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UNIVERSITY OF ILLINOIS.
Agricultural Experiment Station.

URBANA, FEBRUARY, 1898

BULLETIN No. 50.

The Cost of Production of Corn and Oats in Illinois in 1896.

[PREFATORY NOTE.—This inquiry into the cost of raising corn and oats in the State of Illinois, was suggested as an interesting piece of work in statistical investigation for an advanced student in economics. Moreover, there was so much discrepancy between the figures assigned in various statistical publications and those commonly reported among farmers that it was thought desirable to make as careful and extensive an inquiry as possible into the facts. The work was assigned under my direction to Mr. Nathan A. Weston, then Instructor in the Preparatory School of the University of Illinois and a student of economics in the Graduate School.* The excellence of the work as now published is evidence of the wisdom of the selection of the worker and of the care and good judgment with which he performed his task. With the exception of occasional suggestions from the members of the staff of the Agricultural Experiment Station, and some insertions by myself, the work is Mr. Weston's own.

The limits of the scope of the inquiry should be emphasized. The results presented concern the corn and oats' products of Illinois in the season of 1896 *only*. The figures of cost in one year cannot be used for any other; for, of course, the cost varies with the yield and the season. A given total of expenditure in a season when the yield of corn was 40 bushels to the acre would give a very different cost per unit of measure from what it would give when the yield was 60 bushels.

*Mr. Weston is now fellow in economics in the University of Wisconsin.

This fact shows the fallacy of the tables of some of the Illinois crop reports, which copy for a series of years the figures of cost obtained only in the first of the series.

It is not thought necessary to enter here into a discussion of the theoretical question of what constitutes cost of production. The matter of practical interest is to determine what has been the total outlay made by the farmer in order to place on the market a bushel of the cereal in question. That outlay comprises rent, labor, expenditure for seed, and, perhaps, fertilizer, interest, and taxes on tools and other farm equipment, and also depreciation of the same. Taxes on the land need not be included because they ordinarily fall on the land-owner as such. Rent should not be excluded, as it sometimes is, on the mistaken application of the economic theory that "rent is not an element of cost." This doctrine does not mean that "a tenant farmer need not take his rent into account when making up his year's balance sheet. When he is doing that he must count his rent just in the same way as he does any other expense."

While Mr. Weston's investigation was under way we heard that the *Orange Judd Farmer* was making a similar inquiry, extending it, however, to eight states. The statistician of that journal kindly sent us his data for Illinois,—a dozen or fifteen replies in all, I think,—for our use. It seemed inadvisable to use these on account of differences in the form of inquiry. The results of the investigation of the *Orange Judd Farmer* have since been published, and the conclusion drawn from them that corn was grown in the season in question at a cost per bushel as low as 6 cents. That is much below the cost arrived at in this bulletin. If we omit rent the cost per bushel through husking would, according to this inquiry, be about 8 cents.

It should be noted that the corn crop of 1896 was above the average, and that the average yield per acre on the farms reported in the following statistics is 54 bushels.

No addition is made herein for taxes. As said already, in our opinion taxes on equipment only should be counted in, and our data on these were too meager and uncertain for use. In any event the amount to be added therefor to the cost would probably not exceed 6 or 7 cents per acre, or a little over 1 mill per bushel.

It would be very desirable if a properly conducted inquiry into the cost of production of the leading cereals could be made for a series of years. If undertaken under the direction of competent statisticians some light might be thrown on the vexed question of "the distress of the agricultural classes."

DAVID KINLEY, Professor of Economics,
University of Illinois.]

PREVIOUS INVESTIGATIONS.

Considerable has been said and written about the cost of producing the leading cereals, but only a few really systematic inquiries into the question have been made. These have usually been based upon the estimates of interested correspondents, and not upon the reports of work actually done by those engaged in production. Such reports, while interesting, are, however, of but little scientific value because it is impossible to tell how far they are mere guesses.

In view of the great fall in the prices of farm products, and the widespread and prolonged agricultural depression of recent years, the question of cost of production of agricultural products is of great interest and practical importance. The question as to what crops are most profitable, is, of course, the leading one with producers. It cannot be denied that farmers in some sections of the country, being insufficiently acquainted with the problem of cost of production, and not knowing the exact state of the world's supply, have persisted in growing certain kinds of grain when something else could have been produced with much greater profit.

The present investigation was begun in order to secure, if possible, accurate information on the expense of raising the corn and oats' crops of 1896 in the state of Illinois. Before giving the details of the inquiry, it will be interesting to review briefly some previous attempts to determine the cost of production of these grains. Hardly worthy of mention are numerous statements of individual accounts and experiments relating to the subject, to be found in the agricultural reports of the various states and the United States, running in time throughout the past thirty years. For instance, on page 450 of The Report of the United States Commissioner of Agriculture for 1870, Mr. J. C. Burroughs makes a statement concerning the cost of growing corn in Madison County, Illinois. The experiment was on a field of twenty acres, which yielded sixty bushels to the acre. The various items of cost—use of land, labor, etc., are given in the report as amounting to \$322.00, or \$16.10 per acre, and about 27 cents per bushel. Interest attaches to experiments like that of Mr. Burroughs because they are the earliest attempts to solve the problem of expense of production. The experiments are too few and too unevenly distributed geographically, and the reports are too meager in details and too indefinite in statement, to be of much value for comparison with results of later and more systematic inquiries.

In 1885, 1886 and 1887, inquiries concerning the cost of producing corn and oats in Illinois were made by the state department of agriculture.* The published results consist simply of a series of tables,

*Crop Reports, Ill. State B'd of Agr., 1886, 1887.

without detailed description or analysis. The tables show returns for all the counties of the state, indicate the acreage as returned by the assessors, the yield per acre in bushels, the total yield in bushels, the price per bushel, the value of crop, the cost of production per acre, the total cost of production, and the profit, or loss, on the crop. The data as to cost, from which the tables were compiled, consisted chiefly of estimates by correspondents of the department. There is nothing to show that any separate account was taken of the individual elements which enter into cost of production; and, in fact, there is nothing to show that the cost of production per acre for the counties is anything other than an estimate. The purpose of the inquiry appears to be to show the relation between the value of the crop and the cost of its production. This is done without any apparent consciousness of the fact that in such an account the item of cost of production is of prime importance. The cost of production per acre in the series of tables given in the reports of 1886 and 1887 is practically the same. The few variations that occur are so slight as to be unworthy of notice. It is significant that the Crop Reports give the same figures for cost of production, for every county, year after year.

The next investigation of a similar nature was undertaken by the United States Department of Agriculture in 1893. It was prompted by numerous inquiries relative to the cost of raising our principal cereals. Corn and wheat were chosen as the subjects of inquiry. In the case of corn the items of cost were enumerated as follows: Rent of land, manure, preparing ground, planting, cultivating, gathering, housing, and marketing. The table as compiled shows the average and total cost under each of these items, for individual states, groups of states, and the country as a whole. The results were derived from individual estimates made by over 28,000 practical farmers. These results were checked by replies received from over 4,000 experts, who were graduates of various agricultural colleges and engaged in farming.

Further work of this kind has been done by the Illinois Department of Agriculture during the present year, and the results were published in the Statistical Report of The Illinois State Board of Agriculture for May. Like previous reports by this department, this is made up entirely of a series of tables, without discussion or analysis thereof, or any explanation of the method of their construction. In fact, the subject is barely mentioned in the beginning of the report where it is stated that, "It is impossible to obtain the exact cost of production, but the tables are prepared from the accounts and estimates of practical farmers, which have been carefully examined, compared and revised before presenting them to the public in this form." It would have added much to the interest and usefulness of the effort if a more detailed

account of it had been published. However, the tables show that they have been prepared with some care. A careful discrimination has been made between the different elements which enter into the expense of production. This is an important feature which former investigations of the Department have omitted.

THE PRESENT INQUIRY.

When the initiatory steps of the present inquiry were taken nothing was known of the work already begun by the Illinois Department of Agriculture. In preparing the circulars to be sent to the farmers of the state, an attempt was made to avoid the weaknesses and supply the deficiencies of the earlier efforts of this kind. It was the aim to reach, so far as possible, the working farmers of the state as a class. No discrimination was made in favor of those who are recognized as experts, or profess some special interest in these inquiries. It was deemed that much more trustworthy results would be obtained by seeking information from the farmers in general, because the average conditions in practical farming are more likely to be reached in this way than in any other. In the main, the questions were so arranged in the circular as to follow the order of the work in production. The questions do not call for estimates, but for actual expenditures. The questions were made as few as possible, and of such a character that they could be answered easily. Wherever possible, expenditures were asked for in terms of days' labor. The rate of wages per man, and per man and team, was then asked for in order to be applied to the number of days spent in labor. The purpose of putting the inquiry into this form was to remove the temptation to make estimates,—a temptation to which one yields more easily when giving answers to such questions in dollars and cents.

There is another advantage of much importance secured by asking for replies in terms of days' of labor rather than of dollars. The men of the family of the farmer doubtless work many days without remuneration in wages such as is accorded hired help. If answers had been requested in terms of dollars, some correspondents would doubtless have omitted the cost of that family labor. As the circular was worded, we probably secured a pretty complete return of this labor. Some of the questions proposed have no direct bearing on the cost of production. They were inserted for other purposes. Following is a form of the circular sent out:—

UNIVERSITY OF ILLINOIS,
URBANA AND CHAMPAIGN.

JANUARY 30, 1897.

The University of Illinois is endeavoring to secure accurate information concerning the cost to the farmer of producing corn and oats. Your coöperation is asked in the work. You will confer a great favor by answering the following questions, which refer to the crop of 1896, no matter whether your conditions for that year were favorable or not.

Information of this kind will throw light on our agricultural question, and none can give it better than the farmers themselves. Of course all answers will be treated as confidential.

Name of Township.....

(A) CORN.

How many acres grown?

How many days labor actually used in:—(a) Breaking stalks? (b) Plowing? (c) Disking? (d) Harrowing? (e) Rolling? (f) Planting? (g) Cultivating? (h) Cutting? (i) Husking? (j) Hauling to market?

