UNIVERSITY OF MINNESOTA
Department of Agriculture
and
UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Economics
Cooperating

— o —

A Preliminary Report
of

CROP PRODUCTION COSTS

From
Data Secured in 1935
on the

FARM ACCOUNTING ROUTE

In

WINONA COUNTY, MINNESOTA

By

Geo. A. Sallee and Geo. A. Pond
Robert H. Loreaux, Routeman

— o —

Mimeographed Report No. 71
Division of Agricultural Economics
University Farm
St. Paul, Minnesota
February 1936

INDEX

SOURCE OF DATA

Method of Study

A three-year study of the organization and management of a selected group of farms in Winona County was started on March 1, 1935. This study is being conducted under the supervision of the Division of Agricultural Economics of the University of Minnesota in cooperation with the Bureau of Agricultural Economics of the United States Department of Agriculture. Farms which were representative of the better managed farms of the area were chosen with the aid of the county agricultural agent, Mr. H. C. Pedersen. The farmers cooperating in this study keep a complete record of cash receipts and expenses, a daily record of the labor used on each crop and class of livestock, and a record of farm produce used in the house. These records are checked at least twice per month by a field man and supplemented with inventories, feed records, reports of cropping practices and yields, and other significant facts about the farm business. The data collected are sent to the central office at University Farm, St. Paul, where a detailed set of records for each farm is kept. From these records, this report on crop costs and returns for 1935 was prepared. The cost and income from livestock production and the financial returns from these farms will be presented in later reports as the information becomes available.

Description of the Area

Winona County lies in the southeastern part of the state. The topography varies from gently rolling to very hilly. Much of the county is covered with a deposit of loessial material. The loessial soils are very productive. The surface soil is deficient in lime. Limestone underlies this area at no great depth and limestone outcrops are common. The soil washes easily and the steeper slopes are subject to considerable sheet erosion.

The growing season varies from 140 to 160 days. The average annual rainfall is approximately twenty-nine inches, seventy per cent of which is received during the months of April to September, inclusive. According to the report of the 1930 Federal Census, 59 per cent of the farms were classed as dairy farms and 19 per cent as general farms. Forty per cent of the farm land was in pasture. Barley, wheat, oats, flax, rye, and corn are the principal grain crops. Alfalfa, clover, and mixed clover and timothy are the principal hay crops.

Description of the Farms

The average size of the farms studied in 1935 was 335 acres. This is approximately 92 per cent larger than the average for the county as given in the 1930 Census. Fifty-five per cent of the area of these farms was in crops for harvesting. This compares with 50 per cent for the county as a whole. Fourteen per cent of the crop area was in corn, 22 per cent in oats, 28 per cent in barley, 10 per cent in alfalfa, and 6 per cent in clover or mixed clover and timothy. This is slightly less corn, and clover and timothy hay and more barley and alfalfa than the average for the county for 1929.

There is a soil erosion problem on each of the farms studied. Most of the farmers are cooperating with the Federal Soil Conservation Service in an erosion control program. As this program is just getting under way on these farms, the effects of such a program on crop costs and returns are not yet apparent and therefore are not considered in this report.

Description of the 1935 Crop Season

The year 1935 might be characterized as one of excessive moisture. An early heavy fall of snow prevented the ground from freezing during the winter of 1934-35 and as a result fall grains were protected and in the spring most of the moisture from the melting snow was absorbed into the ground. A combination of an abundance of moisture and of cool weather during April, May and June favored an abnormally high yield of hay. However, because of the rank growth and because of exposure to rain, the quality of the hay was below normal. As rainy weather continued through July and August, grain harvest was delayed. Grain was lost because of lodging and of sprouting in the shock. Spring wheat suffered severely from rust.

METHODS OF COMPUTING AND PRESENTING DATA

The comparative cost and return for 1935 for each of the principal crops grown on these farms are presented in this report. The costs presented are relative rather than absolute costs. Because many of the cost items, such as the farmer's own labor and the use of his own land, machinery and equipment, do not represent actual current "out-of-pocket" cash expense, it was necessary for purposes of comparison to estimate their value.

The factors of cost are charged at local prices. Man labor was charged at 20 cents per hour. This rate is based on wages paid to hired laborers on these farms and includes an allowance for board. Horse work was charged at 8 cents per hour, a two-plow tractor at 60 cents per hour, and a three-plow tractor at 80 cents per hour. The machinery charge includes an allowance for depreciation, repairs, interest on investment, and shelter for the machinery. The machinery charge also includes the expense for any use of the truck or auto. The seed charge for hay is based upon the cost of seeding divided by the expected life of the stand. Manure was charged at 50 cents per ton, plus the cost of hauling and spreading. Forty per cent of the total manure cost was charged against the crop on the land to which the manure was applied and the balance was prorated on an acre basis to the rest of the crops on the land which normally might receive manure.

Uniform rates have been used for all crops so that comparisons may be made between the different crops and different farms. The costs and yields on rented land have been adjusted to a full owner basis. Land has been charged at $2.50 per acre for wild hay and at $3.50 per acre for all other crops. The local farm price on December 1 was used in determining the returns from the various crops. The value of crops, such as silage, which have no regular market price was computed by comparing their feeding value with other crops for which a local market price was available.

The costs are presented on the basis of one acre. The cost per bushel or per ton also is given. In the tables showing costs for the individual farms, the farms are arranged in order of cost per bushel or per ton, with the farm having the lowest cost appearing first. In some cases (rye, flax, soybean hay, etc.), the number of farms producing a crop is too small and the variation among the farms is too great to render the averages of any great significance.

USING CROP RECORDS TO INCREASE CROP RETURNS

Reducing Costs

The data presented in this report show a wide variation among the farms in the hours of labor and power used per acre and in the cost per acre and per bushel or per ton. By referring to the tables, each cooperator can compare his record with those of the other cooperators in these respects and thereby discover why his costs are high or low.

