheat growers, dairymen, and other producers are receiving even a smaller percentage of the consumer's dollar.

Many plans are being advanced to limit production in the various industries, and agriculture is one of the latest additions to this list. Highly organized manufacturers can, no doubt, limit their production to their own advantage, providing the agricultural producers will not limit theirs, for this permits the industries to have cheap food. The commercial industries may continue to use their laborers half-time, at normal wages, providing the agricultural producers will continue to produce foods and sell them for one-half their normal price. One class may be maintaining a false standard because it is based on the losses of the producer of basic commodities. We may well wonder what would be the present condition among the working classes in our cities if food production had been limited and controlled, as has been the case in other industries.

-2-

The general public should extend thanks to the optimism and sticktoitiveness of the farmer in continuing to produce a normal supply of food for the masses, even though he is receiving only one-half the price that he should receive, and should also be given credit for doing the thing that is best for all, rather than attempting to serve his own personal interests by attempting to force high prices for his products through a food shortage.

The present discrepancy between farm and retail prices is an example of the effect of controlled activities on the one hand, and normal production on the other, and it has unbalanced the law of supply and demand. The agricultural producer might be justified in limiting his production in order to convince the people just how futile it is to expect better living conditions in a nation, when all industries have adopted the policy of working less and having more, were it not for the hardship that a food shortage or famine would cause.

Since agriculture is the major industry of our nation, care should be exercised by committees or commissions in attempting to limit or reduce production. acreage alone does not control production because climatic conditions, a thing beyond the control of committees, commissions and bureaus play a very important part, and may wreck the best laid plans for producing just what we think we need. The theory that overproduction was to blame for the present financial situation has about run its course, and is being replaced by the more modern idea that governmental expenditures, unbalanced budgets, and taxes are at the bottom of the trouble.

Two of the most popular organizations at present are tax leagues and land utilization committees. The former is a product of high taxes, and the latter a child of low farm prices. Both are of value, in that they give their members additional knowledge on their respective subjects, and lead to improvements. The tax investigator finds that most of the tax expenditures begin at home, and that if we wish to reduce taxes, we must be willing to give up some of the services that have been demanded. For example, four additional years of schooling for our children, sixty mile per hour surfaced highway instead of the old Overland trails, additional counties to increase our charges for political fame, and Federal financial assistance from time to time to save our enterprises. He may also discover some of the maladjustments that exist in our present system of taxation.

The land utilization investigator is likely to find that the proper use of land begins at home, and the improper use is soon discovered by the most logical judge namely, the farmer, and the proper adjustments made. There may be exceptions, like the run down farm areas in the timber lands of the East, that were settled prior to the discovery and opening of fertile lands further west. These shallow acid lands of the East are adapted to production of forest products, rather than agriculture, and should be the home of our State and National forests. They will never play an important part in crop surpluses. These infertile lands may well be taken over by State and Federal agencies, and they are gradually falling into their proper place, in-so-far as land utilization is concerned. It was logical to develop them at the time when they were needed, and to abandon them when more productive lands were brought into use.

-3-

Tax delinquency of farm lands is more likely to indicate a maladjustment of the tax load in a state, than the improper use of land. Productive farm lands in some areas are being taxed out of use, and out of private ownership, by unfair tax burdens. The proper collection and utilization of taxes will go far in answering the land utilization question.

Private ownership and a fair tax thereon will no doubt do more to solve the "Unappropriated Lands" problem of the West, than all of the Commissions, Committees, and Bureaus combined. The present users of these lands are, in many cases, willing to assume ownership, providing a fair value, based on the carrying capacity, is placed on them. Private owners, as a rule, take better care of their property than those who rent or lease.

There is nothing new about the proper use of land, as the problem has faced every agricultural producer in the United States since 1492, and even the Indians were not far out of line in using the lands in a way that best fitted their needs.

That there is an adjustment taking place in the proper use of lands is shown by chart O, which gives the acreage of improved land in certain geographic divisions that are undergoing marked changes at the present time. The acreage of improved land in the New England and North Atlantic states showed an increase from 1850 to 1880, and a decrease from that period up to the present time, while the Mountain states have been increasing their crop acreage very rapidly since that date.