What was the cost (in dollars) of shelling?

Was it grown on sod or other land?

Was it planted by hand or check-rower?

Was it cut or husked from the hill?

How many times was it cultivated?

What was the total yield in bushels?

If husked by machine:—(a) What was the cost (in dollars) per acre? (b) Did the fodder keep? (c) How did it compare with timothy hay for feed? (d) How much was baled for market? (e) What was the price per ton?

(B) OATS.

How many acres grown?

Was it grown on corn or other land?

How many days labor actually used in:—(a) Breaking stalks? (b) Plowing? (c) Disking? (d) Harrowing? (e) Rolling? (f) Sowing? (g) Cutting and shocking? (h) Hauling and threshing? (i) Hauling to market?

What was the cost (in dollars) of twine used?

What was the total yield in bushels?

(C) What was the rate of wages per man?

What was the rate of wages per man and team?

What was the rent of land per acre?

What is the distance to market?

Name.....

Eight hundred of the above forms were sent out in February, and about one hundred more at later times to some of the counties which previously made no replies. When the returns began to come in, they showed at once that some important points had been overlooked in preparing the questions, while some of the questions prepared were so worded as in some cases to give rise to vague answers. In order to secure some additional information and remedy the difficulties that developed, the following form was sent to 100 of those who had made replies:—

1. Number of horses used in:—(a) Plowing? (b) Disking? (c) Harrowing?
2. Cutting and shocking oats:—(a) Number of days? (b) Number of men? (c) Number of horses?
3. Hauling and threshing oats:—(a) Number of days? (b) Number of men? (c) Number of horses?
4. Cost of seed:—(a) Corn? (b) Oats?

Name.....
 Township.....
 County.....

Of the 900 of the original circulars distributed, 316 were returned with answers, and of the second form nearly all. Considering the nature of the inquiry and the fact that the circulars were sent to all classes of producers in every part of the state, this is held to be a very excellent showing. About 15 per cent. of the replies were accompanied by letters in explanation of some parts. Many useful suggestions were contained in these, and some information was gained that could not well have been obtained in answers to questions.

When the replies were examined some counties were proved to be largely represented, while others were not represented at all. In sending out the circulars, an effort was made, as has been said, to distribute them as equally as possible over the territory of the state. The fact, then, that some counties show no returns is to be attributed largely to the agricultural conditions which prevail. As inspection of the tables will show that these counties are mainly in the southern group, where, generally speaking, corn and oats are not the staple products. Furthermore, a study of the Crop Reports of Illinois in recent years, and of the United States census reports for 1890, with respect to the acreage and production of corn and oats in the counties of Illinois, shows that those counties from which the largest number of replies came to our inquiry, are the ones in which these grains are most largely grown.

An analysis of the returns reveals the fact that while there is great uniformity in the answers to some of the questions asked, in the answers to others there is considerable variation. This was to be expected, since in different localities the elements which enter into cost of production are necessarily different. This fact indicated the method for compiling the data. It was determined to take account of the constant elements first, to compute the expense of production up to the point where differences appeared in the character of the constituent elements of expenses of production, and then to make whatever additions were necessary to include the variable factors. An examination of the replies showed that, with the exception of cutting, shelling, and hauling to market the elements comprising the expenses of production were very uniform in character. It was decided, therefore, to find the

expense of production first excluding these three elements, and then to add the necessary amounts for these items separately.

Of the 316 replies, 274 were used in constructing the tables on corn. The others either failed to give reports on corn, were incomplete, or for some reason were deemed unreliable. It was not thought necessary to insert the individual replies. Accordingly table 1 shows the returns by counties. The elements of expense of production as far as, and including, husking, are labor, rent of land, and seed. The sum of these three was found for each individual reply, and the sum of these sums gave the total of the county. This divided by the total number of acres or bushels represented in the replies gave the expense per acre and per bushel, respectively. The average additional expense per acre and per bushel due to the three variable elements was then determined separately for each county and added to the average previously found. The result was the total cost per acre and per bushel for the county, so far as determined by the elements taken into account.

The number of replies which gave expense for seed was 59. These were used to obtain the average for the state. As calculated from table 6 it is .065 per acre, or .455 per bushel planted. The average amount of seed to the acre was estimated at one-seventh of a bushel.

Frequently some of the items, as the rate of wages, or the rent of land were omitted in the replies. Their places were filled by taking an average of the returns obtained from the same county. Throughout the investigation the rate of wages per man and team, when it was not given, is estimated at double the rate of wages per man. The rent of land was not always given in dollars, but occasionally as some fractional part of the crop. A proportionate amount was then subtracted from the number of acres and bushels returned, and the total expense, excluding rent, divided by the remainder, giving the expense per acre and per bushel. For instance, in one reply the rent of land is given as one-half of the crop, the number of acres 60, the number of bushels 3,000, and the cost, exclusive of rent, \$259.90. Dividing this cost by one-half the number of acres and bushels we have \$8.66 and \$.173 for the cost per acre and per bushel respectively. On account of this irregularity, the average rent per acre for the counties multiplied by the number of acres reported will not always give the total rent for the counties. The average rent per acre for the counties is the average of the returns which were given in *money*.

Of the 316 replies received to the questions only 170 were available in compiling the tables concerning oats. A larger number failed to report on oats than on corn, and a great many were so confused on some points that their answers were evidently unreliable. In computing the average cost here, the same method was pursued as before. The

expense of production was first found so far as the uniform elements were concerned, and additions made to the county averages for the variable factors. Only one variable element, however, appears in the case of oats, that of hauling to market. With one exception the same irregularities occur in the individual returns as in those on corn, and the same points are to be noted regarding them. The exception consists in an estimate made in some of the returns with respect to the days of labor spent in cutting and shocking, and hauling and threshing. There were many replies in which the number of men and teams used in cutting, shocking, hauling, and threshing, was not given, although the time taken to perform these operations was given. In order to supply this omission and render usable many replies which were otherwise excellent, the average number of men and of men and teams used in these two kinds of labor was determined from those replies in which definite answers were given. These averages were then applied in all those cases where some definite time was given for performing the work. The cost of seed was computed in the same manner as in the case of corn, and is 50 cents per acre, or 20 cents per bushel.* The average amount of seed to the acre was estimated at two and one-half bushels.

GENERAL CONSIDERATIONS AFFECTING THE STATISTICS.

Before analysing our results and comparing them with those of former investigations, it will be necessary to take notice of some factors in cost of production that do not appear in the circular, as well as of some things produced which are not accounted for in the number of bushels of grain reported.

First, there is the annual interest on the capital invested in machinery, horses, etc., together with the depreciation of the same, which are necessarily parts of cost. This interest is not to be added to the cost of each crop, but is to be distributed among all the crops of the farm in proportion to the amounts of time during which the fixed capital was used in the production of the respective crops. It is difficult to determine the amount to be placed to the account of each.

In the second place, there is sometimes considerable capital invested in fertilizers. This is not all to be added to the cost of the first crop which is grown after the treatment of the soil, as is commonly done; but, rather it should be distributed over successive crops as long as its beneficial effects endure. How this apportionment should be made is also difficult to determine.

Further, it is not contended that the labor processes taken account of in the circular, constitute all the labor that enters into production.

* See table 4.

There are many days' work done about a farm, as in the destruction of noxious weeds, the repairing of fences, etc., in order to keep it in the best conditions for production, which must be made a part of the cost of all crops affected thereby.

Finally in the case of oats the cost of the use of the threshing machine and that of coal are to be added to the average expense as determined in the tables.

On the other hand, the fact must be kept constantly in view that the labor and capital invested have produced some values in addition to the number of bushels of grain. In the case of corn there are the stalks, or fodder, usually worth something, and frequently considerable. In the case of oats there is the straw, which always has a value. Frequently other things are grown with both corn and oats with little or no additional labor. For instance, clover is commonly sown with oats, and used for pasturage after the oats are harvested, or plowed under for a fertilizer. It is particularly to be emphasised, that, when any attempt is made to determine the *profits* arising from the production of a crop, the value of these complementary products must be taken into consideration.

ANALYSIS OF THE TABLES—CORN.

Table 1 presents the returns for corn by counties. It shows that of a total of 102 counties 76 are represented in the replies. This is 74.5 per cent. A careful examination of the counties from which replies were most numerous shows that the "corn counties" are very well represented. It is probable therefore, that the averages need no correction for unequal distribution of replies. The total number of acres represented by the replies is 16,603. The corn acreage of the state in 1896 was 6,881,400. The total number of bushels represented is 896,235. The total crop for that year was 288,616,334. As has been said, the cost of production as far as, and including, husking was first worked out, for the reason that the other items of cost did not appear in all of the replies. Taking the figures as they stand, it appears that the lowest cost per bushel is in Edgar county, 11.3 cents; the highest in Edwards county, 38.8 cents. The average for the state is \$8.72 per acre and 16.1 cents per bushel.

In addition to the expenses of production thus far discussed there are certain other items which, as has been said elsewhere, should fairly be included. Something needs to be added for depreciation of equipment and for interest on investment in equipment; something more for the cost of keeping teams when idle through the winter, and also something for wages of the men when the weather is so bad that they cannot work. It is difficult to estimate these items, but we may perhaps get at the matter in some such way as this:

The cost of equipment will perhaps average about \$250.00¹ for every 40 acres. If we allow 10² per cent. for deterioration and 6 per cent. interest, it will be necessary to add about 1.8 of a cent per bushel to the cost of the crop of the year that we are considering. Per acre the amount will be \$1.00. If we allow 5 per cent. of time lost we must add also to get our total cost, 4 mills³ per bushel, and 21 cents per acre. Allow \$15.00 as the cost of keeping a team 5 months on the basis of \$1.50 per month per horse for pasturage. One-half of this, \$7.50, may be placed against oats and corn when they are the leading crops. If we allow one team for every 40 acres, we must add 1.7 mills per bushel and 9 cents per acre for this item.

Finally, something should be allowed for the cost of cribs. The original cost of these is about 2 cents per bushel capacity, and a crib will ordinarily last about 12 years. We must therefore add for this item about one-sixth of a cent per bushel to our cost. This gives us, per bushel, 18.6 cents, and, per acre, \$10.10.