Variations in the yield per acre are responsible for a considerable portion of the variation in the cost per bushel or per ton and in the net return per acre for the various crops. This is illustrated by the data in Table 1.

Table 1

The Yield, Cost, and Return per Acre of Corn Husked from Standing Stalks, Winona County, 1935

Yield	No. of farms	Average yield, bu.	Cost		Net return
			Per acre	Per bushel	
Under 35 bu.	5	21.8	$16.03	$.80	$-6.65*
35 to 45 bu.	6	39.7	17.02	.43	.06
Over 45 bu.	4	51.1	16.54	.33	5.42

*The value of the crop was $6.65 less than the cost.

The cost per acre is approximately the same as for all three groups but there is a decided difference between the groups in the cost per bushel and in the net return per acre. The farms with the high yields had a much lower cost per bushel and a greater net return than those with low yields.

A few things that favor a large yield of crops per acre are (1) a well prepared seedbed, (2) seeding early, (3) the use of the varieties best adapted to the farm, and (4) the planting of clean seed of high vitality.

Planning the Cropping System

Every farmer necessarily chooses a cropping system for his farm. Such a system should be based, essentially, on expected conditions extending over a period of years. Any adjustments to temporary market conditions usually should be of a minor nature, rather than a total reorganization of the cropping system. The first consideration in developing a cropping system is a definite rotation or succession of crops. A good rotation should include the following groups of crops: (1) small grain crops, (2) cultivated crops, and (3) legume hay or pasture crops. The proportion of the crop land in each group should be approximately the same each year. Each group should follow the other in succession, although the same group may remain on the same field for two or more years. Such a crop rotation will preserve or increase the productivity of the farm, reduce production costs and stabilize earnings. The second consideration in developing the cropping system is the selection of the crops to be included in each rotation group. Some crops are grown primarily for feed whereas others commonly are grown for sale. A com-

parison between the different feed crops and the different cash crops is presented for Winona County in the following paragraphs.

Selection of feed crops. If the crops are to be fed, the selection should be based upon the amount and quality of the digestible nutrients produced per acre. The records secured in this study together with data published by the State Department of Agriculture furnish a basis for such a selection. The production per acre and the relative cost per hundred pounds of digestible nutrients for Winona County, based on ten year average county yields and the average costs obtained on the farms studied, adjusted for differences in yields, are presented in Table 2.

Table 2

Production per Acre and Relative Cost per Hundred Pounds of Digestible Nutrients - Winona County

Crop	Average yield* (1925-34)	Total lb. digestible nutrients	% protein is of total nutrients	Cost per 100 lbs. of total nutrients
Grains:	bu.			
Corn	37.2	1702	8.7	$.97
Barley	27.3	1040	11.3	1.16
Oats	34.9	786	13.8	1.47
Wheat	17.0	808	12.5	1.49
Roughages:	ton			
Alfalfa	2.6	2652	20.8	.41
Clover and timothy	1.7	1676	10.3	.55
Wild hay	1.0	964	6.2	.58
Silage	7.7	2587	7.2	.79

*Yields for alfalfa, clover and timothy, and silage estimated from available data. All other yields from annual reports of the State Department of Agriculture. Analysis of feeds from "Feeds and Feeding" by Henry and Morrison.

The data presented indicate that on the basis of past yields and present costs the lowest cost feed grain crop is corn. It produces more nutrients per acre and at a lower cost than either oats, barley or wheat. Barley is next to corn in the amount of feed produced and in cheapness. When the higher percentage of protein in barley and the greater susceptibility to erosion of land in corn are considered, the difference between these two crops in the cost per 100 pounds of digestible nutrients becomes less significant.

Alfalfa, on the basis of the above data, is the cheapest source of roughage. It also has the further advantages of producing the largest quantity of nutrients per acre and of containing a high percentage of protein. Wild hay is a relatively cheap feed due to the absence of seedbed preparation and seeding costs, and to the fact that it is permitted to grow only on land not suited for other purposes and therefore at a low land cost. Silage has the disadvantage of a high cost and a very low protein content. However, it offers a method of utilizing the entire corn crop.

Selection of cash crops. The profitableness of raising cash crops depends, to a large extent, on the prices received. It is impossible to predict, with any assurance, what the prices for crops will be in the future. However, it is possible to calculate the relative profitableness of the various crops, using ten year average county yields and prices and 1935 costs on the farms studied, adjusted to the ten year average yields. The results of such a calculation are shown in Table 3.

Table 3

Comparative Returns per Acre of Crops
Winona County

	Flax	Corn	Winter wheat	Spring wheat	Barley	Oats
Cost per acre	$14.70	$16.60	$12.20	$11.80	$12.10	$11.55
Yield (1925-34), bu.	11.3	37.2	17.7	16.4	27.3	34.9
Cost per bu.	$1.30	$.45	$.69	$.72	$.44	$.33
Price per bu.(1926-35)	1.71	.55	.83	.86	.49	.32
Net return per acre	4.62	3.86	2.49	2.30	1.28	-.38

On this basis flax is the most profitable cash crop, followed in order by corn, winter wheat, spring wheat, barley, and oats. The actual returns from the individual crops may vary from that shown, but the relative position likely will remain approximately the same.

Each cooperator should study the data presented here with a view toward obtaining the best selection of crops and the most efficient production possible under his conditions.