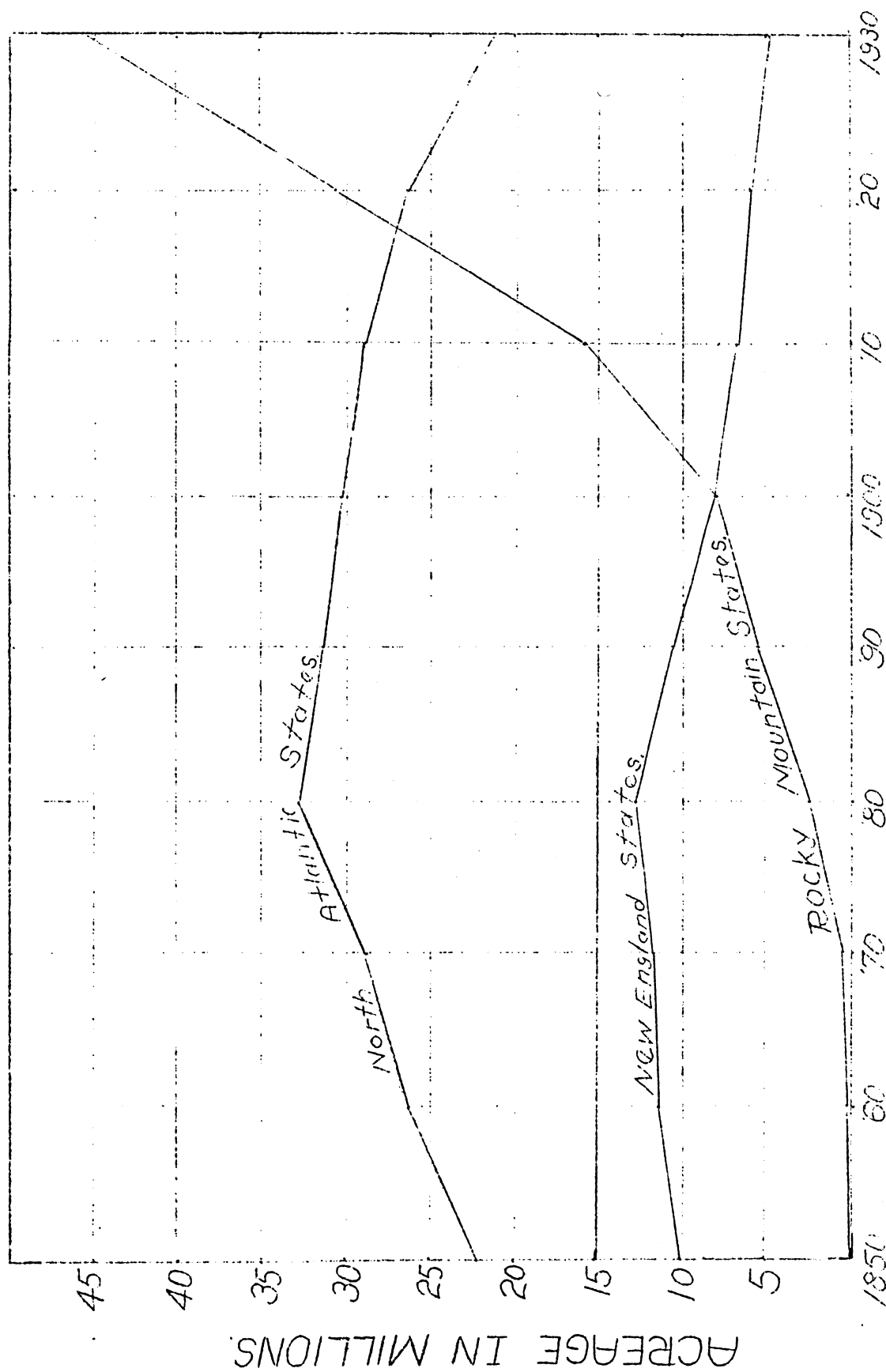
The major portion of the improved land in the Mountain section is not, as many people seem to think, marginal in nature, which is shown by the fact that the financial losses of the farmers in the Central states have been greater than those in the Rocky Mountain division.

The chart brings out the fact that the economic law of diminishing returns has been faithfully at work in adjusting our land utilization. It may be possible for man to assist it or at least make the adjustment easier for the producer involved.

The use of the term "marginal" in reference to land utilization is very misleading. Lands that might be called marginal under one set of economic conditions may not be marginal under other conditions. Present farm prices make all classes of farm lands marginal, if marginal means that they cannot be remuneratively operated. A marginal land classification formula must take into consideration changing prices, freight rates, labor costs, tax levy, and other fluctuating factors that enter into the determination of the necessary remuneration.

There is not the wide difference that many people think in the cost of producing agricultural products. California stockmen are surprised to find that their cost of producing beef is approximately the same as in Wyoming. The cost of producing wool in Texas is about the same as in other areas, although Texas lands may be valued and taxed at five times the rates prevailing in Wyoming. The cost of producing a bushel of wheat is approximately the same in both the winter and spring wheat belts. Lands are usually capitalized at a value that will make up for the difference in operating costs.

# Chart O. IMPROVED LANDS IN FARMS.



-4-

It would have been as logical to have attempted to stop the development of the Mississippi Valley three quarters of a century ago on the ground that there was already sufficient land under cultivation, as to attempt to stop Western development at the present time. That some mistakes have been made in the settlement of certain Western lands is a well recognized fact, but what men and what industries, not to mention Boards and Commissions, do not make mistakes? We built factories equipped to make four million automobiles annually, with a demand this year of less than a million.

The Mississippi Valley, the home of our super-marginal lands as well as farm surpluses, perhaps responds more readily to price and other economic changes, than any other section of the country, and that it does not operate on a haphazard system, as many people would lead us to believe, is shown by the fact that an increase in freight rates of a few cents per bushel on corn may change the type of farming in a given area from a cash crop to a livestock basis. It is doubtful if a dictator or Commission could be found that would be more alive to economic changes than the present corn belt farmer, and his success during the last half century has been based upon proper land utilization.