As against the items of a general character on account of which we have added to the cost as shown in the table, there are certain other items that must be regarded as lessening the cost obtained. In the first place, during the period of growth of the crop both men and teams are likely to spend considerable time in other work than that involved in the original crop. How much should be allowed for this it is impossible to say. Perhaps, however, it would offset the amount added on account of idleness during bad weather. Of more importance than this is the value of the by-products. The principal one is the stalks, which often serve as fodder. The value of this fodder must, of course, be deducted from the gross cost already figured out. We may estimate it at 1 cent per bushel,* or 54 per acre. Making these deductions we get 17.3 cents per bushel and \$9.35 per acre. If the reports recently made public concerning the availability of the pith of corn-stalks for use as cellulose in naval and other construction, are borne out, the value of the corn-stalk as a by-product will be greatly increased.

How much, now, must we allow for what we have called the non-uniform elements of cost of production, namely, shelling, hauling to market, and cutting?

It is a question whether the cost of any of these operations should be

1. Team, wagon and harness, \$170.00; plow, \$12.00; harrow, \$11.00; planter, \$40.00; cultivator, \$18.00; disk, \$28.00; roller, \$20.00. Total, \$299.00. If we assume that one harrow, planter, disk, and roller will do for 80 acres, we must deduct half the price of each, leaving \$250.00. If stalks be cut by machine, \$21.00, or half the price of cutter, should be added to make equipment complete.

2. It is not meant that the equipment needs replacing only once in ten years, but that so far as depreciation is caused by use in *corn* raising ten per cent. per annum is a fair allowance.

3. Total days labor man and team, through husking ÷ No. bushels x .05 { $\frac{37079}{896235}$ x .05 x \$2.13 = .004.
x average wages of men and team, - - - - -

* The figure of the Orange Judd Farmer.

included in the expense of producing corn. They certainly are not to be included in those cases where the corn is fed in the ear to hogs or stock. Cutting, at least, as has been said, is not properly counted an item of cost at all, especially since, in most cases, breaking and plowing in the stalks, have already been allowed for. Moreover, the cost of cutting would doubtless be more than offset by the value of the stalks for fodder. Hence the cost of cutting need not be included, although it is of interest to determine how much it is. The total number of acres cut was 1510, and their yield was 79,826 bushels. The number of days' labor required was 1059. At the average wages of \$1.06 per day, we get 74 cents per acre, and .014 cent per bushel, as the average cost. The amount of stalks which supply on the average one bushel of grain took .013 of a day to cut.

Turning, now, to shelling and hauling, a true, mathematical, average cost of production for the whole crop would perhaps require us to determine the average cost of each of these processes for the quantity to which each of them was actually applied, and then to add to the average cost of the whole crop, through husking, such proportions of the cost obtained for shelling and hauling as the amounts shelled and hauled bear to the whole. Such an average, however, would be ideal. It would have no actual cost to correspond to it, and so would be of no interest. The practical question is: What does it cost on the average, per bushel and per acre, to raise corn and deliver it at the elevator? Accordingly, we add to the total cost thus far obtained the average cost of shelling and of hauling as calculated from the figures obtained from those who reported shelling and hauling. Of the whole amount of corn reported 312,426 bushels were shelled, from 5,638 acres. The total cost of shelling was \$2,935.93, or 9 mills per bushel and 52 cents per acre. The range of cost of shelling, per bushel, was from a quarter of a cent to two cents. Each of these prices applied to only a single report. The great majority of replies were pretty close to the average.

The number of bushels hauled to market, shelled and unshelled, was 311,345, from 5,561 acres, and the hauling took 1,922 days' labor of one man and team. At \$2.13 per day, this amounted to \$4,093.86, or .013 cent per bushel, and 73 cents per acre. The average distance was 3.2 miles, and the average load 162 bushels. Hence the cost of hauling one bushel one mile was 4 mills. Adding these items we get a final cost per bushel, of 19.5 cents, and per acre, of \$10.59.

Making all allowances it would seem proper to accept these as fair figures for the cost of production, per bushel and per acre, of the corn crop of Illinois in 1896. It will be seen that this result differs materially from those given in the United States reports, and in the Crop Reports of Illinois. It must be borne in mind, moreover, that this is

the expense of production per bushel and per acre *for the crop of a single year*. It would be absurd to regard this cost as correct for any other year. The figures could not be quoted, therefore for 1897, and still less for a period 10 years from now.

It is important to emphasize exactly what this cost represents. It is not the cost of the *growing*, merely. As has been indicated, it is the average sum of the expenditures on all the processes involved in production, from the preparation of the soil to the delivery at the elevator, including the wages of the farmer himself, whether owner or renter; a proper allowance for time lost, and for maintenance of team during idleness; interest on investment, including rent, and allowance for depreciation of tools and machinery. Anything received for corn, above this cost, represents pure profit in the economic sense.

Certain other items of interest may be gleaned from the tables. The average number of acres devoted to corn on the farms reported was 60.6.

The total amount paid out in rent was \$64,333.26.*

OATS.

After what has been said about the tables on corn, little need be said about those on oats. On the face of the returns the cost of production for the year in question was, up to the stage of hauling to market, 17.8 cents per bushel, and \$6.59 per acre. Of these amounts 5½ cents and \$2.07 went for labor, per bushel and per acre, respectively; 10 cents and \$3.80 for rent; 1.4 cents and 53 cents for seed; and half a cent and 19.6 cents for twine.

The amount of oats hauled was 153,356 bushels, from 4031 acres, for an average distance of 3.2 miles. The work took 684 days and cost \$1491.12. This makes 37 cents per acre, and 9 mills per bushel.

The amount to be included for depreciation and interest in the case of oats, may be estimated at about 2.2 cents a bushel and 80 cents per acre. This gives us a final average of 21 cents per bushel and \$7.76 per acre, for the cost of oats delivered on the market, in the season of 1896. This is a larger per bushel cost than is shown for corn and will strike the reader as strange; but it is accounted for by the low average yield. According to the tables the yield of oats was 34 bushels to the acre, which is considerably below the average; while that of corn was 54 bushels, or somewhat above the average. If the oats had shown as high a yield per acre as did the corn, their cost per bushel would have been only 14.4 cents.

The lowest cost per bushel was in Cass county, 11.9 cents; the

* This includes the estimated amounts of rents paid in produce, on the basis of the cost of the produce, and makes an average of about \$4.00 an acre.

highest in Moultrie county, 58.2 cents. The lowest per acre cost was \$4.61, in Bond county; the highest \$10.47, in Boone county.

In table 3 the counties are grouped as northern, central, and southern. The grouping is the same as that made for the purpose of holding terms of the supreme court. The table shows in small compass the relative costs of production in the divisions of the state and enables comparison of results to be made with those of the State Department of Agriculture for the same groups.

CONCLUSIONS.

A comparison of the results of the present inquiry with those of previous ones shows that the averages in the present inquiry are considerably lower. This is true particularly of the average cost per bushel. In the case of corn the cost per bushel as determined by the Illinois Department of Agriculture, in 1886, was 42 cents, and by the United States Department of Agriculture in 1893, 38 cents; while in the present investigation it is only 19 cents. The differences in the cost per acre, although considerable, are not so striking. It is of course to be expected that the cost per bushel will vary considerably from year to year, the yield depending very much on the seasonal conditions. However, an examination of the tables put forth by the Illinois Department of Agriculture in 1886 and 1887, leads to the conclusion that the Department's estimates of the yield per acre are too low. As said before, the main object of these tables seems to have been to show the relation between the value of the crop and the expense of production. According to the tables there was a loss of about \$20,000,000 on the corn crop of 1886, and about \$17,500,000 on the crop of 1887, there being a total yield of 182,500,000 bushels in the former year and 129,500,000 in the latter. This would be a loss of 10 cents per bushel in 1886 and 13 cents in 1887. It is hard to believe that the farmers in Illinois were losers to such an amount in those years, or that the price of grain fell so far below the cost of production. Of course no one can deny that the price of grain may fall below the cost of production, but it is not likely to fall very much below, and we cannot suppose that it will do so for many successive years. The same criticism must be passed upon the report of the United States Department of Agriculture. The average yield per acre is probably much greater and the cost of production per bushel much lower than the estimates in these reports.

In the case of oats the table given out by the Illinois Department of Agriculture in 1886 places the cost per bushel at \$.288, while the present investigation shows it to be \$.184; but there is also an equal discrepancy in the cost per acre, which is \$9.80 in the one case and

\$6.83 in the other. As to the estimate of the yield per acre and its effect upon the average cost per bushel, precisely the same things are to be noted as were noted concerning corn. Further, it must be concluded that the average cost per acre as determined by the Illinois Department of Agriculture in 1886 was too high. The county averages in the present inquiry are almost uniformly lower than those of the Department. This, of course, would very materially reduce the average cost per bushel.

A comparison of the results of this inquiry with those of the State Department of Agriculture in 1897 shows that the averages for the state are nearly alike, with respect to corn.

The average for oats as determined in the present inquiry, is about \$2.00 less than that of the Department. It should be noticed also that county averages are almost uniformly less. After allowances are made for any elements of cost that do not appear in this investigation, it must still be concluded that the averages published in the recent report of the Illinois Department are too high.

Generally speaking, the results of the inquiry tend to prove that the average cost of production, and particularly the average cost per bushel, is much less than commonly thought. It has always been a puzzle for people to make the customary market prices of grain agree with what was the supposed cost of production. It may be unhesitatingly asserted that when all complementary products are accounted for, the average market price of grain will rarely fall below the cost of production and then only for brief intervals.

It would be interesting, if possible, in the comparison of different inquiries of this kind, to note whether there has been a gradual decrease in the cost of production due to improvements in machinery and methods. But the data upon which such a conclusion would have to be based are too meagre and untrustworthy. Satisfactory conclusions in this direction could only be reached by a series of careful investigations extending through a number of years.

COST OF SEED.

Table 4 shows the data from which the average cost of seed was computed.

INDIVIDUAL REPORTS.

