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A STUDY OF THE COST OF PRODUCING CORN, WHEAT, HAY AND POTATOES

IN DIFFERENT SECTIONS A STUDY OF THE COST OF PRODUCING

CORN, WHEAT, HAY AND POTATOES

IN DIFFERENT SECTIONS OF THE U. S.

A THESIS

Presented

to

The Department of Agronomy

of

The Virginia Polytechnic Institute

for

The degree

of

MASTER OF SCIENCE

A study of the cost of production of crops is important for the farming interests of any county or state. Much is now being written on the subject of economic marketing but economic production is just as important. No matter how good a marketing plan is, if there is a loss in the production, no farming operations can be really successful. The question of economic production is for the individual farmer to answer, and to aid him in solving this problem, a study of the cost of production must be made by the individual and state. Many states which have given production studies have found such studies a great help to the grower in planning his crop production. However, there are many states which have not made any such studies at all.

The data for the following article was obtained mostly by writing to the different Experiment Stations in the United States. Little could be obtained from the General Library of the Virginia Experiment Station which shows the need for this kind of work here. In fact, none of the data pertaining to Virginia crops

Frank Meriwether Somerville, Jr., B. S.

III

This article will be, as far as possible, a comparison of the cost of production of corn, wheat, hay and potatoes in Virginia with the same

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A STUDY OF THE COST OF PRODUCING CORN, WHEAT, HAY AND POTATOES
IN DIFFERENT SECTIONS OF THE UNITED STATES.

F. M. Somerville

INTRODUCTION

A study of the cost of production of crops is important for the farming interests of any county or state. Much is now being written on the subject of economic marketing but economic production is just as important. No matter how good a marketing plan may be, if there is a leak in the production, no farming operations can be really successful. The question of economic production is for the individual farmer to answer, and to aid him in solving this problem, a study of the cost of production must be made by the individual and state.

Any states which have carried on production studies have found such studies a great help to the grower in planning his crop production. However, there are many states which have not made any such studies at all.

The data for the following article was obtained mostly by writing to the different Experiment Stations in the United States. Little could be obtained from the Agricultural Library of the Virginia Experiment Station which shows the need for this kind of work here. In fact, none of the data pertaining to Virginia crops was obtainable from this source.

This article will be, as far as possible, a comparison of the cost of production of corn, wheat, hay and potatoes in Virginia with the same

CORN

The following table gives the cost of producing corn in Iowa (9) crops grown in other states and sections of the United States.

In this comparison it will be determined whether it is possible for Virginia to compete with these regions in the production of these

Table I. Cost of Production of Corn in Iowa crops.

Items of cost	Cost for 42 Acres
Preparation of seed bed -----	\$ 50.00
Fertilizer -----	155.00
Seed -----	17.50
Insurance -----	31.00
Man labor -----	348.96
Horse labor -----	392.36
Tractor -----	133.16
Truck -----	-----
Use of Equipment -----	126.59
Gross operating -----	1,271.73
Receipts for stalks -----	58.00
Net operating costs -----	1,213.73
Cash rent -----	-----
Building charge -----	61.50
Land charge -----	255.53
Total cost -----	1,530.76

Table I continued.

CORN

The following table gives the cost of producing corn in Iowa (9) for 1920. The figures are the result of careful records kept by farmers aided by trained field men.

Table I. Cost of Production of Corn in Iowa

Items of cost	Cost for 49 Acres
Preparation of seed bed -----	\$ 60.00
Manure -----	156.00
Seed -----	17.50
Insurance -----	31.00
Man labor -----	348.96
Horse labor -----	398.36
Tractor -----	133.16
Truck -----	-----
Use of Equipment -----	126.50
Gross operating -----	1,271.73
Receipts for stalks -----	56.00
Net operating costs -----	1,215.73
Cash rent -----	-----
Building charge -----	81.50
Land charge -----	255.53
Total cost -----	1,552.76

Table I continued.

Items of cost	Cost for 49 Acres
Operator's return, bushels -----	2,508
Yield per acre, bushels -----	51.2
Total yield -----	2,508
Cost per bushel -----	<u>\$.62</u>
Number of acres -----	49
Cost per acre -----	\$31.68

The above table shows the method of obtaining the cost of one bushel of corn on one farm in Iowa.

As the cost of producing a bushel of corn varies on each farm the following table will give the cost on the various farms in Iowa. (5)

Table II Production Cost of 1 Bushel of Corn

Farm Number	Yield per acre	Cost per bushel	Cost of 1 bu. Corn
1	34.17	24.74	1.40
2	89.5	57.7	21.21
3	45.2	31.9	11.90
4	36.5	32.5	12.67
5	80.5	39.5	18.44
6	71.0	50.3	21.45
7	57.5	29.6	17.26
8	64.0	51.4	18.38
Average	63.1	40.0	17.50
Average	19	45.0	17.41
1923	14		
Average	68.0	43.5	17.45
1922	12		
1923			

Table II continued.