In order to get a better picture of the changes that are taking place in land utilization, it is desirable to study rather carefully the past, present, and future use of land and crop production in the United States, as well as the factors that have influenced the changes taking place. Chart I shows the relation of improved land, land in crops, and food production to population during the last eighty years.

Population has increased from 23,191,876 in 1850 to 122,775,046 in 1930, or 429%. The average annual rate of increase over the preceding year for the above period was 2.1%. The following table shows the increase in numbers, percentage increase by ten year periods, and annual percentage increase for each of the ten year periods.

Year	Population	Increase from previous 10 year period	Percentage Increase	Annual Percentage Incr.
1850	23,191,876			
1860	31,443,321	8,251,445	35.6	3.1
1870	38,558,371	7,115,050	22.6	2.1
1880	50,155,783	11,597,412	30.1	2.7
1890	62,947,714	12,791,931	25.5	2.3
1900	75,994,575	13,046,861	20.7	1.9
1910	91,972,226	15,977,651	21.0	1.9
1920	105,710,620	13,738,394	14.9	1.4
1930	122,775,046	17,064,426	16.1	1.5
1940	137,508,052(?)	14,733,006(?)	11.2	1.2

The average ten year rate of increase during the past eighty years has been 12,446,646, and the increase from 1920 to 1930 was 17,054,426. There was a marked percentage increase from 1850 to 1910, with less increase from 1920 to 1930. Immigration, as well as birth and death rates, have played an important part in our population increase. If a twenty-five percent drop from the 1920-1930 percent increase be allowed to take care of the above factors, a population of about 137,500,000 may be expected by 1940. In order to take care of this increase in population, and maintain our present standards of living, it would seem that an increase, rather than a decrease in production, should take place, as we are not producing twelve percent in excess of our present needs.

The acreage of improved land increased very rapidly from 1870 to 1910 due to the opening and developing of the Middle West and West, and kept pace with the increase in population. The population has continued its upward trend since 1910, while the acreage of improved land has shown only a slight increase. Population has increased 33.6 percent since 1910, while improved lands increased only 15.4 percent. Land in crops increased rapidly from 1880 to 1900, less rapidly during the next ten years, and again showed a noticeable increase from 1910 to 1920, due perhaps to the higher prices of farm products. However, the acreage of crop land has shown very little increase during the last ten year period. The trend of the production follows rather closely the crop acreage. The variations in the production curve may be as great as 19% in succeeding years, which is a factor that must be taken into consideration in formulating a land utilization policy. Do we plan on storing feeds and foods during the years of abundance to carry us through the years of low production, or shall we produce enough for our demands during the short years and sell the surplus during the good years?

If some of the proposed land utilization and acreage reduction plans were put into effect, and our population continues to increase as it very likely will, a serious food shortage following unfavorable climatic conditions would merely be a matter of a few years. A year of low crop yields, combined with reduced acreage would result in a food shortage that would be far more serious than a money panic.

Chart II is similar to Chart I, except that the acreage and production are based on the amount per capita and also shows the consumption of feeds and foods. In 1900, the high point in crop acreage per capita, we had 3.35 acres, while at the present time we have reached three. It will, no doubt, go lower as our population increases, but can we maintain our present standards of living if the decrease in crop acreage is as great in the next three decades as it has been in the last three?

The production and consumption lines are gradually approaching a point which indicates that we may be on an importing basis by 1940, if production follows the line that the present low farm prices have laid out for it.

Chart III shows the trend in population, as compared to the trends in the numbers of cattle, sheep, and swine. Livestock showed a marked increase from 1850 to 1900, while the trend in numbers of livestock since 1890 has followed a straight line. We have less cattle, the same number of swine, and slightly more sheep than we had in 1890.