As a matter of interest, and for the purpose of enabling comparisons to be made, we give below a few individual cases.

No. 1. Mr. E. S. Fursman, of El Paso, Woodford Co., submits the following:

A field of 30 acres of clover sod one year old, plowed in October, after cutting a crop of clover in July and pasturing till October.

Plowing, 3-horse sulky plow, 10 days at \$3.00 per day	\$ 30.00
Disking 1 man, 4 horses, 2¼ days	7.87
Harrowing, before planting, man and 4 horses, 1¼ days at \$3.50.	6.11
Seed at 75 cents	2.70
Planting, man and two horses, 2¼ days at \$2.50	5.62
Harrowing, after planting, man and 4 horses, 1 day	3.50
Plowing, 3 times, man and team, 13 days	32.50
Husking, 2¼ cents per bushel	48.00
Shelling, 5 men and machine	25.50
Hauling, on basis of distance of 3½ miles	26.62
Rent, at \$80 per acre, 6 per cent	144.00
Total cost	\$332.42
Cost per acre	11.08

Yield, 71 bushels per acre. Cost, 15.6 cents per bushel.

No. 2. Washington Township, Carroll Co. Cost of production of one acre of corn.

Cutting stalks	\$0.19
Plowing	.90
Harrowing (smoothing)	.17
Planting, checkrower	.28
Harrowing, twice	.26
Cultivating, 3 times	1.13
Rent	3.25
Interest on equipment	.22
Wear and tear	.42
Seed	1.12
Harvesting	1.80
Total	\$8.74

Yield, 46 bushels. Cost, 19 cents per bushel.

No. 3. Champaign Co. No. acres 85, total yield 5,525 bushels, or 65 per acre.

Breaking stalks, days' labor, man and team	4
Plowing	38
Disking	7
Harrowing	7
Planting	7
Cultivating	36
Husking	85
Total	184
Rate of wages, \$2.00, making a total of	\$368.00
Rent, at \$4.42 per acre	287.30
Seed	5.52
Total	\$660.82

Per acre, \$7.77; per bushel, 11.9 cents, through husking. This record gives no costs of hauling and shelling. If we add the state averages for these items we get a final cost of \$9.20 per acre and 14.1 cents per bushel.

No. 4. De Kalb Co. Field of 150 acres. Yield, 6,500 bushels, or 43 per acre.

Breaking stalks, days' labor.....	8
Plowing.....	30
Disking.....	15
Harrowing.....	10
Planting.....	12
Cultivating.....	75
Husking.....	120
Total	270
Rate of wages, \$3.00, making a total of.....	\$ 810.00
Rent, at \$3.50 per acre.....	525.00
Seed.....	9.75
Total	\$1,344.75

This gives \$8.96 per acre, and 20.8 cents per bushel. Adding the figures for shelling and hauling we get \$9.91 and 23 cents, respectively.

No. 5. Madison Co. 25 acres and 1,100 bushels, or 44 per acre.

Plowing, days' labor.....	20
Harrowing.....	3
Planting.....	5
Cultivating.....	18
Husking.....	25
Total	71
Wages, \$2.25. Total cost of labor, through husking....	\$159.75
Rent.....	100.00
Seed.....	1.62
Total	\$261.37

This gives, per acre, \$10.45; per bushel, 23.8 cents.

Allowing for hauling and shelling, we get \$11.42 and 26 cents, respectively.

No. 6. Wabash Co. 24 acres and 1,100 bushels, or 46 to the acre.

Plowing, days' labor.....	18
Harrowing.....	3.5
Planting.....	1.5
Cultivating.....	13
Husking.....	24
Total	60
Rate of wages, \$2.00. Total cost of labor, through husking....	\$120.00
Cost of seed.....	1.56
Total	\$121.56

This gives \$5.06 per acre, and 11 cents per bushel. Adding the costs of hauling and shelling, we get \$6.07 per acre and 13.2 cents per bushel.

This does not include rent. If we assume the state average of \$4.00 for this item, our figures become \$10.07 and 21.9 cents

The average bushel cost in each of 34 counties was below the state average.

NATHAN A. WESTON, B.S.

TABLE I. COST OF PRODUCTION OF CORN IN ILLINOIS IN 1896.

County.	Days' labor spent by man and team in											Number of replies.	Cost per bu. through husking.	Cost per acre through husking.	Number of bushels.	Cost of crop through husking.	Cost of seed.	Number of acres.	Rent, per acre.	Total cost of labor, through husking.	Rate of wages, man and team, dolls.	Rate of wages, man, dolls.
	Plowing.	Disking.	Harrowing.	Rolling.	Planting.	Cultivating.	Husking.	Total days' labor, including husking.	Total cost of labor, through husking.	Rent, per acre.	Number of acres.											
Adams.....	4	9	18	1	12.25	82	146	344.75	1.21	2.41	830.74	4.57	146	9.49	1507.55	6300	10.32	2.39				
Bond.....	3	3	6	.....	5	25	32	90.5	1.00	1.50	135.75	5.04	33.33	2.60	238.35	1500	7.15	1.52			
Bureau.....	2	33	15.5	.....	9	45	84	201.5	1.37	2.74	552.25	4.18	80	5.20	892.45	4600	11.15	2.22			
Carroll.....	2	1.5	13.5	.....	8	49	121	259.5	1.09	2.25	586.25	3.33	120	7.80	993.05	8000	8.28	1.24			
Cass.....	5	10	22.5	.....	3	19.25	151	531.5	1.09	2.17	1156.75	4.33	275	17.87	2365.87	14200	8.60	1.66			
Champaign.....	2	7	20	.....	26	22	210	548	1.00	2.00	1006.00	1	145	18.85	1114.85	7250	7.68	1.53			
Clark.....	33	53.8	96.5	.....	129.5	40.5	121	722	1.10	2.20	6904.45	4.42	1580	106.90	13801.85	86910	8.73	1.55			
Christian.....	8	50.5	343	.....	37	82	362	1879.5	1.02	2.03	3813.75	3.65	910	61.73	6981.63	49130	7.67	1.42			
Clark.....	5	13.5	71	.....	37	6.5	28.5	392.5	1.04	2.07	844.30	3.65	92	9.29	823.59	4970	8.95	1.70			
Clay.....	1	18	.....	.....	7	.....	35	114	1.91	1.82	207.50	1	27	2.72	210.22	666	7.78	3.15	
Coles.....	4	14.5	.....	.....	6	42	12	82	1.00	1.50	123.00	2.00	30	1.95	184.95	900	6.16	2.05		
Cook.....	3	33	21	.....	8	10	138	331.5	1.00	2.00	664.00	4.85	140	9.10	1353.10	7750	9.66	1.74			
Crawford.....	3	.....	18	.....	8	35	65	161	1.25	2.50	402.50	5.00	65	4.22	731.72	3000	11.25	2.10		
Cumberland.....	3	.....	18	.....	8	38	80	177	1.79	1.79	318.00	3.00	49	3.77	441.77	2825	9.01	1.56		
DeKalb.....	4	15	24	.....	6	18	121.10	442.10	1.17	2.34	4076.25	3.64	117	11.43	837.73	5958	7.16	1.40			
DeWitt.....	12	21	108.5	.....	4.5	73.25	523	741.11	1.17	1.82	1897.00	4.18	485	33.33	3784.33	27975	7.80	1.33			
Douglas.....	6	19.3	175	.....	27.5	34.5	40	957	1.16	2.32	570.50	4.78	395	28.94	3559.34	22873	8.99	1.55			
DuPage.....	8	13	187	.....	27.5	30	21	946	1.09	1.98	1873.00	4.18	485	33.33	3784.33	27975	7.80	1.33			
DuPage.....	2	10	43	.....	10	88	75	245	1.84	1.68	786.08	4.20	155	14.30	1069.60	7950	7.04	1.34			
Edgar.....	6	7.3	102	.....	17.5	110	180	404	1.00	2.00	86.00	2.00	14	0.91	168.91	280	6.84	1.13			
Edwards.....	2	.....	14	.....	8	.....	10	40	1.00	2.00	86.00	2.00	14	0.91	168.91	280	6.84	1.13	
Effayette.....	2	.....	13	.....	3	13	19	54	1.00	2.00	108.00	2.00	28	1.96	147.96	880	5.28	1.68		
Ford.....	6	20	228	.....	47	50	4	1097	1.14	2.29	2510.86	4.83	574	32.36	4807.57	24333	9.35	1.97			
Franklin.....	1	1	5	.....	2	.....	8	28	1.00	1.50	42.00	2.00	10	0.65	62.65	400	6.26	1.56		
Fulton.....	4	12	32.5	.....	5.5	17	109	254.5	1.20	2.40	1050.00	5.00	188	14.40	1820.40	10000	9.73	1.82			
Greene.....	5	8	110	.....	26	118	246	501	1.06	1.06	1347.50	4.39	315	20.47	2751.12	15700	8.73	1.75			
Grundy.....	3	6.5	33	.....	2	20	253	415	1.03	2.06	1825.30	4.00	591	25.11	3444.70	25900	8.73	1.49			
Hancock.....	8	20.5	127	.....	8.5	11.5	2	684	1.07	2.14	1495.44	3.92	290	18.84	2622.78	15000	9.04	1.67			
Henderson.....	2	7	12	.....	8	.....	80	241	1.85	1.70	408.25	4.66	120	7.86	970.05	7400	8.13	1.32		
Henry.....	6	12	33	.....	7	39.5	163.5	795	1.12	2.23	1774.00	4.03	406	30.27	3965.77	26450	8.73	1.16			
Iroquois.....	8	15	209.5	.....	57	40	4	1042	1.14	2.28	2375.64	3.94	488	34.06	4903.29	23355	8.32	1.73			
Jasper.....	4	.....	10	.....	4	37	222.5	795	1.82	1.65	315.52	7.01	69	5.02	414.08	2400	6.00	1.72		
Jersey.....	4	19	37	.....	6	24	15	101	1.07	2.14	1135.56	2.66	240	15.59	2111.15	11075	8.79	1.76			
Jo Davess.....	3	2	94	.....	3	8.75	136	190.12	1.10	2.24	471.00	4.66	82	5.33	695.83	4440	9.16	1.69			
Johnson.....	1	7	21	.....	10	7	.....	110	0.75	1.50	165.00	4.50	60	3.90	438.90	2400	7.31	1.82		
Kane.....	3	4.5	79	.....	22	3	13.5	110	1.15	2.30	1057.00	4.26	202	13.13	1925.13	10810	9.59	1.83			
Kankakee.....	6	2.5	114	.....	33	40	.....	689	1.01	2.62	1390.50	4.43	269	20.72	2670.59	15450	9.72	1.73		
Kendall.....	2	4	12	.....	10	.....	18	50	1.00	2.25	213.75	4.43	40	2.60	2756.17	2500	10.81	1.72		
Knox.....	4	4	16	.....	18.5	.....	114	426	1.85	1.91	814.86	4.34	214	13.91	1758.17	12020	8.21	1.46		