Farm Number	Cost of 1 bu Corn
5	.84
3	.41
34	.43
29	.61
Average	<u>.61</u>

In the above table it is not clearly shown what the varying factor might be, but it appears to be due to the number of bushels produced per acre.

Table III shows the cost of production of corn in Charlotte County, Virginia, in 1922. (8)

Table III Corn - 1922 - Charlotte Co. Virginia.

Farm No.	Per Acre			COST		Profit + or Loss -	
	Man Hours	Horse hours	Labor cost	Per Acre	Per Bu.	Per Acre	Per Bushel
1	47.8	45.0	\$14.17	24.94	1.60	\$ + 1.16	\$ + .08
2	89.3	37.7	21.21	33.12	8.28	-27.12	-6.78
3	43.2	31.9	11.90	21.26	1.84	- 5.47	- .48
4	36.4	32.5	12.67	23.00	2.45	-12.43	-1.32
5	58.7	39.5	19.44	29.15	1.43	+ 5.90	+ .29
6	71.0	50.3	21.48	36.04	1.19	+0.34	+ .09
7	57.5	29.6	17.26	25.43	1.45	+ 3.93	+ .22
8	64.7	51.4	18.38	33.54	1.92	-10.43	- .60
Average	58.1	40.0	\$17.50	28.93	1.76	- 7.38	- .52
Average 1923	57.9	45.0	17.41	28.95	1.65	- 3.77	- .31
Average 1922 1923	58.0	42.5	17.45	28.94	1.70	- 5.57	- .41

The above table shows it costs the Virginia farmer of Charlotte County \$1.70 to raise a bushel of corn. This does not take into consideration the grade or type of corn. It may be inferior or of good quality.

Comparing table II with table III it is evident that it costs the Virginia farmers much more to produce a bushel of corn than it does the Iowa farmer. If it costs the Virginia farmer \$1.70 to produce a bushel of corn and \$.61 for the Iowa farmer, then the Virginia farmer has a handicap of \$1.09 to overcome in competing with the Iowa farmer. In fact table III shows that the Virginia farmer is producing corn at a loss of 41 cents per bushel if it is sold on the market.

The cost of producing a bushel of corn in Virginia as shown by the U. S. Government reports, taken from 2000 farmers experiments, is \$25.42 per acre and \$0.85 per bushel. This is 85 cents less on the bushel than that given in table III. This figure is likely a more representative one, therefore, it will be used in the comparisons.

The Norfolk & Western Railway Company quoted through freight rates on grain at 22.5 cents per hundred for a distance of 500 miles. For example: Two bushels of corn weighs 112 lbs. with a freight rate of 25.2 cents - add this - \$1.70 cost of producing 2 bushels of corn making \$1.95, what it will cost the Virginia farmer to raise and ship two bushels of corn 500 miles. Now add 25.2 cents to \$1.22 making \$1.47 what it costs the Iowa farmer to raise and ship two bushels of corn 500 miles. There is a difference of \$0.48 per bushel.

The above figures show that it is not possible for the Virginia farmer to compete with the Iowa farmer in corn production. He must utilize his corn other than markets outside of the state. He cannot afford to ship his corn in competition with Iowa.

Can Virginia compete with Iowa on the home market? Iowa is about 800 miles from Virginia. Add 5 cents to the 25 cents for the extra mileage making \$.30 for freight + \$1.22 cost of producing 2 bu. corn equals \$1.52 cents, what it will cost Iowa to ship corn into Virginia. Therefore Iowa can ship corn into Virginia at 28 cents less per hundred lbs. than Virginia can raise it. The answer as to competition is obvious.

Corn Production In Illinois

The following table gives the method of obtaining the cost of producing one bushel of corn in Hancock County, Illinois from 1913 - 22 inclusive. (3)

Table IV		Illinois	
Year		Cost Data On Crops	
		1913 - 22	
Man Labor		\$ 4.27	Per Acre
Horse Labor		5.83	" "
Tractor		.37	" "
Seed		.37	" "
General Farm Expenses		2.60	" "
Miscellaneous		1.12	" "
Total Operating Expenses		14.56	" "
Interest on land at 5%		8.30	" "
Total Expense		22.86	" "
Yield per acre on bushel		43.70	" "
Net cost per bushel		\$0.50	
For Franklin Co. net cost per bu. =		.90	
For Piatt Co. net cost per bu. =		.60	
For Champaign Co. net cost per bu. =		.42	
Average for State		\$.60	

In table IV it is shown that it costs Illinois one cent less to produce a bushel of corn than it does Iowa. Compare this 60 cents against the \$0.85 for Virginia and it is seen that Virginia cannot compete with Illinois in the production of corn, using the same comparison as that for Iowa, Illinois being about the same distance from Virginia to compete with Missouri in corn production. Missouri can ship corn into Virginia at \$1.63 a hundred, where it costs Virginia \$1.70 to raise it.