CHART I

RELATION OF IMPROVED LAND, LAND IN CROPS, & FOOD PRODUCTION TO POPULATION

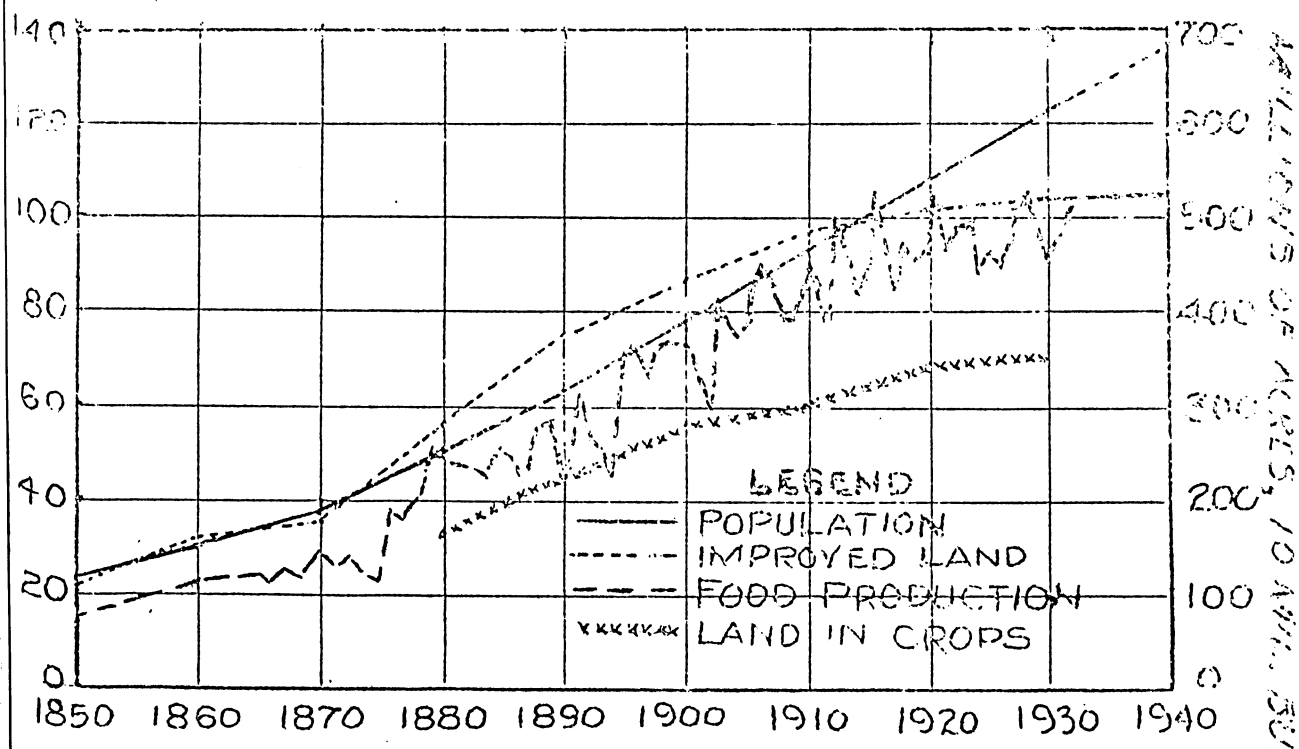
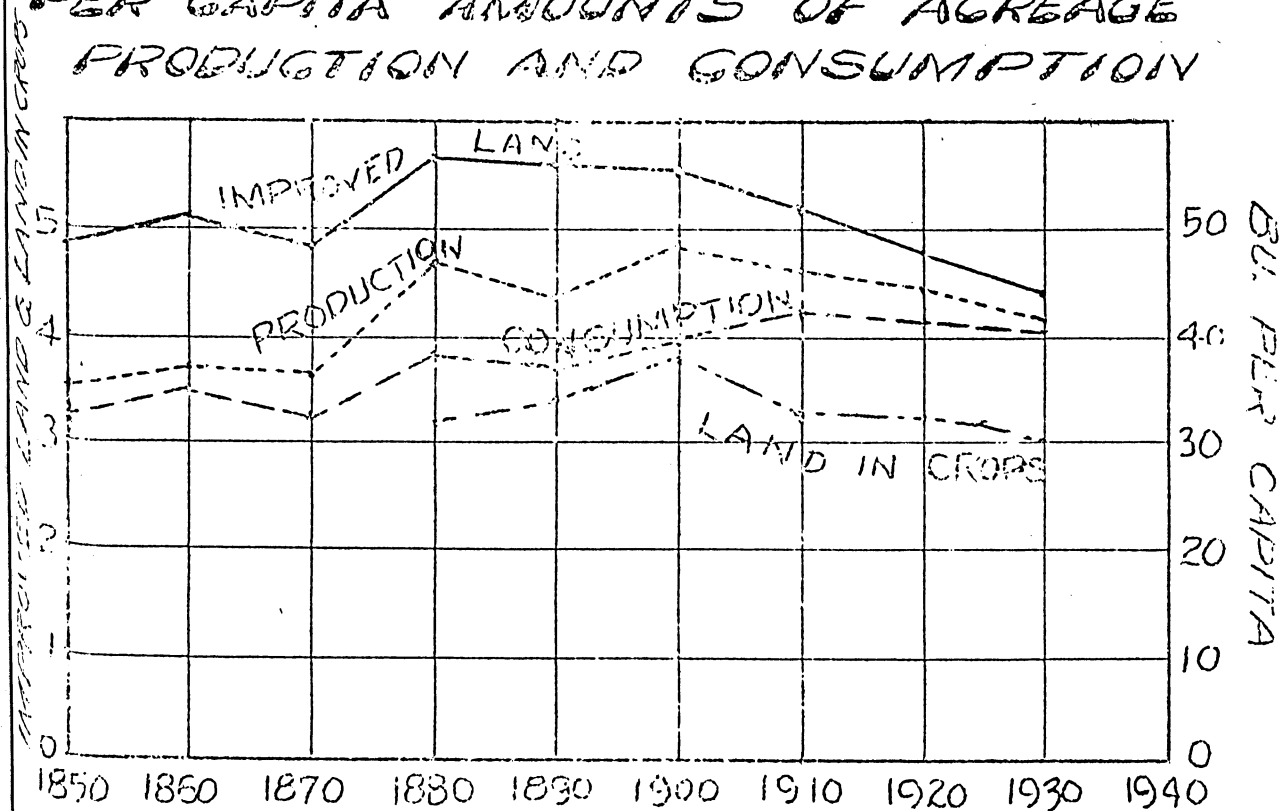


CHART II

PER CAPITA AMOUNTS OF ACREAGE PRODUCTION AND CONSUMPTION



-6-

Chart IV shows the number of livestock per capita. There has been a marked downward trend in all classes, except dairy cattle, since 1890. We now average 1 dairy cow, 1.5 beef animals, 2.1 sheep, and 2.4 hogs per family of five in the United States.