Comparative Cost and Return per Acre for the Principal Crops

	Barley	Oats	Winter wheat	Spring wheat	Oats & wheat	Oats & barley	Husked corn	Shredded corn	Rye	Flax
Number of farms	19	18	10	9	5	4	15	7	5	4
Acres per farm	53	40	14	10	23	18	10	11	27	6
Before harvest:										
Man labor, hr.	3.1	3.2	2.7	3.2	2.9	3.3	11.8	11.9	2.4	5.6
Horse work, hr.	10.3	11.6	9.6	10.8	7.7	12.6	28.1	28.1	6.1	17.5
Tractor work, hr.	.8	.7	.7	.6	1.1	.5	1.1	.9	.8	1.0
Harvesting:										
Man labor, hr.	4.9	4.9	8.4	5.3	5.9	4.3	10.4	12.2	4.6	8.3
Horse work, hr.	5.3	5.9	9.4	5.2	5.6	4.0	17.0	16.4	4.7	11.3
Tractor work, hr.	.3	.3	.3	.4	.5	.5	.3	-	.3	.4
Total:										
Man labor, hr.	8.0	8.1	11.1	8.5	8.8	7.6	22.2	24.2	7.0	13.9
Horse work, hr.	15.6	17.5	19.0	16.0	13.3	16.6	45.1	44.4	10.8	28.8
Tractor work, hr.	1.1	1.0	1.0	1.0	1.6	1.0	1.4	.9	1.1	1.4
Costs:										
Man labor	$1.61	$1.63	$2.22	$1.70	$1.76	$1.52	$4.45	$4.84	$1.39	$2.78
Horse and tractor	2.04	2.12	2.26	2.04	2.37	2.08	4.66	4.25	1.70	3.24
Seed	2.12	1.34	1.97	1.83	1.85	2.00	.42	.48	1.84	1.57
Twine	.16	.17	.21	.18	.19	.16	-	.27	.17	.02
Threshing	.61	.90	.75	.42	.71	.67	.19+	1.74	.36	1.48
Manure	.79	.75	.58	.68	.73	.35	1.80	2.48	.65	.38
Machinery	1.06	1.06	1.05	1.05	1.05	1.05	1.55	2.50	1.05	1.05
Operating cost	8.39	7.97	9.04	7.90	8.66	7.83	13.07	16.56	7.16	10.52
Land	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Total cost	11.89	11.47	12.54	11.40	12.16	11.33	16.57	18.65**	10.66	14.02
Yield, bu.	20.7	31.8	23.6	11.0	22.6§	21.3§	36.8	27.9	12.4	6.1
Cost per bushel	$.57	$.36	$.53	$1.04	$.54	$.53	$.45	$.67	$.86	$2.30
December 1 price	.39	.24	.93	.75‡	.54	.31	.43	.43	.42	1.58
Crop value	8.07	7.63	21.95	8.25	12.20	6.60	15.82	12.00	5.21	9.04
Crop value less cost	-3.82	-3.84	9.41	-3.15	.04	-4.73	-.75	-6.65	-5.45	-4.38

*A minus (-) indicates a cost greater than the value of the crop.
+Charge for mechanical huskers.
§At 40 lbs. per bushel.
‡Low price because of low quality.
**Net cost after deducting stover credit of $1.41 per acre.

Comparative Cost and Returns per Acre for the Principal Roughage Crops

	Alfalfa hay	Clover and timothy	Wild hay	Soybean hay	Corn silage
Number of farms	19	7	10	5	20
Acres per farm	15	12	4	6	13
First cutting or before harvest:					
Man labor, hr.	7.6	7.2	9.1	7.7	10.1
Horse work, hr.	11.4	11.8	13.0	19.4	24.0
Tractor work, hr.	.2	.2	-	1.2	1.1
Second cutting or harvest:					
Man labor, hr.	5.2	1.3	.7	9.6	11.6
Horse work, hr.	7.6	3.2	1.4	11.2	19.0
Tractor work, hr.	.2	-	-	.1	-
Third cutting:					
Man labor, hr.	1.2	-	-	-	-
Horse work, hr.	1.7	-	-	-	-
Tractor work, hr.	-	-	-	-	-
Total:					
Man labor, hr.	14.0	8.5	9.8	17.3	21.7
Horse work, hr.	20.7	15.0	14.4	30.6	43.0
Tractor work, hr.	.4	.2	-	1.3	1.1
Costs:					
Man labor	$2.80	$1.70	$1.96	$3.46	$4.34
Horse or tractor	1.93	1.32	1.15	3.42	4.26
Seed	1.10	1.10	-	1.76	.64
Twine	-	-	-	.14	.34
Silo filling	-	-	-	-	2.40
Manure	.75	.81	-	1.12	2.41
Machinery	1.21	.82	.74	1.51	2.50
Operating costs	7.79	5.75	3.85	11.41	16.89
Land	3.50	3.50	2.00	3.50	3.50
Total costs	11.29	9.25	5.85	14.91	20.39
Yield, tons	3.1	2.3	1.5	1.7	7.9
Cost per ton	$3.64	$4.02	$3.90	$8.77	$2.58
December 1 price	4.95	4.00	3.00	4.50	1.75
Crop value	15.35	9.20	4.50	7.65	13.82
Crop value less cost*	4.06	-.05	-1.35	-7.26	-6.57

*A minus (-) indicates a cost greater than the value of the crop.