Corn Production in Missouri

The following table gives the cost of producing a bushel of corn in Missouri for the years 1910 - 1923 inclusive. (4)

Table V Cost of Producing Corn in Missouri 1910 - 23

CORN		
Year	Cost per Acre	Cost per Bushel
1910-13	\$14.54	\$0.54
1914	14.31	.60
1915	13.64	.47
1916	16.06	.83
1917	22.20	.56
1918	21.81	.78
1919	24.49	.91
1920	28.64	.90
1921	19.05	.62
1922	19.47	.68
1923	19.35	.64
AVERAGE	19.42	.68

16 22.80 .96
17 31.11 .97

Table VI Continued.

In table V it is seen that on an average it cost Missouri 68 cents to produce a bushel of corn against 85 cents the cost in Virginia. There is a difference of 17 cents on the bushel which is too much for Virginia to compete with Missouri in corn production. Missouri can ship corn into Virginia at \$1.63 a hundred, where it costs Virginia \$1.70 to raise it.

Table VI Corn Production - Wisconsin (2)

Cost 1921 - 22		
Farm Number	Per Acre	Per Bushel
1	\$60.62	\$0.76
2	46.34	1.12
3	29.38	1.00
4	35.15	.95
5	40.97	.84
6	38.15	1.05
7	39.57	.76
8	17.66	1.33
9	38.21	.60
10	13.78	1.35
11	33.37	.97
12	44.49	.62
13	46.14	.71
14	40.98	.92
15	51.90	.55
16	22.80	.96
17	31.11	.97

Table VI Continued.

Farm Number	Cost 1921 - 22	
	Per Acre	Per Bushel
18	\$23.96	.74
19	31.57	1.01
20	61.18	.60
21	44.78	1.29
22	54.72	.83
23	40.39	.94
AVERAGE	\$34.48	\$0.87

In table VI it is shown that it costs Wisconsin 2 cents more per bushel to produce corn than it does Virginia. Virginia can compete with this state in corn production as far as Wisconsin herself is concerned, but her nearness to the corn belt is a drawback to Virginia.

Table VII Corn Production In North Dakota

Red River Valley			Central N. Dakota			Northwest N. Dakota			Southwest N. Dakota			State Average		
Acres	Yield Per Acre	Cost Per Unit	Acres	Yield Per Acre	Cost Per Unit	Acres	Yield Per Acre	Cost Per Unit	Acres	Yield Per Acre	Cost Per Unit	Acres	Yield Per Acre	Cost Per Unit
\$20.08	39.4	\$.51	\$20.76	36.3	\$.57	\$23.23	16.8	\$1.38	\$14.90	11.9	\$1.25	\$19.02	28.7	\$.66

The average cost of producing a bushel of corn in North Dakota, is shown in (14) the above table to be 66 cents. This state, then can produce it 19 cents cheaper per bushel than Virginia. This is 4 and 6 cents higher than Iowa and Illinois (tables III and IV). Therefore Virginia cannot compete

produce an acre of corn than it does Virginia but 20 cents more per bushel. This is evidently due to the fact that the yield per acre in Georgia is much

with North Dakota in corn production on a foreign market, or on the home market, because North Dakota could ship corn into Virginia at a cost of \$1.67 per two bushels while it costs Virginia \$1.70 to raise on equal amount.

Table VIII. Cost of Corn Production in New York (7)

YEAR	1914	1915	1916	1917	1918	1919	1920	Average
Corn Cost per Bu.	\$.88	\$1.19	\$1.77	\$1.79	\$2.07	\$1.74	\$1.88	1.62

The above table shows that Virginia could easily compete with New York in corn production. Virginia can produce corn at nearly half what it cost New York; 85 cents per bushel against \$1.62 per bushel.

An effort was made to obtain from Texas, Alabama and some other southern states some data on the cost of production in their respective states. All except Georgia and Mississippi replied that they did not have any such data. It would have made this article more complete to have such data from the east and south to compare with Virginia.

The following table shows the average cost of production of corn in Georgia. (19)

Table IX. Production Cost of Corn

Average Yield for State Per Acre	Net Cost	
	Per Acre	Per Bushel
18 bu.	\$18.88	\$1.05

In this table it is shown that it cost Georgia \$6.54 less to produce an acre of corn than it does Virginia but 20 cents more per bushel. This is evidently due to the fact that the yield per acre in Georgia is much

lower than that of Virginia. It is clearly seen that Virginia can compete with Georgia in the production of corn.

Table X Production Cost of Corn - Mississippi (19)

Average Yield for State Per Acre	Net Cost	
	Per Acre	Per Bushel
20 bu.	\$23.38	\$1.17

The above table shows that it costs Mississippi \$2.19 less to produce an acre of corn than it does Virginia but 32 cents more per bushel. This difference again is due to the lower yield per acre in Mississippi. That it costs Mississippi \$2.19 less per acre but 32 cents more per bushel can be explained by the cost of harvesting. Where there is a high yield per acre the acre cost will be greater but the cost per bushel will be less.

Mississippi therefore cannot compete with Virginia in the production of corn because of the increased production cost per bushel over that of Virginia.