The theory that low farm prices are due to surplus production is not well supported by beef prices, which have dropped fifty percent during a period of the lightest marketing of beef on record. How much further can cattle numbers be reduced and keep beef, as we would like to have it, in our diet? We have decreased our livestock to the point where millions of families now serve meat only once a day instead of twice. The annual consumption of beef per capita during the last two years was less than 50 pounds. The receipts of all livestock, based on pounds of livestock weight, at public stockyards during the first five months of this year were 17.6 percent less than the average for the past twelve years. The number of dairy cows maintains a fairly uniform relation to population and will probably continue to do so for some time.

The number of livestock on farms January 1st is not an exact measure of the production for the year, but it offers a very good indication. In the case of swine, the production per head may be slightly more, due to improved sanitary conditions resulting in an increase in the litters. In the case of beef cattle, however, the production per head may be slightly less, due to the presence of a higher percentage of younger animals than formerly existed. There is a tendency on the Northwestern cattle ranches to produce lighter and earlier maturing animals than was formerly the practice.

The fact that we have changed from an exporting to an importing nation of beef products since 1900, while at the same time our consumption of beef per capita dropped from 70 to 50 pounds, or 29 percent, indicates that beef production has followed very closely the number of beef animals.

The amount of feed required to produce a pound of meat is one thing that has not changed, so far as experience, research, and investigational work can show, regardless of many statements to the contrary. Good grade steers in 1900 put on as economical gains as the same grade of steers in 1932. The age of the steers, as long as they are good quality, is the influential factor in determining the pounds of digestible nutrients per pound of gain.

In the case of dairy cows, the number has about kept pace with the population. The pounds of better fat per cow can, and has been, increased slightly during the last 30 years, not as much however, as our cow testing associations would indicate. The production per cow goes up with milk prices and goes down with price declines. The price of feed, as compared to the price of milk, is also an important factor. High yielding records from an isolated cow, a trap-nest hen, or an abnormal sow mean little, as the yields are one hundred or more percent beyond the point of diminishing returns, and therefore have little practical value.

There are two ways to increase production: (1) increasing the acreage, and (2) increasing the production per acre. Chart V shows the total acreage and production per capita, and the trend lines show the part that increased yields have played.