Cost of Producing Barley

Farm no.	Hours									Costs									Yield bu.	Cost per bu.
	Before Harvest			Harvesting			Total			Man labor	Horse & tractor	Seed	Twine	Threshing	Manure	Machinery	Land	Total		
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor											
149	2.6	7.9	.6	6.2	4.7	.8	8.8	12.6	1.4	$1.76	$2.15	$2.49	$.19	$.86	$.79	$1.05	$3.50	$12.79	36.0	.36
139	3.6	14.2	-	7.5	9.7	-	11.1	23.9	-	2.22	1.91	2.83	.21	.99	.95	1.05	3.50	13.66	34.4	.40
216	2.7	5.4	1.2	4.5	2.7	.7	7.2	8.1	1.9	1.44	2.20	1.42	.19	.77	1.31	1.05	3.50	11.88	25.7	.46
119	2.3	4.2	1.2	3.5	4.9	-	5.8	9.1	1.2	1.17	1.70	2.32	.10	.63	.33	1.05	3.50	10.80	22.8	.47
018	3.8	16.8	-	7.7	11.2	-	11.5	28.0	-	2.30	2.24	2.58	.23	.66	.49	1.05	3.50	13.05	25.8	.51
026	2.8	12.7	.1	4.0	6.6	.2	6.8	19.3	.3	1.37	1.74	1.97	.18	.84	.48	1.05	3.50	11.13	20.8	.54
121	1.8	3.0	1.1	4.0	1.8	.4	5.8	4.8	1.5	1.17	1.56	2.12	.10	.56	.46	1.05	3.50	10.52	19.5	.54
179	3.2	15.4	-	6.8	7.2	-	10.0	22.6	-	2.01	1.81	1.83	.18	.82	.60	1.05	3.50	11.80	21.7	.54
113	5.4	24.2	-	4.7	6.4	-	10.1	30.6	-	2.02	2.45	2.70	.19	.63	.88	1.05	3.50	13.42	23.7	.56
112	2.1	3.3	1.2	4.8	4.3	.7	6.9	7.6	1.9	1.37	2.18	2.47	.14	.65	1.84	1.05	3.50	13.20	22.5	.59
189	3.0	4.0	2.0	5.3	4.0	.5	8.3	8.0	2.5	1.66	2.64	1.68	.22	.60	1.28	1.05	3.50	12.63	20.8	.61
169	4.4	18.9	-	3.9	5.9	-	8.3	24.8	-	1.66	1.98	2.32	.11	.77	1.16	1.05	3.50	12.55	19.3	.65
118	3.2	2.9	2.5	5.6	3.6	.7	8.8	6.5	3.2	1.77	2.47	1.63	.22	.32	.44	1.05	3.50	11.40	16.4	.69
016	4.8	19.6	-	4.9	7.2	-	9.7	26.8	-	1.95	2.15	2.15	.15	.44	.97	1.05	3.50	12.36	17.0	.73
014	2.9	12.9	.3	3.9	6.2	-	6.8	19.1	.3	1.35	1.73	1.97	.17	.42	1.00	1.05	3.50	11.19	14.5	.77
199	2.9	8.4	1.1	3.6	5.2	.3	6.5	13.6	1.4	1.31	2.17	2.29	.17	.43	.42	1.17	3.50	11.46	14.6	.78
129	3.2	15.1	.5	3.8	2.2	.5	7.0	17.3	1.0	1.41	2.19	1.59	.11	.39	.61	1.05	3.50	10.85	13.5	.80
159	2.1	2.6	1.3	4.2	3.7	.4	6.3	6.3	1.7	1.25	1.54	2.05	.09	.36	.97	1.12	3.50	10.88	12.2	.89
109	2.9	3.6	1.6	3.9	3.5	.5	6.8	7.1	2.1	1.37	1.86	1.94	.14	.46	-	1.05	3.50	10.32	11.3	.92
Aver.	3.1	10.3	.8	4.9	5.3	.3	8.0	15.6	1.1	1.61	2.04	2.12	.16	.61	.79	1.06	3.50	11.89	20.7	.57

Cost of Producing Oats

Farm no.	Hours									Costs									Yield	Cost
	Before Harvest			Harvesting			Total			Man	Horse &	Seed	Twine	Thresh-	Ma-	Mach-	Land	Total	bu.	per
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor	labor	tractor			ing	nure	inery				bu.
139	3.6	14.2	-	6.6	9.1	-	10.2	23.3	-	$2.04	$1.86	$1.86	$.34	$1.52	$.95	$1.05	$3.50	$13.12	55.4	$.24
216	2.3	3.7	1.4	6.2	5.2	.7	8.5	8.9	2.1	1.70	2.39	.56	.19	1.43	1.31	1.05	3.50	12.13	47.6	.25
119	2.5	9.1	.8	3.5	5.2	-	6.0	14.3	.8	1.20	1.78	1.66	.09	1.13	.33	1.05	3.50	10.74	40.0	.27
149	2.7	10.0	.5	6.7	6.2	.8	9.4	16.2	1.3	1.88	2.35	1.15	.16	.91	.95	1.05	3.50	11.94	41.7	.29
014	3.2	16.5	-	4.1	5.5	-	7.3	22.0	-	1.46	1.77	1.20	.18	1.05	1.00	1.05	3.50	11.20	36.1	.31
159	1.8	2.1	1.2	5.4	4.5	.6	7.2	6.6	1.8	1.45	1.65	1.28	.10	.73	.27	1.08	3.50	10.06	25.2	.32
118	2.5	2.1	2.0	5.0	4.1	.8	7.5	6.2	2.8	1.50	2.18	1.18	.21	.58	.43	1.05	3.50	10.64	30.6	.33
199	3.8	10.6	1.4	5.6	8.9	-	9.4	19.5	1.4	1.88	2.66	1.48	.23	.99	.25	1.19	3.50	12.18	36.6	.33
016	4.7	19.7	-	4.2	7.1	-	8.9	26.8	-	1.79	2.15	1.08	.13	.74	.97	1.05	3.50	11.40	32.2	.35
018	3.9	15.2	.2	6.8	9.0	-	10.7	24.2	.2	2.14	2.10	1.84	.20	.76	.49	1.05	3.50	12.08	33.1	.36
109	2.5	3.1	1.7	5.4	4.7	.9	7.9	7.8	2.6	1.59	2.15	1.35	.19	.93	1.51	1.05	3.50	12.27	32.2	.38
121	1.8	2.9	1.1	3.8	2.6	.5	5.6	5.5	1.6	1.12	1.71	1.44	.10	.71	.34	1.06	3.50	9.98	24.4	.41
026	3.0	13.9	-	4.6	4.5	.7	7.6	18.4	.7	1.52	1.89	1.58	.18	.97	.29	1.05	3.50	10.98	25.8	.42
169	4.8	23.5	-	5.2	8.5	-	10.0	32.0	-	2.00	2.56	1.46	.16	1.02	1.16	1.05	3.50	12.92	27.2	.47
179	4.2	21.0	-	3.8	5.8	-	8.0	26.8	-	1.60	2.15	1.85	.16	.99	.60	1.05	3.50	11.89	24.8	.48
112	2.8	5.5	1.2	4.4	4.1	.6	7.2	9.6	1.8	1.44	2.19	1.36	.11	.72	1.02	1.05	3.50	11.39	23.7	.49
129	3.9	15.9	1.0	3.1	4.2	.1	7.0	20.1	1.1	1.42	2.51	.79	.16	.53	.61	1.05	3.50	10.57	19.8	.53
113	4.4	20.0	-	3.7	6.5	-	8.1	26.5	-	1.62	2.12	.94	.12	.45	1.08	1.05	3.50	10.90	16.9	.64
Aver.	3.2	11.6	.7	4.9	5.9	.3	8.1	17.5	1.0	1.63	2.12	1.34	.17	.90	.75	1.06	3.50	11.47	31.8	.36