It is shown in the above table that the counties used were from the high and low producing areas of Iowa, thereby giving a more even average for the whole state. It also shows that the number of bushels produced per acre is the factor controlling the cost of production.

Comparing this production cost with that of Virginia it is seen that Iowa can produce a bushel of wheat 28 cents cheaper than Virginia can produce it.

W H E A T

The U. S. Government reports give the average cost of producing wheat in Virginia from 2000 farmer's experiments, as \$1.60 per bushel and \$22.42 per acre based on an average yield of 14 bushels.

The average given for Charlotte county, Virginia for 1922 was \$1.65 based on an average yield of 15.6 bushels per acre.

The \$1.60 cost per bushel will be used in the comparisons. It should be a more representative figure as it was obtained from the entire state rather than from just one county.

Table XI Cost of Wheat Production in Iowa 1920 (20)

COUNTY	COST PER ACRE	COST PER BUSHEL	YIELD PER ACRE
Montgomery	\$34.81	\$1.88	18.5
Warren	32.20	1.86	17.4
Wopello	35.23	2.07	17.0
Lucas	22.39	.75	29.7
Buena Vista	34.21	.81	42.5
Floyd	26.55	.66	40.0
Average	\$30.89	\$1.32	27.6

It is shown in the above table that the counties used were from the high and low producing areas of Iowa, thereby giving a more even average for the whole state. It also shows that the number of bushels produced per acre is the factor controlling the cost of production.

Comparing this production cost with that of Virginia it is seen that Iowa can produce a bushel of wheat 28 cents cheaper than Virginia can produce it.

Iowa could ship wheat into Virginia at about \$2.92 per two bushels or 120 lbs. This figure is obtained by allowing 22.5 cents through freight rates per hundred pounds for 500 miles, which would be 27 cents for 120 lbs. or two bushels of wheat. Adding 8 cents for the extra mileage from Iowa to Virginia we get 35 cents freight rates. It costs Virginia \$3.20 to raise two bushels. Therefore Iowa could ship wheat into Virginia at 10.5 cents per bushel cheaper than Virginia can raise it. Virginia therefore cannot compete with Iowa in wheat production.

Wheat Production in Illinois (3)

Table XII Summary of Cost Data

Counties	Cost Per Acre	Cost Per Bushel	Yield Per Acre	Year
Franklin	\$20.25	\$1.25	13.75	1920 -22
Hancock	26.47	1.08	21.60	1913 - 22
Champaign & Piatt	28.53	1.31	21.8	1920 -22
AVERAGE	\$25.08	\$1.21	19.05	

In table XII it is shown that Illinois can produce wheat at 39 cents a bushel cheaper than Virginia. Using the same comparison as for Iowa it is seen that Illinois can ship wheat into Virginia at 21.5 cents cheaper per bushel than Virginia can raise it. Therefore she cannot compete with Illinois in wheat production.

The following table shows the net cost per acre and per bushel to produce wheat in Nebraska, Kansas and Oklahoma in 1920.

1922	16.93	1.37	15.8
1923	16.22	1.40	
AVERAGE	16.78	1.45	13.1

(The average yield per acre was not given for all the years)

Table XIII Net Cost Production of Wheat (II)

	1920	
STATE	COST PER ACRE	COST PER BUSHEL
Nebraska	\$18.07	\$1.99
Kansas	15.34	1.84
Oklahoma	17.53	1.86

In the above table it is shown that Virginia can produce a bushel of wheat cheaper than either Nebraska, Kansas or Oklahoma. It must be taken into consideration that this table is for one year only and a year that was unusually high in those costs that go into production of a crop. Therefore it is not advisable to accept these figures as absolute.

Table XIV Cost of Missouri Wheat 1910-23 (13)

YEAR	COST PER ACRE	COST PER BUSHEL	AVERAGE YIELD
1910 - 13	\$11.51	\$0.78	14.7
1914	12.81	.78	16.4
1915	12.55	1.08	11.6
1916	12.77	1.54	8.3
1917	17.06	1.22	13.9
1918	24.99	1.46	
1919	25.27	1.94	
1920	27.83	2.18	
1921	24.68	2.26	
1922	18.93	1.37	13.8
1923	18.22	1.40	
AVERAGE	\$18.78	1.45	13.1

(The average yield per acre was not given for all the years)

In the above table it is shown that it costs Missouri 15 cents less to raise a bushel of wheat than Virginia. On this basis Virginia could compete with Missouri on a home market because it will cost Missouri more to ship wheat into Virginia than it costs Virginia to raise an equal amount. Virginia could not compete with Missouri on a foreign market where the shipping rates were the same for both states.

- Cost of Producing Wheat in North Dakota -

The following table shows the summary of the cost of producing a bushel of wheat in different sections of North Dakota. As this table only covers a period of three years it cannot be taken as absolute proof of the cost of producing wheat in this state. It will only give a fair idea of the present cost.