CROP AVERAGE & PRODUCTION PER ACRE  
1910-1914 = 100

CHART V

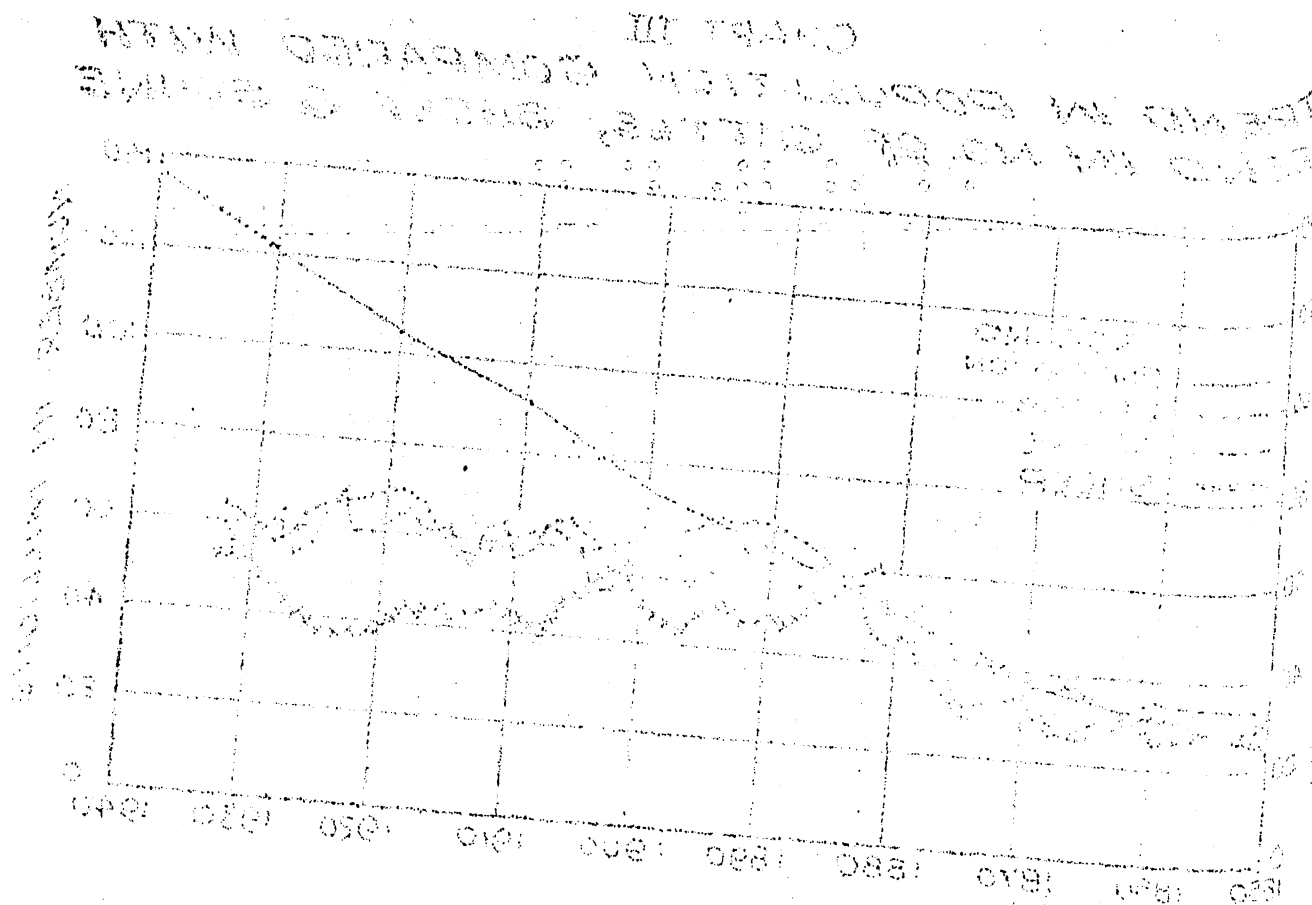
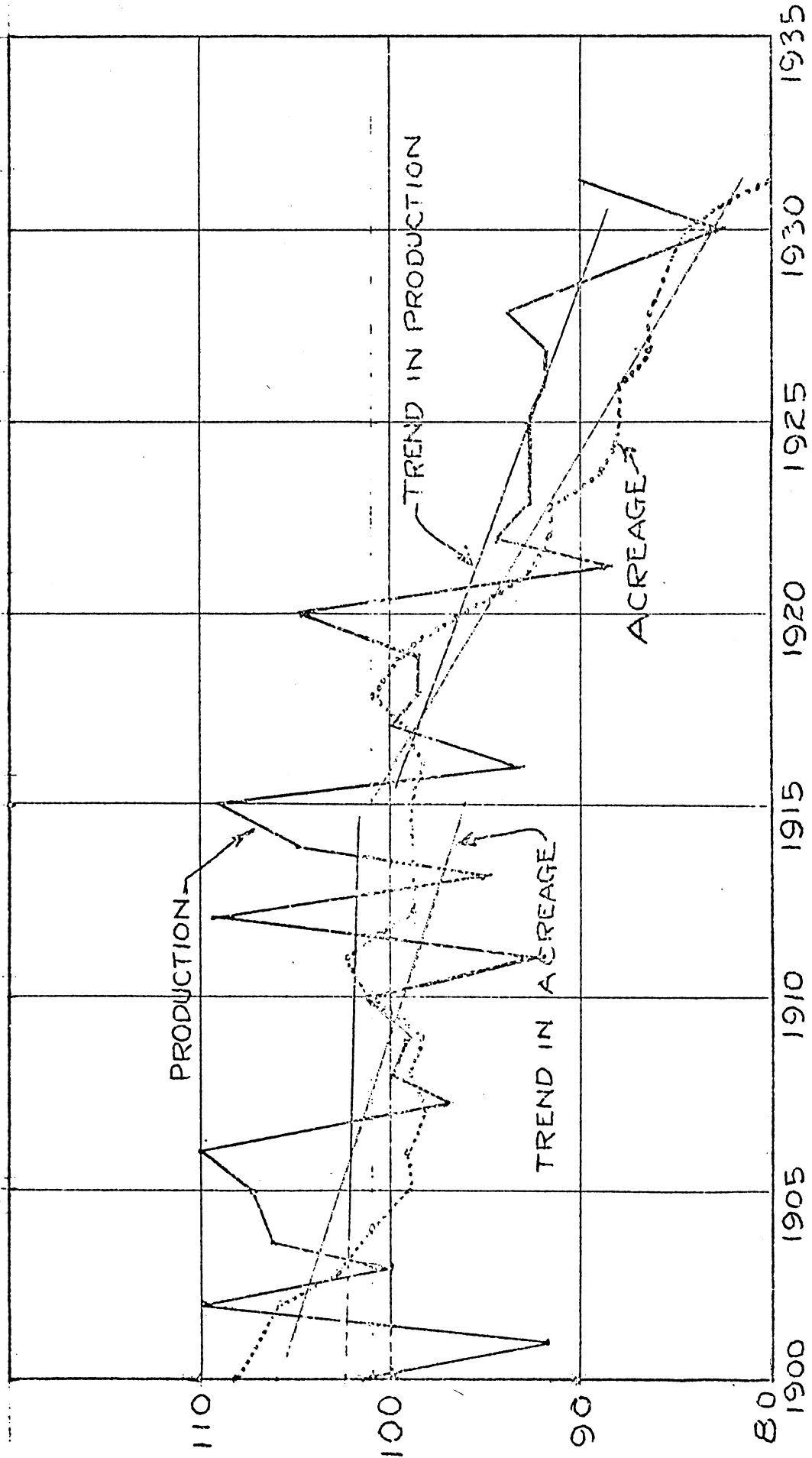