County	6	1-75	124	20-75	43-5	5	21-5	144	295	655	1-25	2-51	1674-30	4-12 ⁹	286	20-47	2713-27	16264	9-48	166
LaSalle.....	1	1	13		6	5	3	12.5	18	53	.75	1.30	79.30	3 00	20	1-30	140.80	16264	9-48	166
Lawrence.....	6	5	104	17.5	33	1	21.5	150	225	503	1.19	2.38	1341.00	4 91	243	15-77	140.80	9000	7-04	204
Lee.....	6	18.5	266	52	54.5	15	47	312	1359	359	1.22	2.45	3330.00	4 73	653	44-06	2551.77	12500	10.50	173
Livingston.....	9	23	125	5.5	29	7	23.25	188	304	704	1.06	2.13	3300.32	5 00	311	22.86	2778.12	15984	8.93	173
Logan.....	6	17	103	29.5	34	7	22.5	147	233	592	.99	1.98	1172.30	4 101	267	19.28	2288.58	15217	8.57	150
McDonough.....	2	1	52	2	26	2	13	207	107	287	2.00	2.00	574.00	3 66	100	6.82	965.82	6370	9.19	151
McHenry.....	7	7.5	171	36.5	28.25	2.5	26.5	228	367	867	1.10	2.20	1915.25	5 00	336	28.38	2653.63	19396	8.79	152
McLean.....	4	34	206	43	33	16	39.5	247	560	1178	1.18	2.36	2788.04	4 501	568	41.27	4786.81	11831	8.42	150
Macon.....	1	6	28	8	6	8	60	60	100	222	1.00	2.25	499.50	4 00	100	6.50	906.00	7300	9.06	124
Macoupin.....	2	1	25	2	4.5	1.5	7	34	35	110	1.16	2.33	257.25	4 00	37	2.40	407.65	1580	11.01	258
Madison.....	1	.....	.....	.....	4	.....	3	10	18	48	1.00	2.00	96.00	1 30	30	1.95	97.95	900	4 80	163
Marion.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Marshall.....	2	21.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mercer.....	5	29.5	146	13	42	.....	30.5	220	360	841	1.13	2.26	670.00	4 00	105	8-77	98.77	5400	8 75	151
Montgomery.....	2	2	54	8	6	3	5	46	50	141	.84	1.69	238.50	3 001	40	3-90	302.40	1000	7 50	287
Morgan.....	2	2	28	8	6	5	12	61	140	288	1.25	2.50	720.00	4 24	180	11-70	1494.90	11760	8 30	125
Moultrie.....	1	5	40	3	9	10	5	100	90	262	1.00	2.00	524.00	1 1	100	6 50	530.50	6500	7 95	122
Ogle.....	3	5	84	16	25	.....	15	104	185	434	.96	1.93	839.40	4 23	200	13 00	1698.90	10500	8 49	161
Peoria.....	1	1	19	.....	4	.....	4	30	40	98	.85	1.91	187.18	4 34	37	2 40	350.16	1380	9 46	254
Piatt.....	2	4	117	.....	32	6	17	202	210	598	1.00	2.00	1106.00	4 50	230	14 05	2245.95	10300	9 76	218
Pike.....	1	6	28	5	7	.....	5	48	70	169	1.00	1.50	253.50	4 00	70	4 55	336.03	4550	7 68	118
Pulaski.....	1	2	25	2	10	.....	5	3.5	28	107	.80	2.18	24.00	4 00	45	2 92	366.92	1445	6 82	268
Putnam.....	2	8.5	34	14.5	11	1.5	7.25	53	91	220	1.09	2.18	481.52	4 00	90	6 23	871.75	5115	9 68	170
Randolph.....	4	.....	.....	.....	7	.....	6	44	31	113	1.00	2.00	226.00	2 50	47	3 06	346.50	1300	7 37	254
Sangamon.....	4	11	111	.....	21.5	17.5	15.5	100	190	466	.83	1.67	781.00	4 24	203	13 18	1054.70	10245	8 15	101
Schuyler.....	2	28	79.5	4	37.5	10	35	82	189	465	.98	1.96	911.50	4 90	229	14 88	2048.88	9300	8 94	220
Shelby.....	2	2	31	8	2.5	3	4	21	58	129	1.00	2.50	322.50	3 65	69	4 48	578.83	3100	8 38	186
St. Clair.....	1	.....	.....	.....	3	.....	1	5	10	26	1.25	2.50	65.00	2 50	15	.97	103.47	350	7 80	295
Stephenson.....	2	3	45	10	13	.....	10	51	75	207	1.00	2.00	414.00	3 33	105	6 82	770.82	5050	6 34	152
Tazewell.....	1	1	8	.....	3	2	2.5	18	40	74	1.25	2.50	185.00	5 00	60	2 60	387.60	2400	0 60	161
Vermilion.....	3	2.5	24	.....	5	3	5.5	34	70	144	1.00	2.00	296.00	5 00	60	3 80	593.80	3500	8 80	169
Wabash.....	1	8.7	18	.....	3.5	.....	1.5	13	24	60	1.00	2.00	126.00	1 1	24	1 56	121.50	1100	10 96	221
Warren.....	1	.....	.....	.....	202	.....	100	720	920	2411 ¹³	1.25	2.33	4843.25	5 00	1070	69 55	10262.82	70000	9 59	146
Whiteside.....	2	4.5	34	5	14	.....	7.5	57	85	207	1.16	2.33	462.25	4 00	90	5 85	848.22	4500	9 42	188
Will.....	2	.....	.....	.....	7.5	.....	7	55	104	221	1.00	1.40	309.40	4 00	107	6 95	744.35	5200	6 95	143
Winnebago.....	2	4	48	3	13	8	11	56	90	233	1.11	2.22	519.50	2 83	120	7 80	867.30	4900	7 22	177
Woodford.....	2	4	41	8	18	4	13	54	126	268	1.00	2.00	536.00	5 00	127	8 25	1179.25	7300	9 20	147
Totals and averages.....	274	723	6,724	969	1,868	409	1,444	9,096	15,551	37,077	1.06	2.13	79,428.91	17	16,603	1,147,58	144,909.79	896,235	8.72	161

1. Rent 1/3 of crop in one reply. 2. Rent 1/2 of crop in one reply. 3. Rent 2/3 of crop in two replies. 4. Rent 2/3 and 1/3 of crop. 5. Rent 2/3 of crop in one reply. 6. Rent 2/3 of crop in four replies. 7. Rent 2/3 and 1/3 of crop in two replies. 8. Rent 1/2 of crop. 9. Rent 1/2 and 1/2 of crop in two replies. 10. Fourteen days' labor of man alone to be added to this. 11. Two hundred and seven days' labor of man alone to be added to this. 12. Forty-five days' labor of man alone to be added to this. 13. Seventeen days' labor of man alone to be added to this. 14. Including \$14.00 for labor of man alone. 15. Including \$28.75 for labor of man alone. 16. Including \$45.00 for labor of man alone. 17. Average rent cannot be accurately given because in many cases it is a fractional part of the crop; see page 65 for an estimate.