Year	Northwest N. Dakota	Southwest N. Dakota	South Dakota
1928	11.53	8.77	12.23
1929	11.59	7.8	12.28
1930	12.25	8.09	13.19
1931	11.78	8.41	12.09
	Yield Per Acre	Yield Per Acre	Yield Per Acre
	Cost Per Bushel	Cost Per Bushel	Cost Per Bushel
	Acres Cost	Acres Cost	Acres Cost
	Yield Per Acre	Yield Per Acre	Yield Per Acre
	Cost Per Bushel	Cost Per Bushel	Cost Per Bushel
	Acres Cost	Acres Cost	Acres Cost
	Yield Per Acre	Yield Per Acre	Yield Per Acre
	Cost Per Bushel	Cost Per Bushel	Cost Per Bushel

Four Sections of North Dakota for 1928 - 30 - 31 (L.)

Table XV Cost of Wheat in Four Sections of North Dakota for 1921 - 23 - 24 (15)

YEAR	Red River Valley			Central N. Dakota			Northwest N. Dakota			Southwest N. Dakota			State Average		
	Acre Cost	Yield Per Acre	Cost Per Bushel	Acre Cost	Yield Per Acre	Cost Per Bushel	Acre Cost	Yield Per Acre	Cost Per Bushel	Acre Cost	Yield Per Acre	Cost Per Bushel	Acre Cost	Yield Per Acre	Cost Per Bushel
1921	\$17.35	12.2	\$1.42	\$13.90	10.1	\$1.38	\$13.33	11.7	\$1.14	\$9.41	8.0	\$3.14	\$14.09	9.85	\$1.43
1923	14.98	8.4	1.78	12.38	6.8	1.82	11.63	10.5	1.11	8.77	7.3	1.20	12.23	8.2	1.49
1924	14.93	18.9	.78	---	---	---	11.59	14.1	.82	---	---	---	13.26	16.5	.80
Average	\$15.75	13.1	\$1.32	\$13.14	8.4	\$1.60	\$12.25	12.1	\$1.02	\$9.09	5.1	\$2.17	\$13.19	11.51	\$1.26

(Note)
 In table XV it is shown that North Dakota can produce wheat 34 cents cheaper per bushel than Virginia. North Dakota is about 1300 miles from Virginia which would make the freight rate about 42 cents per two bushels or 120 lbs. Then North Dakota can ship wheat into Virginia at 26 cents a bushel cheaper than Virginia can raise it. Virginia cannot compete with North Dakota.

The question then arises, why do not Iowa, Illinois, and North Dakota ship wheat into Virginia? For the simple reason that Virginia is not a wheat market. The wheat states of the west have a much nearer market for their wheat in such cities as Chicago and Minneapolis thereby saving in freight rates. It is better for them to ship their wheat to such centers where it is made into flour, then to ship it east to supply the markets.

It is found that Missouri and North Dakota do not average as much wheat per acre as Virginia (tables XIV and XV). The yield per acre is judged as the greatest limiting factor in low cost of production. What then is Virginia's limiting factor? She can produce more wheat to the acre than either North Dakota or Missouri. Why then can they produce it cheaper than Virginia? It is likely due to the difference in labor and fertilizer requirements.

- Production of Wheat in New York -

Table XVI shows the cost of producing wheat in New York over a six year period. (7)

Table XVI Average Cost of Production of Wheat in New York 1914 - 1921 Inclusive.

YEAR	COST PER ACRE	COST PER BUSHEL
1914 - 1921	\$40.61	\$1.61

(Note)

The above table is the latest data compiled by the Department of Agricultural Economics of the New York State College of Agriculture.

By this table it is shown that it costs New York one cent more per bushel to raise wheat than it does Virginia. Therefore Virginia can compete with New York in the production of wheat both on a home or foreign market. In fact New York cannot compete with Virginia in this farm commodity.

- Cost of Producing Wheat in Georgia -

The following table shows the average cost of production of wheat in Georgia for 1923. (19)

Table XVII Cost of Wheat Production in Georgia

Average Yield Per Acre for State	Net Cost	
	Per Acre	Per Bushel
10 bushels	\$19.22	\$1.92

From the above table it is seen that it cost Georgia \$3.20 less to produce an acre of wheat than Virginia and 32 cents more per bushel. The same conclusions are reached, therefore, in this case as that of corn production given in table IX. In the above table it is seen that Georgia cannot compete with Virginia in production of wheat.

POTATOES

The U. S. Government reports give the average cost of production of potatoes in Virginia as \$80.46 per acre and 69 cents per bushel.

A "Summary of Summaries for Detail Cost Farms, Charlotte County, Virginia, 1923", shows the cost of a bushel of potatoes to be 48 cents; but as this is just for one county, the government report of 69 cents will be used in the comparisons. This should be a fairer estimate of the average for the state.