Cost of Producing Winter Wheat

Farm No.	Hours									Costs									Yield	Cost per bu.
	Before Harvest			Harvesting			Total			Man labor	Horse & tractor	Seed	Twine	Threshing	Manure	Machinery	Land	Total	bu.	
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor											
121	1.7	3.0	1.0	8.0	5.4	.4	9.7	8.4	1.4	$1.95	$1.79	$1.96	$.18	$.47	$.34	$1.07	$3.50	$11.26	32.3	$.35
199	1.1	3.0	.3	6.2	9.7	-	7.3	12.7	.3	1.47	1.27	2.04	.26	.85	.55	1.05	3.50	10.99	28.8	.38
119	2.7	4.4	1.2	5.2	8.0	-	7.9	12.4	1.2	1.57	1.92	1.78	.11	.73	.33	1.05	3.50	10.99	25.0	.44
179	1.3	6.3	-	9.9	11.6	-	11.2	17.9	-	2.25	1.43	1.48	.35	1.49	.60	1.05	3.50	12.15	26.3	.46
159	2.1	5.7	.7	7.6	9.0	.8	9.7	14.7	1.5	1.94	2.04	2.09	.14	.82	.55	1.05	3.50	12.13	24.9	.49
016	3.5	15.1	-	12.6	15.5	-	16.1	30.6	-	3.21	2.45	2.03	.29	.71	.97	1.05	3.50	14.21	27.6	.51
109	2.2	2.6	1.3	5.5	5.2	.5	7.7	7.8	1.8	1.54	1.70	.73	.17	.36	.67	1.05	3.50	9.72	17.7	.55
189	2.4	1.3	2.1	8.6	8.2	.7	11.0	9.5	2.8	2.21	2.99	2.44	.22	.82	-	1.05	3.50	13.23	20.6	.64
129	3.2	18.2	-	11.4	7.9	1.1	14.6	26.1	1.1	2.92	3.00	3.18	.28	.52	.61	1.05	3.50	15.06	17.4	.86
169	6.8	36.6	-	8.8	13.4	-	15.6	50.0	-	3.12	4.00	1.98	.15	.68	1.16	1.05	3.50	15.64	15.5	1.01
Aver.	2.7	9.6	.7	8.4	9.4	.3	11.1	19.0	1.0	2.22	2.26	1.97	.21	.75	.58	1.05	3.50	12.54	23.6	.53

Cost of Producing Spring Wheat

Farm No.	Hours									Costs									Yield	Cost per bu.
	Before Harvest			Harvesting			Total			Man labor	Horse & tractor	Seed	Twine	Threshing	Manure	Machinery	Land	Total	bu.	
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor											
026	2.9	13.8	-	5.2	4.2	.9	8.1	18.0	.9	$1.62	$2.00	$1.74	$.14	$.75	$.29	$1.05	$3.50	$11.09	15.7	$.71
113	5.1	22.8	-	6.2	9.7	-	11.3	32.5	-	2.26	2.60	2.44	.21	1.00	.88	1.05	3.50	13.94	16.8	.84
118	2.0	2.8	1.0	6.4	3.8	.7	8.4	6.6	1.7	1.69	1.53	2.15	.31	.34	-	1.05	3.50	10.57	12.6	.84
139	3.9	15.5	-	8.7	9.2	-	12.6	24.7	-	2.51	1.98	1.92	.22	.42	.95	1.05	3.50	12.55	13.7	.92
149	3.2	13.4	-	4.1	2.7	.8	7.3	16.1	.8	1.46	1.90	1.89	.19	.28	.79	1.05	3.50	11.06	9.6	1.15
112	2.5	4.1	1.4	3.3	2.1	.5	5.8	6.2	1.9	1.15	2.05	1.76	.10	.25	2.04	1.06	3.50	11.91	8.8	1.35
119	3.2	6.9	1.1	4.3	5.2	-	7.5	12.1	1.1	1.50	1.88	1.81	.10	.27	.33	1.05	3.50	10.44	7.5	1.39
129	3.5	15.4	.6	4.3	5.8	-	7.8	21.2	.6	1.57	2.22	1.64	.19	.28	.30	1.05	3.50	10.75	7.3	1.47
199	2.1	2.5	1.4	5.6	4.2	.6	7.7	6.7	2.0	1.54	2.18	1.14	.19	.21	.55	1.05	3.50	10.36	6.6	1.57
Aver.	3.2	10.8	.6	5.3	5.2	.4	8.5	16.0	1.0	1.70	2.04	1.83	.18	.42	.68	1.05	3.50	11.40	11.0	1.04