CHART IV

CHART V

## CROP ACREAGE &amp; PRODUCTION PER CAPITA

1910 - 1914 = 100



From 1900 to 1915 there was a noticeable downward trend in acreage while the trend in production remained fairly constant, showing that there was a material improvement in crop yields during that period. Some of this increase in crop yields may be attributed to better farm prices, and, to some extent, to the work of the agricultural colleges and the United States Department of Agriculture.

From 1915 to 1930, the trend in crop acreage dropped almost double the amount of the previous fifteen years, while the production trend followed more closely the acreage than it did in the previous period. This indicates that improvement in production is becoming more difficult, and that we may not expect the marked improvements in the years ahead of us that we have had in the past. Furthermore, the present low farm prices may be expected to reduce yields.

The land problem in our state is one of tenure and taxation rather than utilization, inasmuch as only one third of the land of the state is privately owned and must carry the entire land tax of the state. The federal government controls about 60 percent, and in addition, the oil and mineral wealth on a considerable area of the privately owned lands on which the citizens of the state pay taxes. The federal government returns some money to the counties and state in the form of forest fees, and highway construction due to federal control in the state, but the amount is small in comparison with the tax collected from the private land owners. The above condition results in a very high assessed value on the privately owned lands, in order to make up for the lack of return from the federal lands. The result is inequality between the charges on privately owned and federally controlled lands, and makes it impossible to adjust land charges under our present system.

Efforts are being made to set aside large grazing areas for the use of certain individuals. Montana has such an area on which the annual charge per section of land is placed at \$20 or 3.1 cents per acre, which is about one-fourth of the state tax charge on similar privately owned grazing lands. Taxes should not be more than one-third of the interest charge on such lands, which means that the interest and tax charges on privately owned lands would be many times the amount being charged as rent on the grazing area.

The most important factor in controlling profits on cattle and sheep ranches is the per cent of investment in cattle and sheep as compared to the total investment, which means that the less land a stockman has to own per animal unit, the better his chances for success. Under our present system we have ranchers who are paying a tax of 75 cents per cattle unit investment, while their neighbors are paying three dollars. If the federal government would accept its tax responsibilities this inequality would be solved and I feel sure that it would take care of the Unappropriated Lands problem of the West.

Many writers say that the United States has had no land policy, and that the various Homestead Acts are sentimental, harmful, out of date, and should be repealed. I consider our land policy sound, and that our success as a nation can be attributed to the far-seeing policy of private ownership of land by the people who work thereon.

The federal government recognized the value of giving the worker an ownership interest in the thing that he was using to produce wealth for the nation. Land is of little or no value to a nation, or to an individual, unless it is used in some productive manner. The various Homestead Acts have been based upon the principle that the worker on the land should be the owner thereof. The government was wise in that it recognized that happiness, contentment, as well

Industry and thrift of the agricultural class, depended on land ownership by the user, and that the success of an agricultural nation depended on the loyalty and support of its agricultural class. This explains the support that the federal government has at all times given to agricultural teaching and research work.

The rise and fall of many great nations is closely associated with the treatment given its agricultural people in the way of land ownership, taxes, and rents collected therefrom. The point of decay began where the rulers and landlords attempted to tax the land to the point where the workers thereon could no longer afford to own it.

Many accuse Uncle Sam of giving away magnificent gifts in the form of land, and think that he should retain the lands for the federal government. They do not seem to realize that billions of dollars in taxes cannot be collected annually from undeveloped property and that conservation does not mean the locking up of treasure so that it cannot be used for the purpose for which it was intended. Neither do they realize that Uncle Sam has always operated his own lands at a loss, not to mention such unpleasant incidents as the Tea Pot Dome. A government that is not far sighted enough to see that its success depends directly on the success of the people whom it serves is of short duration, and I do not think that up to the present time we can say that our federal land policy has been unsound.

The principles involved in the Homestead Act are as sound today as they were fifty years ago. Its failure at present lies in its application. One hundred and sixty to 640 acres was sufficient for the agricultural producer east of the 100th meridian, but it is not enough to permit a man to make a living by that ancient and honorable occupation of grazing livestock, instead of tilling the soil. If the Homestead laws had been based on carrying capacity rather than acreage, the Public Domain problem would have been solved years ago and the states, and indirectly the federal government, would have been receiving revenues from these millions of acres of land, the same as they have from adjoining lands that are worth a little more per acre. Uncle Sam is "Land Poor", and perhaps that will be as long as he has any land. He is not supposed to be in the real estate business except as a trustee who holds the title until the lands can be disposed of to the people, thereby substituting private ownership and full jurisdiction, including taxation of and by the states.