Table VIII Cost Per Acre, Cost Per Bushel and Price Received for

Year	C O B U		Fried		C O B U		Price		Figs/acre		Per Acre	
	Per Acre	Per Bu.	Per Acre	Per Bu.	Per Acre	Per Bu.						
1921	85.00	0.58	1.04	0.58	1.12	0.60	51.19	1.19	152.00	0.60	152.00	1.19
1920	149.00	1.25	.78	1.56	.94	.44	.73	1.82	152.00	.44	152.00	1.45
1919	63.00	.62	2.15	98.00	.72	.74	87.00	2.04	147.00	.74	147.00	.87
1918	72.00	.58	.73	66.00	.56	.66	74.00	1.04	175.00	.66	175.00	1.36
1917	102.00	.74	.82	107.00	.68	.74	98.00	.53	85.00	.74	85.00	.90
1916	62.00	.75	1.59	66.00	.66	.69	58.00	1.64	70.00	.69	70.00	.50
1915	57.00	.77	.61	51.00	.50	.58	44.00	1.07	82.00	.58	82.00	.77
1914	49.00	.56	.87	54.00	.53	.57	51.00	.56	62.00	.55	62.00	.51
1913	44.00	.53	.50	51.00	.52	.55	64.00	.60	54.00	.52	54.00	.47
1912-1913 AVE	672.00	1.64	1.94	631.00	0.50	0.56	571.00	1.95	636.00	0.56	636.00	1.75

Table XVIII Cost Per Acre, Cost Per Bushel and Price Received for Potatoes in Several States (17)

YEAR	Minnesota			Wisconsin			Michigan			New York			Maine		
	C O S T		Price	C O S T		Price	C O S T		Price	C O S T		Price	C O S T		Price
	Per Acre	Per Bu.	Per Bu.	Per Acre	Per Bu.	Per Bu.	Per Acre	Per Bu.	Per Bu.	Per Acre	Per Bu.	Per Bu.	Per Acre	Per Bu.	Per Bu.
1921	\$52.00	\$.58	\$1.02	\$67.00	\$.68	\$1.22	\$61.00	\$.60	\$1.19	\$82.00	\$.72	\$1.24	\$186.00	\$.61	\$.97
1920	149.00	1.32	.78	155.00	.98	.84	129.00	.94	.78	152.00	1.08	.92	284.00	1.50	.84
1919	83.00	.80	2.15	98.00	.72	1.99	87.00	.74	2.04	107.00	.87	2.07	220.00	.79	1.86
1918	72.00	.58	.79	86.00	.54	.87	74.00	.68	1.04	94.00	.86	1.28	194.00	.92	1.16
1917	102.00	.76	.82	107.00	.65	.80	92.00	.74	.92	94.00	.90	1.19	194.00	1.47	1.26
1916	52.00	.72	1.58	58.00	.85	1.70	55.00	.89	1.84	70.00	.90	1.92	141.00	.65	1.73
1915	47.00	.37	.51	51.00	.40	.58	44.00	.58	.67	53.00	.77	.89	106.00	.56	.80
1914	48.00	.36	.37	56.00	.31	.37	51.00	.33	.36	67.00	.41	.48	117.00	.43	.35
1913	43.00	.33	.50	51.00	.32	.53	46.00	.38	.55	56.00	.67	.82	107.00	.46	.55
AVER- AGE	\$72.00	\$.64	\$.96	\$81.00	\$.60	\$.98	\$71.00	\$.65	\$.93	\$86.00	\$.79	\$1.20	\$172.00	\$.82	\$1.05

Probably the most striking thing shown by table XVIII is the marked variation in costs for successive years. The costs are usually high when the price received is low, and vice versa.

It is shown by this table that Minnesota, Wisconsin, and Michigan can produce potatoes a few cents cheaper on the bushel than Virginia but they cannot compete with Virginia in potatoe production because of the money received for Virginia's early crop. These states cannot produce this early crop.

In the "Summary of Summaries for Detail Cost Farms, Charlotte County, Virginia", it is shown that the farmers of this section received an average income of \$225 per acre and \$1.50 per bushel and the above mentioned three states received only an average income of 32 cents per bushel. Therefore they cannot compete with Virginia in potatoe production.

Virginia also has another advantage in that she is nearer the eastern markets and can ship by water instead of rail, which is very much cheaper.

It costs New York and Maine more per bushel to raise potatoes than it does Virginia which is another reason why Minnesota, Wisconsin and Michigan, cannot compete with Virginia in producing potatoes.

It is shown that it costs Central North Dakota \$42.39 per acre or 44 cents per bushel to produce potatoes but she cannot compete with Virginia for the same reasons that the other western states cannot.

Table XIX Cost of Producing Potatoes in Georgia and Mississippi (19)

State	Average Yield Per Acre for State	Net Cost	
		Per Acre	Per Bushel
Georgia	82	57.08	.70
Mississippi	105	64.92	.62

It cannot be compared with the data from other sections of the United States. In this table it is shown that it costs Georgia \$23.38 less per acre to produce potatoes than Virginia and one cent more per bushel. What the cause for the great difference in the acre cost of production is not shown unless it is the cost of harvesting a larger yield per acre. Neither state seems to have much advantage over the other from the cost per bushel standpoint.