Cost of Producing Oats and Wheat

Farm no.	Hours									Costs									Yield bu.*	Cost per bu.
	Before Harvest			Harvesting			Total			Man labor	Horse & tractor	Seed	Twine	Threshing	Manure	Machinery	Land	Total		
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor											
199	2.0	2.6	1.4	5.7	4.2	.6	7.7	6.8	2.0	$1.54	$2.17	$2.36	$.18	$.80	$.55	$1.05	$3.50	$12.15	30.5	$.40
216	2.3	3.5	1.5	6.0	5.7	.4	8.3	9.2	1.9	1.67	2.24	1.13	.22	1.05	1.30	1.05	3.50	12.16	27.9	.44
189	3.5	4.2	2.5	6.0	5.2	.6	9.5	9.4	3.1	1.90	3.23	1.26	.22	.92	.54	1.05	3.50	12.62	26.1	.48
149	2.9	11.7	.3	5.4	3.9	.8	8.2	15.6	1.1	1.65	2.17	2.45	.18	.57	.79	1.05	3.50	12.36	20.9	.59
018	3.8	16.4	-	6.4	8.9	-	10.3	25.3	-	2.06	2.03	2.04	.17	.19	.49	1.05	3.50	11.53	7.6	1.52
Aver.	2.9	7.7	1.1	5.9	5.6	.5	8.8	13.3	1.6	1.76	2.37	1.85	.19	.71	.73	1.05	3.50	12.16	22.6	.54

*At 40 lbs. per bushel.

Cost of Producing Oats and Barley

Farm no.	Hours									Costs									Yield bu.*	Cost per bu.
	Before Harvest			Harvesting			Total			Man labor	Horse & tractor	Seed	Twine	Threshing	Manure	Machinery	Land	Total		
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor											
121	1.8	4.8	.7	4.9	2.4	.6	6.7	7.1	1.3	$1.34	$1.59	$1.55	$.12	$.83	$-	$1.05	$3.50	$9.98	27.8	$.36
169	5.1	22.3	-	4.7	8.0	-	9.8	30.3	-	1.96	2.42	2.15	.13	.89	-	1.05	3.50	12.10	22.3	.54
149	3.4	13.2	.5	3.9	1.6	.8	7.3	14.9	1.3	1.45	2.24	1.92	.18	.56	.79	1.05	3.50	11.69	21.3	.55
199	3.0	10.0	.8	3.6	4.2	.4	6.6	14.2	1.2	1.32	2.06	2.38	.21	.41	.62	1.05	3.50	11.55	13.6	.85
Aver.	3.3	12.6	.5	4.3	4.0	.5	7.6	16.6	1.0	1.52	2.08	2.00	.16	.67	.35	1.05	3.50	11.33	21.3	.53

*At 40 lbs. per bushel.

Cost of Corn Husked from Standing Stalks

Farm no.	Hours									Costs								Yield bu.	Costs per bu.
	To Harvest			Harvest			Total			Man labor	Horse & tractor	Seed	Husker	Manure	Machinery	Land	Total		
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor										
216	7.4	11.1	2.2	8.0	16.1	-	15.4	27.2	2.2	$3.09	$3.97	$.32	$ -	$1.23	$1.55	$3.50	$13.66	50.2	$.27
026	10.8	23.2	1.0	13.9	23.8	-	24.7	47.0	1.0	4.95	4.55	.41	-	.25	1.55	3.50	15.21	49.3	.31
189	8.5	15.8	2.8	17.5	23.2	-	26.0	39.0	2.8	5.21	5.39	.62	-	1.61	1.55	3.50	17.88	58.1	.31
179	12.1	40.5	-	3.9	5.8	.9	16.0	46.3	.9	3.20	4.45	.47	1.00	.60	1.55	3.50	14.77	40.9	.36
199	13.2	27.3	2.2	10.8	20.3	-	24.0	47.6	2.2	4.81	5.56	.29	-	1.31	1.55	3.50	17.02	43.5	.39
118	11.0	16.6	3.2	6.6	8.8	1.7	17.6	25.4	4.9	3.52	4.99	.44	.87	1.49	1.55	3.50	16.36	41.0	.40
139	12.2	29.9	-	12.2	13.6	-	24.4	43.5	-	4.88	3.48	.52	-	1.79	1.55	3.50	15.72	38.8	.41
149	9.7	28.3	.4	18.2	37.5	-	27.9	65.8	.4	5.58	5.60	.53	-	2.67	1.55	3.50	19.43	46.7	.42
016	12.4	31.7	.6	17.6	30.7	-	30.0	62.4	.6	5.99	5.48	.29	-	2.54	1.55	3.50	19.35	39.2	.49
129	14.6	39.6	.7	3.6	4.6	1.3	18.2	44.2	2.0	3.63	5.16	.27	1.00	.61	1.55	3.50	15.72	30.9	.51
121	9.0	20.2	1.5	9.1	11.4	-	18.1	31.6	1.5	3.62	3.71	.34	-	.34	1.55	3.50	13.06	24.2	.54
113	15.6	35.8	-	10.9	21.0	-	26.5	56.8	-	5.30	4.54	.52	-	3.52	1.55	3.50	18.93	35.0	.54
149	6.3	11.8	2.0	8.7	13.1	-	15.0	24.9	2.0	3.00	3.20	.52	-	1.75	1.55	3.50	13.52	22.6	.60
111	12.5	32.3	-	5.1	5.9	-	17.6	38.2	-	3.53	3.05	.39	-	.23	1.55	3.50	12.25	11.4	1.07
169	22.4	57.2	.6	10.0	20.0	-	32.4	77.2	.6	6.48	6.68	.30	-	7.11	1.55	3.50	25.62	20.0	1.28
Aver.	11.8	28.1	1.1	10.4	17.0	.3	22.2	45.1	1.4	4.45	4.66	.42	.19	1.80	1.55	3.50	16.57	36.8	.45