The supposition that the Western grazing lands have been ruined by overgrazing and that the silt occurring in the streams is due to a lack of grazing control has been given much publicity by certain interests, but it is not supported by the facts in the case. The idea probably originated with the biologist who noted the luxuriant and abundant forage on the National Forests as contrasted to the scant growth on the unappropriated lands. The difference in vegetative growth is not due to control, or lack of control, but rather to the fact that moisture is the limiting factor of plant growth in the West, and the higher elevations, controlled by the National Forests, receive an annual precipitation two to five times the amount received by the unappropriated lands. The real test of range improvement is in the carrying capacity, that is, the number of animal units that a given area will carry for a certain period and the condition of the animals.

There has been no noticeable increase or decrease in the trends of numbers of livestock carried on our National Forests since their establishment. The increases and decreases in the number of cattle and sheep in the National Forests checks very closely with the increases and decreases on ranches in the United States which indicates that, if there is overstocking on our ranches, the same condition prevails on the forests.

That the vegetation on the Unappropriated Lands and in the National Forests in Wyoming has undergone no noticeable change in carrying capacity during the last thirty-five years of grazing, is shown by careful investigations over a period years, dealing with millions of head of livestock. The inability of the Forest Service to increase the carrying capacity of the ranges is not offered as a criticism, for the men in the service represent the best, and they are a hard working, loyal group. The following reasons, I believe, explain why the carrying capacity of our grazing lands, regardless of ownership and control, have shown little or no change during the last thirty-five years.

1. Stockmen, from an economic standpoint, cannot continue to over-graze a range, as they must rely on the cheap summer gains for their profit, and their livestock will not put on satisfactory summer gains on a range that is over-grazed to the point of being detrimental to plant growth and propagation. The Western stockman is wiser that he is given credit for being in this respect. Our best and most common examples of over-grazing are along trails, near bedgrounds, and where wild life is permitted to propagate. In all of the above cases food is a matter of life and death, rather than one of converting forage into meat in order to make a profit.

2. A factor that makes it very difficult for the Forest Service to show an improvement in forage, is that dominant trait in human nature that causes the owner to take better care of his own property than he will take of the property he rents or leases. The users of the Forests may be inclined to shift the responsibility of forage improvement to the Forest Service, when they should accept the responsibility themselves the same as they do on their privately owned lands.

3. The forage plants growing on our Western ranges are the result of thousands of years of elimination and adaptation, having been grazed by animal life for long periods, and are not easily improved upon or destroyed by man within a few years.

Federal control and leasing of the Unappropriated Lands are being advocated on the theory that they will afford "water shed protection", retard "erosion", and reduce the accumulation of "reservoir silt". The statement is often made that water shed protection is the big issue at stake in the handling of these lands, that the waters arising thereon are more important than their forage, and that grazing should be reduced or prohibited in order that there might be a decrease in the number of silt particles in the reservoir water.

In regard to the above, which may be grouped under the term "surface runoff" there is nothing to indicate that federal leasing of these lands for grazing purposes will in any way influence the movement of water. It has not influenced the runoff from the National Forests, nor has anyone shown that it changes the amount of silt in our river water. In so far as watershed protection is concerned, the remaining Unappropriated Lands do not present a problem that will be solved by placing the lands under some leasing agency.

Several important reasons why any system of leasing will not have a noticeable influence on water movements may be given: (1) In states like Wyoming, the runoff from the Unappropriated Lands is relatively unimportant, due to the light, porous soil, a scant and fairly well distributed precipitation, and non-mountainous topography resulting in a small amount of runoff. When inland basins, millions of acres in extent, show no excessive accumulation of silt in their lakes, it proves that these areas do not contribute a noticeable percentage of silt in the runoff waters; (2) In those ~~negative~~ <sup>semi-arid</sup> areas where the precipitation is torrential in character, the scant ~~negative~~ <sup>negative</sup> growth is insufficient to check the runoff, even when grazing of the area is prohibited; (3) The river silt as a rule comes from the steep bare cliffs adjoining the channel, the striding in the river bed itself, or from the steep slopes of the mountainous area that are, in most cases, located in the National Forests. The waters in our irrigation streams originate in the mountainous areas that are already under grazing control, and not from our Unappropriated Lands. Streams from the National Forests, as a rule, carry more water on entering these lands than on leaving, while the silt content of the water increases not from inflowing streams, but from the channel walls and river bed.

The value of the Unappropriated Lands for water shed purposes has been placed above that of grazing, and the theory advanced that grazing should therefore be controlled or reduced in order to improve the water shed. The value of the grazing of these lands is many times the value of the waters arising thereon, and any attempt to prevent the best use of these lands for grazing purposes, in order to experiment in runoff and silt accumulation, might well come under the heading of "destructive conservation".

Our Western lands are being used in a fairly economical manner, perhaps more so than many Eastern lands where home-ties and sentimental reasons play a more important part, and any suggested change in their management or control should be based on sound and well proven economic facts, rather than upon unproven and unsubstantiated theories.