TABLE 2. COST OF PRODUCTION

County.	Number of acres.	Days' labor of man and team spent in								Total through hauling and threshing.		Rate of wages, dols.			
		Breaking stalks.	Plowing.	Disking.	Harrowing.	Rolling.	Sowing.	Cutting and shocking.		Hauling and threshing.		Man.	Man and team.		
								Man.	Man and team.	Man.	Man and team.				
Adams	3	2.75	7	16	7	....	4.5	6.2	7.1	11.3	12.6	17.4	53.0	1.16	2.68
Bond	4	.....	8	.....	4.5	.....	.5	4	2	7	7	11	23	1.00	1.50
Boone	1	.....	18	.....	8	.....	5 ⁹	7	6.5	26	10	37	51	1.38	2.87
Bureau	.....	.....	.....	24.5	23.5	.....	5	17	11.3	15	12	32	76.3	1.00	2.00
Carroll	4	4	6	15.5	8	.....	9	17	13.5	40.7	36.7	57.7	92.8	1.08	2.16
Cass	.....	5	2	.....	5	.....	.2	1.3	.....	2	1.5	3	6	1.00	2.00
Champaign	12	18	24	50	40	5	21.5	84.3	60.5	110.1	135.6	203.9	340.5	1.05	2.22
Christian	4	5.5	25	10	13	3	3.5	15.1	9.6	38.8	20.2	53.8	92.8	.84	1.93
Clark	4	3	8	.....	4	1	1	10	2	1.5	1	5	4.5	1.9	2.00
Clay	1	.....	.....	.....	2	.....	.....	1.4	1.4	11.3	12.6	2.8	17	1.00	2.00
Clinton	1	3	7	2	3	.....	3	4.9	4.8	7.6	8.4	12.4	31.2	1.00	1.50
Coles	2	5	13	.....	5.5	2.5	3	12	5.8	11	12.5	23	47.3	1.00	2.36
Cook	1	.....	12	6	4	.....	4	2.1	2.1	12	6	16.8	30.7	1.00	2.00
Crawford	2	6	12	3	3	.....	1.5 ¹³	7.6	7.6	11.3	12.6	22.5	45.7	1.00	2.00
Cumberland	1	.....	20	4	5	1	9	8	6	9	9	9	63	1.00	2.00
DeKalb	6	4	42	32	25	.....	22	62	34	133.3	85.5	105.3	27.0	1.12	2.32
DeWitt	6	5	3	35	17	3.5	11.5	26	28	46.9	51	73.7	148.5	.95	1.94
Douglas	3	4.5	15	13	9.25	2	8	16.6	14.3	30.1	35.9	46.7	102	1.00	2.16
DuPage	2	2	10	.....	3	.....	2	7	6.9	14.6	16.4	21.5	34.8	1.10	2.12
Edgar	2	5.5	7	.....	6	.....	1.25	5	3	10.5	11.5	15.5	34.3	1.00	1.50
Fayette	1	.....	10	.....	4	.....	1	2.8	2.8	7.6	8.4	10.3	26.2	1.00	2.00
Ford	5	1	.....	26	22	.....	11.5	40.1	28.4	47.1	52.9	85.1	143.7	1.04	2.46
Franklin	1	2	10	.....	4	.....	2	2.8	2.8	7.6	8.4	10.3	29.2	1.00	1.50
Fulton	2	6.5	.....	8	10	.....	4.3	15.5	10	35	26	50.5	64.8	1.00	1.96
Greene	1	1	8	.....	1	.....	1.5	2.1	2.1	2	2.5	4.1	16.1	1.50	2.25
Grundy	2	3	.....	20	7.5	4	10	22	12	26	30	48	86.5	1.12	1.64
Hancock	4	9	26	2	12	.....	5.5	15.1	9.1	44.2	33.3	59.2	94.9	1.07	2.07
Henderson	2	1	.....	4	6	.....	2	3	4.5	8	8	11	25.5	.75	1.65
Henry	3	6.5	14	.....	12	.....	4	17.5	9.8	22	32	39.5	83.3	1.25	2.32
Iroquois	6	6.5	24	30.5	22.5	.....	14.5	35.1	27	49.2	74.3	84.3	199.3	1.10	2.43
Jasper	3	2	12	.....	4.75	4	4	6.1	4.1	7.9	10	14	40.9	.84	1.63
Jersey	2	1	13.75	.....	5.5	2.5	4.3	4.5	3.8	8.5	9	13	38.8	1.25	1.26
Jo Daviess	3	.....	7	6.5	9.5	3.5	6.5	14.5	7.5	13.2	14.7	27.7	53.2	1.00	2.17
Johnson	1	2	5	3	2.5	.....	1.5	2.1	2.1	7.6	8.4	9.6	24.5	.75	1.50
Kane	3	3.5	15	23	19	2	5.5	14.7	9.5	27	32	41.7	109.5	1.13	2.28
Kankakee	4	4.5	.....	29	19	.....	10.5	31.3	18.7	47.8	49.9	79.1	131.6	1.11	2.27
Kendall	2	2	17	9	6	.....	3.5	10.5	5.5	18	13	28.5	56	1.00	2.15
Knox	4	2	.....	13	7	.....	4.3 ¹⁴	20	13.9	27.3	27.6	52.3	67.8	1.08	2.05
La Salle	6	.....	.....	25.25	29	.....	17	29.2	23.1	52.3	53.6	81.5	149.5	1.18	2.45
Lee	4	3	22	10	17	1	9.5	28.8	17.3	33.8	33.8	62.5	113.5	1.16	2.51
Livingston	5	.....	3.5	34.5	22	.....	11	36.5	25	52.6	56.4	89.1	150.4	1.34	2.61
Logan	2	2.5	15.5	.....	6	1	2.5	7.1	5.6	13.8	14.2	20.9	47.3	.92	1.93
McDonough	3	3.5	4	6.5	10	1	4	17	8.5	23	22	40	59.5	.93	1.86
McHenry	2	.....	15	6	8	2	5	10	5	8	9	18	50.5	1.00	2.00
McLean	3	2.5	1	11.5	8.5	.....	4.5	17.5	10.4	43.8	40.1	61.3	78.5	1.20	2.30
Macon	2	.....	.....	10	5	.....	3.5	8	6	14	13	22	37.5	1.17	2.34
Macoupin	1	1	6	2	3	1	1	1.5	1.5	3.5	1.5	5	17	1.00	2.25
Marshall	2	2	.....	17.5	6.5	.....	2.5	15	8	3	35	18	71.5	1.16	2.39
Mercer	3	7.5	13	3.5	11	2	3.5	16.2	10.1	21.6	21.4	37.7	74.3	1.07	2.16
Montgomery	1	.....	12	.....	4	3	2	.....	.....	.....	.....	.....	21	1.00	1.50
Morgan	2	1	11	.....	5.5	.....	4	11	8.8	15.1	19.1	26.1	49.4	1.25	2.50
Moultrie	1	1	5	.....	1	1	1	3	1.5	4	2	7	12.5	1.00	2.00
Ogle	2	.....	15	12	12	.....	5.5	14	14	20	16	34	74.5	1.00	2.00
Piatt	2	5	9	.....	7	3	4.5	18	13.5	25	46	43	88	1.00	2.00
Putnam	2	.....	8	2	8	.....	4	9	4.5	9	13	18	40	1.07	2.16
Randolph	1	1	21	.....	7	4	3.5	5	5	6	9	11	50.5	1.00	2.00
Sangamon	3	6	4	9.5	9.5	.....	3	14	14	18	21	32	67	.93	1.63
Shelby	1	.....	.....	3	1.5	.....	5	1	2.8	7.6	8.3	10.3	17.1	1.00	2.50
St. Clair	1	.....	7	.....	3	.....	2	4	2	5	2.5	9	16.5	1.25	2.50
Stephenson	2	3	23	.....	12	3	5.5	9	8	30	27	39	81.5	1.00	2.00
Tazewell	1	1	6	.....	2	.....	2	3	3	8	8	11	22	1.25	2.50
Vermilion	2	.....	5	2	3	1	1.5	6	2	7.5	8	13.5	22.5	1.14	2.00
Wabash	1	1	.....	3	1.5	.....	.....	2	3.6	.....	.....	.....	9.6	1.00	3.00
Warren	1	.....	.....	.....	.....	.....	85 ⁷	40	60	67	60	107	205	1.50	2.50
Whiteside	1	75	.....	2.5	2	.....	1	4	2	6	10	14.3	1.00	2.25	
Will	2	.....	4	12	1.5	.....	4	14	7	19	16.3	33	44.8	1.00	1.62
Winnebago	1	.....	.....	12	2	3	4	6	3	9	18	15	42	1.00	2.00
Woodford	2	1	4	6	2	1	2.5	6.1	6.1	10.8	11.2	16.9	33.8	1.00	2.00
Totals and Averages.	170	165.8	623.8	583.8	576	47.5	403.8 ¹⁸	924.2	675.9	1500.2	1526.9	2438.5	4615.3	1.09	2.18

1. Rent $\frac{1}{2}$ of crop. 2. Rent $\frac{2}{3}$ of crop. 3. Rent $\frac{3}{4}$ and $\frac{1}{2}$ of crop. 4. Rent $\frac{1}{2}$ of crop. 5. \$52.00. 6. \$24.00. 7. Includes labor from breaking stalks to sowing. 8. The average rent per acre cannot be given, since many replies gave rent as fractional part of crop. 9. Besides 4 days' labor of man alone. 10. Besides

OF OATS IN ILLINOIS IN 1896.