Table XX Cost of Producing Hay - 1922 Charlotte Co., Virginia

Kind	INCOME		COST	
	Per Acre	Per Ton	Per Acre	Per Ton
Glover	\$33.33	\$25.00	\$13.72	\$10.29
Bean	23.25	25.00	20.08	21.83
Soybean	20.25	27.00	20.64	18.06
Tim. & H. G.	4.69	25.00	10.64	55.75
Oat	12.70	25.00	15.19	32.38
Cl. & H. G.	19.24	25.00	17.13	6.85
Tim & Bean	22.22	25.00	25.51	25.71

HAY

The Bureau of Agricultural Economics, United States Department of Agriculture stated that they did not have any data on the cost of producing hay in Virginia. The only figures that are available are those contained in the, "Summary of Summaries for Detail Cost Farms, Charlotte County, Virginia". As this information is given in detail, that is, each hay crop is listed separately and not under the one head-"hay", - it cannot be compared with the data from other sections of the United States given under the head of "hay". The average might be taken, but would not be a fair comparison as this average is only for one county in Virginia. Taking these matters into consideration it is not advisable to make such a comparison.

Table XX shows the cost of producing the different kinds of crops used for hay in Charlotte County, Virginia. (8)

Table XX Cost of Producing Hay - 1922 Charlotte Co., Virginia

Kind	I N C O M E		C O S T	
	Per Acre	Per Ton	Per Acre	Per Ton
Clover	\$33.33	\$25.00	\$13.72	\$10.29
Bean	23.53	25.00	20.08	21.33
Soybean	30.86	27.00	20.64	18.06
Tim. & H. G.	4.69	25.00	10.64	56.75
Oat	12.50	25.00	16.19	32.38
Cl. & H. G.	48.54	25.00	17.18	8.85
Pea & Bean	22.22	25.00	25.51	28.71

Cost of Producing Hay in Missouri (13)

Table XXI

YEAR	C O S T	
	PER ACRE	PER TON
1910 - 13	\$6.22	\$6.35
1914	5.28	6.07
1915	6.70	6.32
1916	7.59	7.37
1917	8.06	8.58
1918	---	---
1919	---	---
1920	11.23	9.06
1921	6.89	5.99
1922	6.19	5.63
1923	7.54	6.08
AVERAGE	\$6.18	\$6.60

for hay in Illinois from 1913 to 1922. (3)

It is seen from the above table that it costs more to produce a ton of hay than it does an acre in Missouri. This is possibly due to the low production per acre and the cost of harvesting. Of course there are many factors which might cause this, such as, kind of crop grown, climate etc.

	.89 Ton	6.27
Mixed Hay	.215 Ton	--
Red Top	.837 Ton	--
Cow Peas	.507 Ton	--
Soy Bean	1.03 Ton	14.80

Cost of Producing Hay in North Dakota (15)

Table XXII

Section	Millet Hay			Wild Hay		
	Yield Tons	Cost		Yield Tons	Cost	
	Per Acre	Per Acre	Per Ton	Per Acre	Per Acre	Per Ton
Red River Valley	1.6	\$14.90	\$9.31	1.2	9.05	7.53
Central N. Dak.	1.85	13.55	7.32	1.2	7.46	6.22
Northwest N. Dak.	1.6	10.74	6.71	1.0	5.01	5.01
Southwest	1.36	11.83	8.70	.56	2.82	5.02
State Average	1.62	13.00	8.02	1.0	6.27	6.27

Just what is meant by the name of "wild hay" used in the above table is not stated.

Cost of Production of Hay in Illinois

Table XXIII shows the cost of producing different kinds of crops used for hay in Illinois from 1913 to 1922. (3)

Table XXIII Cost of Producing Hay in Illinois 1913 - 1922

KIND	YIELD PER ACRE	COST PER TON
Clover	1.37 Ton	\$7.44
Timothy	.89 Ton	6.27
Mixed Hay	.945 Ton	--
Red Top	.537 Ton	--
Cow Peas	.607 Ton	--
Soy Bean	1.03 Ton	14.50

Several of the above crops can be compared in cost of production with those given in table XV for Virginia. It cost Virginia \$10.29 to produce a ton of clover while it costs Illinois \$7.44 to produce a ton of the same crop. It costs Virginia \$18.00 to produce a ton of soybean hay against \$14.50 the cost for Illinois to produce a ton of this crop.

Cost of Producing Hay in New York

Table XXIV Cost of Production of Hay - New York (7)

YEAR	COST	
	Per Acre	Per Ton
1914	\$13.75	\$11.76
1915	15.48	11.63
1916	18.30	9.56
1917	19.31	11.06
1918	23.47	14.50
AVERAGE	\$16.06	\$11.90

The gradual increase in the cost of producing on acre of hay as shown in the above table is what could be expected under the war conditions. This is exactly opposite to the cost of producing a ton which decreases until the year 1918 where there is a big jump. This fact is explained by the increased production per acre which lowered the cost of production per ton until the year 1918 when there was a decrease in the tons per acre production increasing the cost of production per ton.