Cost of Corn Cut and Shredded

Farm no.	Hours									Costs									Net cost	Yield bu.	Cost per bu.
	To Harvest			Harvest		Total			Man labor	Horse & tractor	Seed	Twine	Shredder	Manure	Machinery	Land	Total	Stover credit			
	Man	Horse	Tractor	Man	Horse	Man	Horse	Tractor													
014	7.9	16.6	1.3	9.8	14.4	17.7	31.0	1.3	$3.54	$3.51	$.85	$.23	$.99	$1.19	$2.50	$3.50	$16.31	$1.80	$14.51	36.0	$.40
018	11.4	33.8	-	11.8	16.8	23.2	50.6	-	4.64	4.05	.36	.12	1.91	1.42	2.50	3.50	18.50	1.48	17.02	31.1	.55
112	9.6	16.3	1.6	12.2	18.7	21.8	35.0	1.6	4.36	4.08	.29	.32	2.37	3.12	2.50	3.50	20.54	1.58	18.96	33.6	.56
119	11.8	24.4	2.2	8.0	11.6	19.8	36.0	2.2	3.96	4.66	.36	.16	1.18	.63	2.50	3.50	16.95	1.38	15.57	26.2	.59
139	10.3	22.5	.4	10.3	18.5	20.6	41.0	.4	4.12	3.47	.95	.68	2.17	2.05	2.50	3.50	19.44	1.51	17.93	29.1	.62
169	22.4	57.2	.7	19.6	21.4	42.0	78.6	.7	8.40	6.82	.28	.13	2.07	7.12	2.50	3.50	30.82	1.38	29.44	27.1	1.09
111	10.2	25.8	-	14.1	13.2	24.3	39.0	-	4.85	3.12	.27	.28	1.50	1.86	2.50	3.50	17.88	.75	17.13	12.5	1.37
Aver.	11.9	28.1	.9	12.2	16.4	24.2	44.4	.9	4.84	4.25	.48	.27	1.74	2.48	2.50	3.50	20.06	1.41	18.65	27.9	.67

Cost of Producing Rye

Farm no.	Hours: Before Harvest Man	Horse	Tractor	Harvesting Man	Horse	Tractor	Total Man	Horse	Tractor	Costs: Man labor	Horse & tractor	Seed	Twine	Threshing	Manure	Machinery	Land	Total	Yield bu.	Cost per bu.
121	1.7	4.0	.7	6.6	3.4	.5	8.3	7.4	1.2	$1.66	$1.56	$1.60	$.15	$.47	$-	$1.05	$3.50	$9.99	16.3	$.61
129	4.3	16.8	-	4.4	4.6	.2	8.7	21.4	.2	1.74	1.89	1.69	.09	.50	.66	1.05	3.50	11.12	16.9	.66
199	1.8	3.0	1.0	4.2	7.7	-	6.0	10.7	1.0	1.20	1.66	1.58	.18	.43	-	1.05	3.50	9.60	14.2	.68
109	1.6	2.8	.7	4.8	5.6	.5	6.4	8.4	1.2	1.27	1.39	2.12	.21	.23	1.51	1.05	3.50	11.28	7.6	1.48
189	2.4	3.7	1.5	2.9	2.4	.4	5.3	6.1	1.9	1.06	2.00	2.23	.22	.19	1.07	1.05	3.50	11.32	6.9	1.64
Aver.	2.4	6.1	.8	4.6	4.7	.3	7.0	10.8	1.1	1.39	1.70	1.84	.17	.36	.65	1.05	3.50	10.66	12.4	.86

Cost of Producing Flax

Farm no.	Hours: Before Harvest Man	Horse	Tractor	Harvesting Man	Horse	Tractor	Total Man	Horse	Tractor	Costs: Man labor	Horse & tractor	Seed	Twine	Threshing	Manure	Machinery	Land	Total	Yield bu.	Cost per bu.
199	3.1	4.5	2.0	3.9	6.6	-	7.0	11.1	2.0	$1.41	$2.51	$1.67	$.07	$.84	$.55	$1.05	$3.50	$11.60	8.4	$1.38
113	6.7	31.0	-	9.4	16.9	-	16.1	47.9	-	3.22	3.83	1.30	-	.88	-	1.05	3.50	13.78	7.8	1.77
159	4.5	10.4	1.9	6.2	2.4	1.6	10.7	12.8	3.5	2.15	3.15	1.19	-	.38	-	1.05	3.50	11.42	3.8	3.01
016	7.9	24.1	-	13.8	19.4	-	21.7	43.5	-	4.33	3.48	2.12	-	3.81	.97	1.05	3.50	19.26	4.2	4.59
Aver.	5.6	17.5	1.0	8.3	11.3	.4	13.9	28.8	1.4	2.78	3.24	1.57	.02	1.48	.38	1.05	3.50	14.02	6.1	2.30

Cost of Producing Clover and Timothy Hay

Farm no.	Hours: First Cutting Man	Horse	Tractor	Second Cutting % cut	Man	Horse	Tractor	Total Man	Horse	Tractor	Costs: Man labor	Horse & tractor	Seed	Manure	Machinery	Land	Total	Yield ton	Cost per ton
118	8.9	9.9	1.2	100	4.2	10.3	.2	13.1	20.2	1.4	$2.62	$2.44	$1.10	$.43	$1.15	$3.50	$11.24	4.0	$2.81
179	7.0	12.7	-	-	-	-	-	7.0	12.7	-	1.40	1.02	1.10	.60	.65	3.50	8.27	2.1	3.94
121	6.9	13.3	-	-	-	-	-	6.9	13.3	-	1.37	1.07	1.10	.34	.65	3.50	8.03	2.0	4.02
199	5.3	10.6	-	100	3.8	10.3	-	9.1	20.9	-	1.83	1.67	1.10	1.30	1.15	3.50	10.55	2.5	4.22
129	7.5	12.0	-	-	-	-	-	7.5	12.0	-	1.49	.96	1.10	.61	.65	3.50	8.31	1.8	4.62
169	7.4	11.3	-	36	1.4	2.0	-	8.8	13.3	-	1.76	1.06	1.10	1.57	.83	3.50	9.82	2.0	4.91
149	7.5	12.7	-	-	-	-	-	7.5	12.7	-	1.49	1.01	1.10	.79	.65	3.50	8.54	1.6	5.34
Aver.	7.2	11.8	.2	34	1.3	3.2	-	8.5	15.0	.2	1.70	1.32	1.10	.81	.82	3.50	9.25	2.3	4.02