County.	Number of replies.	Cost of labor, dolls.			Rent of land per acre, dolls.	Number of acres.	Total cost of seed.	Cost of twine, dolls.	Cost of crop through hauling and threshing, dolls.	Number of bushels.	Cost of crop through hauling and threshing, dolls.	
		Man.	Man and team.	Total.							Per acre.	Per bu.
Adams.....	3	20.31	142.11	162.42	4.50	54	27.21	7.90	440.53	1405	8.15	.313
Bond.....	1	11.00	34.50	45.50		27	13.60	2.75	61.85	300	3.44	.309
Boone.....	2	51.25	146.50	197.75	4.27	55	27.72	11.50	471.97	3100	8.58	.152
Bureau.....	2	32.00	152.50	184.50	3.33	100	50.40	19.00	586.90	6050	5.86	.097
Carroll.....	4	62.40	200.84	263.24	4.32	127	64.00	14.75	890.79	5250	7.01	.169
Cass.....	2	3.25	12.00	15.25		10	5.04	2.00	22.29	480	3.71	.077
Champaign.....	12	214.63	758.72	953.35	4.36	577	315.99	116.05	3903.79	21550	6.76	.181
Christian.....	4	45.33	179.02	224.35	3.00	94	50.40	16.00	545.75	2260	5.80	.241
Clark.....	2	4.54	38.06	42.60		11	8.06	3.00	53.66	240	4.87	.222
Clay.....	1	2.77	33.92	36.69		8	4.03	1.20	41.92	148	5.24	.283
Clinton.....	1	12.41	48.81	61.22	2.00	40	20.16	4.00	165.38	800	4.13	.206
Coles.....	2	23.00	111.87	134.87	5.00	45	25.20	13.40	398.47	1696	8.85	.235
Cook.....	1	16.83	60.14	76.97	5.00	23	11.59	6.75	210.30	950	9.14	.221
Crawford.....	2	22.46	91.32	113.78		20	20.16	5.25	139.19	619	6.95	.224
Cumberland.....	1	17.00	126.00	143.00		30	23.76	6.00	172.76	400	5.75	.431
DeKalb.....	6	219.81	625.50	845.31	3.43	309	155.73	76.50	2138.16	14200	6.96	.150
DeWitt.....	6	70.57	289.52	360.09	3.73	227	123.48	43.55	1255.32	7880	5.53	.156
Douglas.....	3	46.69	221.10	267.79	5.00	105	65.32	22.10	755.41	3550	7.19	.212
DuPage.....	2	23.73	73.98	97.71	3.28	35	17.64	7.10	237.45	1100	6.78	.215
Edgar.....	2	15.50	51.37	66.87		18	15.12	4.40	86.39	660	4.79	.130
Fayette.....	1	10.33	52.30	62.63		14	10.68	2.80	75.50	200	5.39	.377
Ford.....	5	88.61	354.27	442.88	4.72	274	150.19	60.00	1588.07	10753	5.79	.147
Franklin.....	1	10.33	43.72	54.05	2.00	20	10.08	2.50	106.63	600	5.33	.177
Fulton.....	2	50.50	127.43	177.93	5.00	66	36.28	15.55	529.70	3466	8.02	.152
Greene.....	1	6.12	36.13	42.25	2.25	20	10.08	1.20	98.53	800	4.92	.123
Grundy.....	2	54.00	142.55	196.55	4.00	167	84.16	30.00	978.71	4850	5.86	.201
Hancock.....	4	63.55	196.62	260.17	3.64	95	47.88	17.25	671.70	3180	7.07	.211
Henderson.....	2	8.25	42.12	50.37	4.83	60	30.24	14.00	384.61	1900	7.41	.234
Henry.....	3	49.37	193.87	243.24	4.62	158	79.63	36.50	1089.37	6065	6.89	.179
Iroquois.....	6	93.19	484.36	577.55	3.93	275	147.16	53.98	1742.34	11231	6.33	.155
Jasper.....	3	11.72	66.70	78.42	1.70	34	19.64	4.55	143.61	416	4.22	.345
Jersey.....	2	16.25	84.07	100.32	3.52	38	19.15	5.00	258.47	910	6.80	.284
Jo Daviess.....	3	27.70	120.78	148.48	2.75	61	30.28	12.85	359.71	2355	5.90	.148
Johnson.....	1	7.22	36.67	43.67	4.50	15	7.56	1.60	113.33	300	7.62	.377
Kane.....	3	47.17	249.75	296.92	4.18	186	93.74	42.40	1212.06	7070	6.51	.171
Kankakee.....	4	87.85	298.92	386.77	4.42	165	98.85	37.25	1115.87	6060	6.76	.184
Kendall.....	2	28.50	120.87	149.37	5.00	35	27.72	12.00	264.09	1000	7.54	.264
Knox.....	4	56.82	139.28	196.10	4.39	129	65.01	28.50	855.96	4830	6.63	.173
La Salle.....	6	96.46	307.07	403.53	3.66	236	28.50	45.32	1398.73	8887	5.92	.157
Lee.....	4	73.15	262.77	335.92	4.83	113	56.95	25.75	965.12	4920	8.54	.196
Livingston.....	5	119.97	393.64	513.61	5.00	259	138.09	55.65	1847.35	13032	7.21	.141
Logan.....	2	19.35	91.37	110.72	5.00	57	32.76	9.90	378.38	1800	6.63	.263
McDonough.....	3	37.25	110.75	148.00	4.20	100	50.40	19.50	637.90	4300	6.37	.148
McHenry.....	2	18.00	101.00	119.00	3.50	50	25.20	9.50	355.10	2200	7.11	.161
McLean.....	3	73.60	181.04	254.64	5.00	119	59.97	19.25	928.86	4877	7.80	.190
Macon.....	2	25.75	87.75	113.50	4.50	95	47.88	15.50	604.38	2110	6.36	.286
Macoupin.....	1	5.00	38.25	43.25	4.00	20	10.08	5.00	138.33	800	6.91	.172
Marshall.....	2	21.00	171.50	192.50	4.50	77	42.84	14.50	542.34	3620	7.04	.149
Mercer.....	3	40.47	160.63	201.30	4.57	112	56.44	21.80	701.54	3890	7.06	.203
Montgomery.....	1		31.50	31.50		52	26.20	5.00	138.70	700	3.96	.297
Morgan.....	2	32.62	123.45	156.07	4.24	100	51.20	21.00	652.27	3700	6.52	.176
Moultrie.....	1	7.00	25.00	32.00		17	8.56	3.50	44.06	120	4.00	.550
Ogle.....	2	34.00	149.00	183.00	3.00	96	48.38	14.20	499.58	3690	5.20	.135
Piatt.....	2	43.00	176.00	219.00	4.50	110	55.44	12.25	781.69	3863	7.10	.202
Putnam.....	2	19.37	88.87	108.24	4.00	70	35.28	10.25	431.77	2205	6.16	.195
Randolph.....	1	11.00	101.00	112.00	2.50	45	22.68	8.00	255.18	1150	5.67	.222
Sangamon.....	3	30.00	109.62	139.62	4.60	85	42.94	17.00	590.56	2176	6.94	.271
Shelby.....	1	10.33	42.62	52.95	3.65	18	9.07	4.20	131.92	500	7.32	.263
St. Clair.....	1	11.25	41.25	52.50	2.50	15	7.56	3.00	100.56	350	6.70	.285
Stephenson.....	2	39.00	163.00	202.00	2.90	80	40.32	22.00	496.82	3116	6.21	.159
Tazewell.....	1	13.75	55.00	68.75	5.00	40	20.16	4.00	292.91	1200	7.32	.244
Vermilion.....	2	15.37	45.00	60.37	5.00	29	14.61	4.50	224.48	1042	7.74	.215
Wabash.....	1	2.00	28.80	30.80		12	6.04	2.00	62.84	480	7.85	.196
Warren.....	1	160.50	512.50	673.00	5.00	260	131.04	35.00	2139.04	7000	8.22	.300
Whiteside.....	1	10.00	32.06	42.06	4.00	15	7.50	3.00	112.62	500	7.50	.225
Will.....	2	33.00	72.85	105.85	4.00	87	43.80	15.00	512.65	3120	5.89	.164
Winnebago.....	1	18.00	84.00	102.00	2.00	38	19.15	7.00	204.15	1250	5.37	.163
Woodford.....	2	16.85	67.50	84.35	5.00	45	22.68	10.00	342.03	2850	7.60	.120
Totals and Averages.....	170	2670.00	10102.98	12772.98		6176	3274.32	1213.70	40770.10	228132	6.59	.178

1 1/4 days' labor of man alone. 11. One day's labor of man alone. 12. 3/4 days' labor of man alone. 13. Besides 3 1/2 days' labor of man alone. 14. Besides 3 days' labor of man alone. 15. Besides 1 1/4 days of man alone.

TABLE 3.—PRESENTATION OF DATA BY GROUPS OF COUNTIES.—CORN.

Groups of counties.*	Days' labor spent by man and team in										Total days' labor, including husking.	Rate of wages, dollars.		Total cost of labor through husking.	Number of acres.	Cost of seed, dollars	Cost of crop through husking, dollars.	Number of bushels.	Cost per acre through husking.	Cost per bushel through husking.
	Breaking stalks.	Plowing.	Disking.	Harrowing.	Rolling.	Planting.	Cultivating.	Husking.	Man.	Man and team.										
Northern.....	106	269.8	2789.5	506.8	907.8	73	622	4192	6,757	16,499.5	.....	36,479.44	7,550	506.05	68,109.21	418,344	9.02	.162	
Central.....	141	438.3	3593.5	438.5	869.8	32	741	4599	8,349	19,272.5	2.04	40,306.99	8,515	603.85	73,027.88	458,239	8.57	.159		
Southern.....	27	15	341	24	91	12.8	80.8	395.5	445	1,404.5	.91	2,552.58	538	37.68	3,772.70	19,652	7.01	.191		

PRESENTATION OF DATA BY GROUPS OF COUNTIES.—OATS.

Groups of counties.	Number of replies.	Days' labor of man and team spent in										Cutting and shocking.		Hauling and threshing.		Total through hauling and threshing.	
		Breaking stalks.	Plowing.	Disking.	Harrowing.	Rolling.	Sowing.	Man.	Man and team.	Man.	Man and team.	Man.	Man and team.	Man.	Man and team.		
Northern.....	81	59	272.5	364.3	313	21.5	259.3	518.3	375.7	821.9	822.6	1350	2487.8				
Central.....	75	89.8	259.3	208.3	233.8	28	125	363.3	262.1	599.6	617.1	992.0	1815.4				
Southern.....	14	17	92	11	39.3	.8	19.5	42.6	38	78.7	87.3	125.8	312				

OATS, CONTINUED.

Groups of counties.	Number of replies.	Rate of wages, dollars.		Cost of labor, dollars.		Rent per acre, dollars.	Number of acres.	Total cost of seed, dollars.	Cost of twine, dollars.	Cost of crop through hauling and threshing.	Number of bushels.	Cost of crop through hauling and threshing.	
		Man.	Man and team.	Man.	Man and team.							Per acre.	Per bu.
Northern.....	81	1.15	2.28	1,558.64	5,678.35	7,236.99	3420	1780.10	692.05	23,181.54	136,291	6.77	1.70
Central.....	75	1.03	2.11	998.87	3,645.64	4,844.51	2506	1352.63	484.00	16,279.34	86,478	6.49	1.88
Southern.....	14	.89	1.85	112.49	578.99	691.48	250	141.59	37.65	1,249.22	5,363	4.99	2.32

* See page 66.

TABLE 4. COST OF SEED FOR CORN AND OATS IN ILLINOIS IN 1896.