The following table will show the cost of producing corn, wheat and potatoes in various section of the United States, these sections classified geographically.

Table XXV

1923 Cost of Producing Corn, Wheat and Potatoes in United States-
Averages by Geographical Divisions. (18)

Crop and Geo- graphical divi- sions	Yield Per Acre (bu.)	Total Cost Per Acre	Credit Per Acre for by Products	Net Cost	
				Per Acre	Per Bu.
C O R N					
N. Atlantic	47	\$49.01	\$8.28	\$40.73	\$0.87
S. Atlantic	30	29.21	3.64	25.57	.85
E. N. Central	44	30.00	3.23	26.77	.61
W. N. Central	35	20.15	1.34	18.81	.54
S. Central	24	22.34	1.16	21.18	.88
Western	29	21.60	2.58	19.02	.66
Average U. S.	35	\$26.40	\$2.65	\$23.75	\$0.68

Eastern (2)	112	21.02	.56	20.46	.69
Southeastern (3)	97	25.23	.17	25.06	.73
Central (4)	101	28.96	.08	28.88	.72
W. Central (5)	115	21.73	.07	21.66	.54
W. S. Central (6)	83	24.94	.15	24.79	.67
Western (7)	149	25.75	.90	24.85	.66
AVERAGE U. S.	116	\$26.11	\$1.39	\$24.72	\$0.67

Table XXV (continued)

Crop and Geo- graphical divi- sions	Yield Per Acre (bu.)	Total Cost Per Acre	Credit Per Acre for by Products	Net Cost	
				Per Acre	Per Bu.
WHEAT					
N. Atlantic	23	\$34.26	\$5.83	\$28.43	\$1.24
S. Atlantic	14	24.96	2.54	22.42	1.60
E. N. Central	20	24.52	2.40	22.12	1.11
W. N. Central	13.	16.81	.64	16.17	1.24
S. Central	13	18.35	1.19	17.16	1.32
Western	22	24.99	1.04	23.95	1.09
<hr/>					
AVERAGE U. S.	17	\$22.88	\$1.86	\$21.02	\$1.24
POTATOES WHITE					
Northeastern (1)	170	\$105.99	\$0.49	\$105.50	\$0.62
Eastern (2)	116	81.02	.56	80.46	.69
Southeastern (3)	97	75.83	.17	75.66	.78
Central (4)	101	52.56	.08	52.48	.52
N. Central (5)	116	51.71	.37	51.34	.44
W. S. Central (6)	82	54.94	.18	54.76	.67
Western (7)	149	69.73	.90	68.83	.46
AVERAGE U. S.	118	\$70.11	\$1.39	\$69.66	\$1.59

- Note (1) Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, and Pennsylvania.
- (2) Maryland, Virginia, West Virginia, North Carolina, Kentucky and Tennessee.
- (3) South Carolina, Georgia, Florida, Alabama and Mississippi.
- (4) Ohio, Indiana, Illinois, Iowa, Missouri, Kansas and Nebraska.
- (5) Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.
- (6) Louisiana, Texas, Oklahoma, and Arkansas.
- (7) Montana, Wyoming, Colorado, Utah, Washington, Oregon, and California.

Comparing the cost of producing these three crops, as shown in table XXV, with the cost in Virginia it is seen that it costs Virginia more per unit to produce these crops than it does the various sections of the United States.

The conclusion drawn from this cost of production study is that factors enter into successful farming other than the cost of production. In some cases it shows where the farmer produces at a loss. If this is true, how then can the farmer continue in business? Only by utilizing his man and horse labor to the best advantage. To do this he sometimes has to grow a crop at a loss thereby losing much less than he otherwise would if the crop were not grown.

This study also shows the lack of such information relating to Virginia especially with respect to hay. No figures were obtainable with respect to cost of producing hay in Virginia either from the United States Department of Agricultural Economics or from the State Department of Agriculture.

Cost of production data must be interpreted correctly by the farmer or the statistician in order to be of benefit to either. Often data of this

nature is seized upon by the gloomy pessimist to the discouragement of the farmer. The farmer should not accept such figures at their face value but he should consider the other factors that enter into his business.

Crop and Geo- graphical divi- sions	Yield Per Acre (bu.)	Total Cost Per Acre	Gross Per Acre for by Products	Net Cost	
				Per Acre	Per Bu.
CORN					
N. Atlantic	47	\$42.93	\$3.28	\$40.75	\$0.87
S. Atlantic	30	29.21	3.64	25.57	.85
N. W. Central	44	30.00	3.23	26.77	.61
W. S. Central	36	29.15	1.34	27.81	.80
S. Central	34	28.34	1.76	26.58	.78
Western	28	21.50	2.55	18.95	.68
Average U. S.	35	\$26.25	\$2.50	\$23.75	\$0.68

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