Corn.					Oats.						
Counties.	Acres planted.	Cost of seed, dolls.	Counties.	Acres planted.	Cost of seed, dolls.	Counties.	Acres planted.	Cost of seed, dolls.	Counties.	Acres planted.	Cost of seed, dolls.
Boone ...	30	4.00	Henry ...	75	8.25	Boone ...	30	18.00	Henry ...	25	15.62
Bureau ...	70	10.00	Iroquois ...	37	1.00	Bureau ...	30	15.00	Iroquois ...	25	9.37
Carroll ...	30	3.60		43	3.50	Carroll ...	22	11.00		45	23.55
	55	17.00	Kane	170	10.00		25	12.00	Kane	160	60.00
Champaign ..	80	3.00	Kankakee	60	9.00	Champaign ..	33	20.00	Kankakee	40	22.80
	90	4.20		70	10.50		90	38.25		60	36.00
	70	3.00	La Salle .	37	5.00		52	28.00	La Salle .	37	19.38
	80	2.88		60	2.70		80	24.00		53	25.00
	100	8.00		110	12.00		50	30.00		78	39.60
	40	3.00	Lee	22	1.50		40	24.00	Lee ...	40	16.00
Christian	95	3.25	Livingston ..	110	6.00	Christian	80	40.00	Livingston ..	55	27.00
	140	7.20		70	2.50		40	18.00		50	30.00
Clark	40	1.25	Logan ...	100	4.20	Clark	6	3.60	Logan ...	20	10.00
Coles	70	2.50		65	2.00	Coles	20	9.00		45	30.00
	50	2.10	Macon ...	120	9.00		25	15.00	Macon ...	65	36.00
Cumberland ..	65	3.15	Macoupin	100	3.50	Cumberland ..	47	30.00	Macoupin	20	10.00
DeKalb ..	80	9.00	McDonough..	75	11.00	DeKalb ..	45	24.30	McDonough..	40	15.00
	50	1.40	McLean ...	30	1.60		34	15.00	McLean ...	10	8.75
	20	3.00		102	4.00		30	18.00		84	50.00
DeWitt ...	105	3.00	Mercer ...	55	3.00	DeWitt ...	60	22.50	Mercer ...	32	18.00
Douglas ..	100	2.80	Moultrie.	100	4.00	Douglas ..	50	20.00	Moultrie.	17	9.00
Edgar ...	38	3.80	Ogle	50	1.50	Edgar ...	20	11.00	Ogle	50	20.00
	40	1.20		40	6.87		10	8.40		46	13.00
Ford	100	4.00	Piatt	60	3.20	Ford	70	30.00	Piatt	30	14.00
Fulton ...	100	7.00		170	5.28	Fulton ...	60	22.50		80	40.00
Greene ...	120	3.40	Randolph	35	2.25	Greene ...	.....		Randolph	45	22.50
Grundy ...	165	11.00	Sangamon...	33	6.27	Grundy ...	105	80.00	Sangamon...	35	15.75
Hancock .	60	2.25		80	6.00	Hancock .	30	13.50		20	9.00
	45	3.50	Stevenson ...	40	2.00		25	18.75	Stevenson ..	50	32.00
Henderson ..	80	6.00	Tazewell.	40	2.10	Henderson ..	20	20.00	Tazewell.	40	12.00
Totals			4367		287.20	Totals			2636		1329.12
Average price per bu.....			45½ c.			Average price per bu.....			20 c.		
Average cost of seed, per acre....			6½ c.			Average cost of seed, per acre....			50½ c.		

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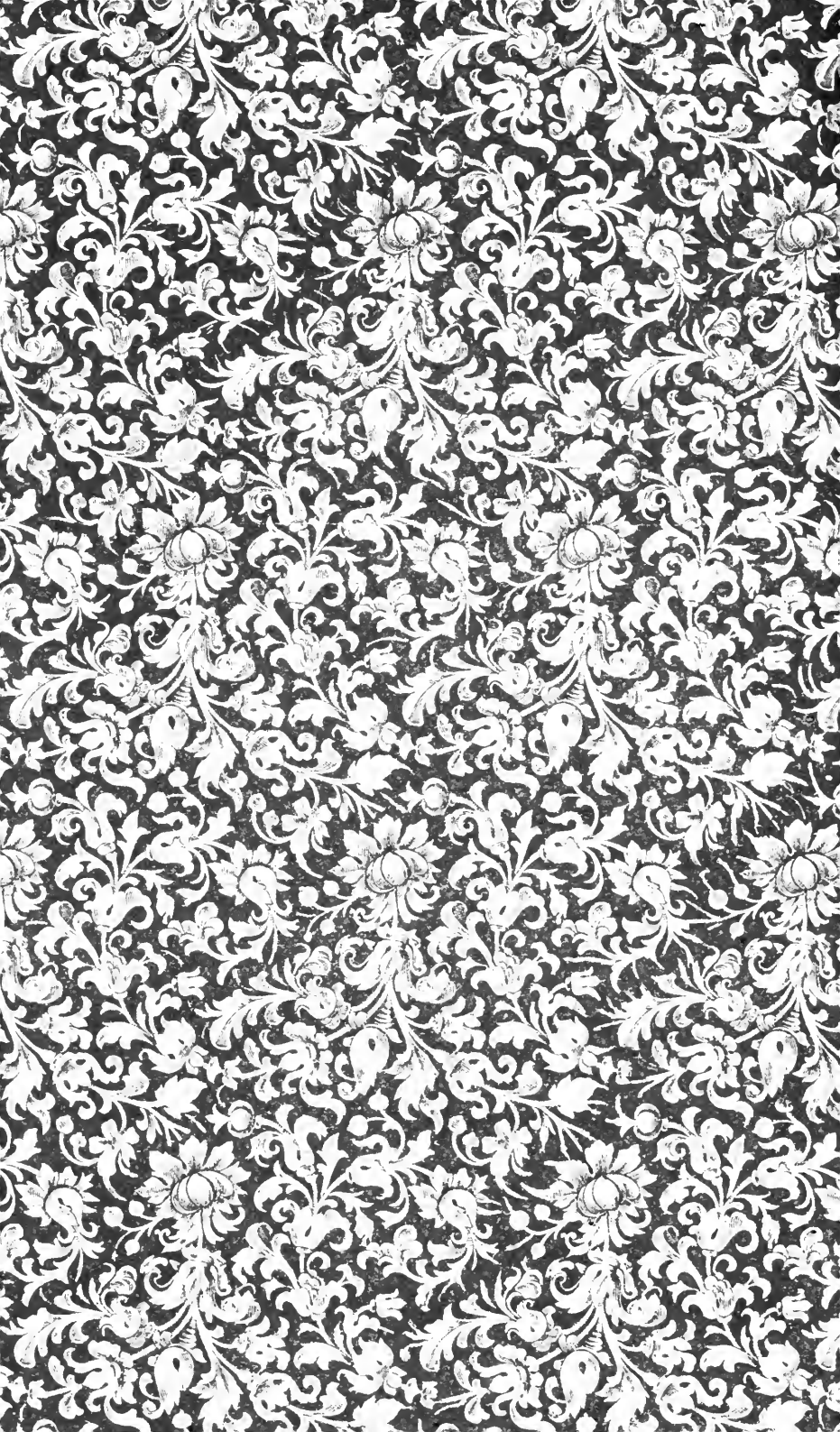
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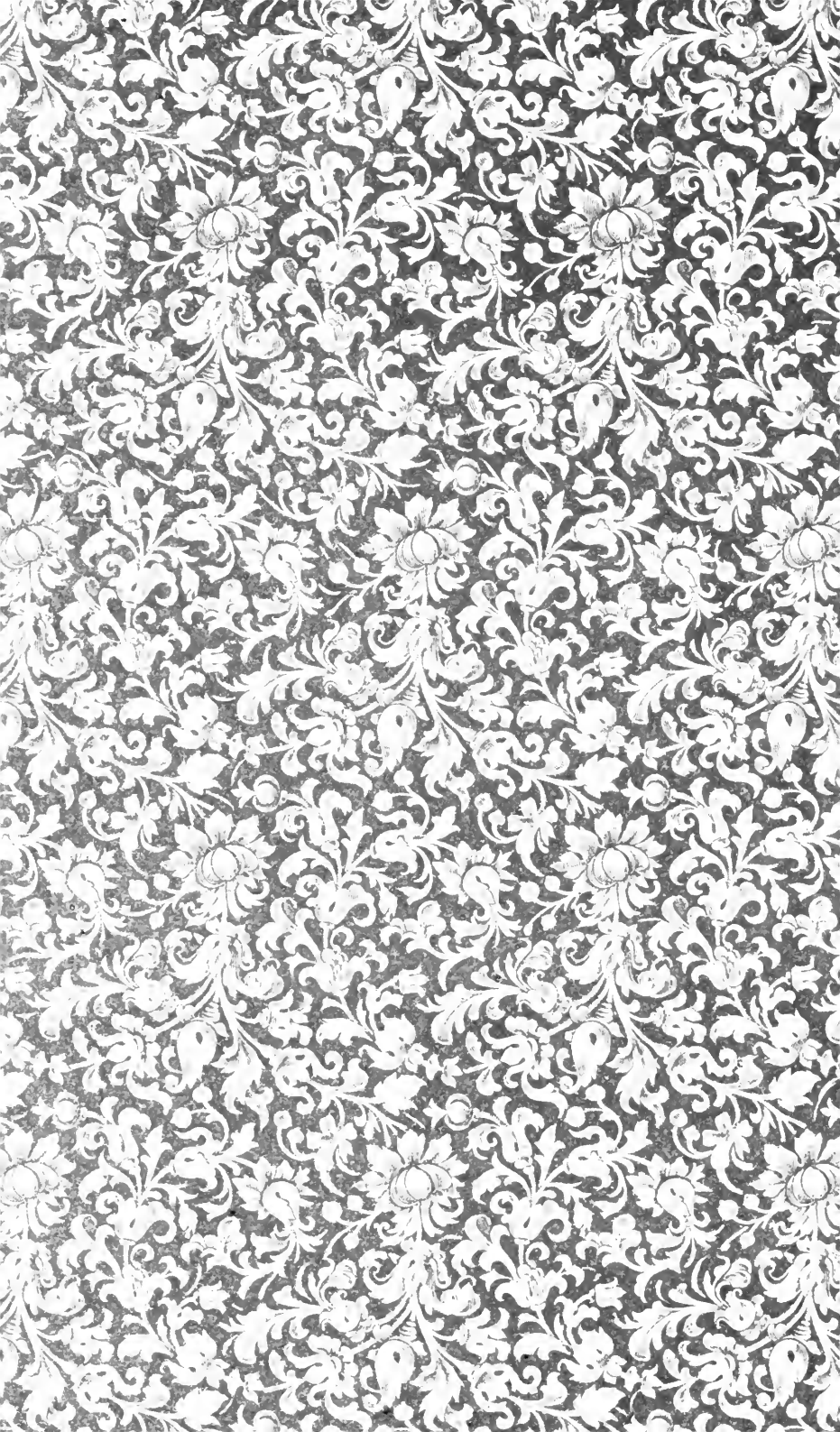
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