Cost of Producing Alfalfa Hay

Farm no.	Hours													Costs							Yield tons	Cost per ton
	First Cutting			Second Cutting				Third Cutting			Total			Man	Horses & tractor	Seed	Manure	Machinery	Land	Total		
	Man	Horse	Tractor	% cut	Man	Horse	Tractor	% cut	Man	Horse	Man	Horse	Tractor									
139	8.1	13.4	-	100	4.8	8.5	-	43	1.9	3.1	14.8	25.0	-	$2.97	$2.00	$1.10	$.95	$1.32	$3.50	$11.84	5.2	$2.29
189	8.9	10.9	.7	100	5.3	5.8	.3	100	5.9	7.5	20.1	24.2	1.0	4.02	2.74	1.10	1.11	1.55	3.50	14.02	6.1	2.30
216	4.4	7.4	-	100	2.9	5.1	-	100	3.5	5.9	10.8	18.4	-	2.17	1.47	1.10	1.19	1.55	3.50	10.98	4.4	2.49
113	6.5	12.7	-	90	6.0	9.3	-	6	.2	.3	12.7	22.3	-	2.55	1.79	1.10	.59	1.12	3.50	10.65	4.0	2.66
119	4.8	5.9	-	100	4.4	7.3	-	100	4.3	5.1	13.5	18.3	-	2.70	1.47	1.10	.33	1.55	3.50	10.65	3.4	3.13
014	6.9	10.1	-	100	5.7	8.8	-	100	3.3	5.4	15.9	24.3	-	3.18	1.94	1.10	1.02	1.55	3.50	12.29	3.9	3.16
179	7.3	9.9	-	100	9.3	14.1	-	-	-	-	16.6	24.0	-	3.32	1.92	1.10	.61	1.15	3.50	11.60	3.2	3.63
159	7.3	10.7	.8	100	6.0	6.9	.2	-	-	-	13.3	17.6	1.0	2.65	2.01	1.10	.47	1.15	3.50	10.88	3.0	3.63
016	11.3	12.6	-	100	7.9	12.6	-	-	-	-	19.2	25.2	-	3.84	2.01	1.10	.97	1.15	3.50	12.57	3.4	3.70
118	11.1	14.9	1.2	100	6.2	8.9	.9	-	-	-	17.3	23.8	2.1	3.46	3.20	1.10	.43	1.15	3.50	12.84	3.4	3.78
026	5.3	10.6	-	-	-	-	-	-	-	-	5.3	10.6	-	1.06	.85	1.10	.29	.65	3.50	7.45	1.9	3.92
112	6.2	8.6	.5	100	4.9	8.1	-	-	-	-	11.1	16.7	.5	2.22	1.77	1.10	-	1.15	3.50	9.74	2.4	4.06
109	5.0	7.5	1.0	100	6.1	7.0	1.9	-	-	-	11.1	14.5	2.9	2.22	2.93	1.10	1.62	1.15	3.50	12.52	2.8	4.47
121	3.0	5.4	-	100	2.6	3.6	-	-	-	-	5.6	9.0	-	1.13	.72	1.10	.34	1.15	3.50	7.94	1.7	4.67
149	6.7	12.3	.3	71	4.3	6.9	-	-	-	-	11.0	19.2	.3	2.20	1.78	1.10	1.58	1.00	3.50	11.16	2.3	4.85
111	20.4	19.9	-	100	10.6	13.0	-	45	3.8	5.5	34.8	38.4	-	6.95	3.07	1.10	.56	1.33	3.50	16.51	3.2	5.16
169	8.6	19.5	-	56	1.9	3.0	-	-	-	-	10.5	22.5	-	2.10	1.80	1.10	1.16	.93	3.50	10.59	2.0	5.30
129	4.4	7.9	-	100	6.1	9.6	-	-	-	-	10.5	17.5	-	2.11	1.40	1.10	.61	1.15	3.50	9.87	1.5	6.58
018	8.2	15.4	-	100	4.0	6.4	-	-	-	-	12.2	21.8	-	2.44	1.74	1.10	.49	1.15	3.50	10.42	1.2	8.68
Aver.	7.6	11.4	.2	90	5.2	7.6	.2	26	1.2	1.7	14.0	20.7	.4	2.80	1.93	1.10	.75	1.21	3.50	11.29	3.1	3.64

Cost of Producing Soybean Hay

Farm no.	Hours									Costs								Yield ton	Cost per ton
	To Harvest			Harvest			Total			Man labor	Horse & tractor	Seed	Twine	Manure	Machinery	Land	Total		
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor										
216	8.5	7.0	3.4	10.9	9.3	-	19.4	16.3	3.4	$3.87	$4.05	$2.12	$-	$1.30	$2.20	$3.50	$17.04	2.8	$6.04
014	4.2	14.0	1.0	16.1	19.3	-	20.3	33.3	1.0	4.06	3.47	1.96	-	1.00	1.50	3.50	15.49	2.5	6.15
139	5.2	18.1	.5	6.2	8.8	-	11.4	26.9	.5	2.29	2.48	2.65	.36	.95	1.05	3.50	13.28	1.5	9.01
109	6.6	12.9	1.1	4.8	5.1	.5	11.4	18.0	1.6	2.28	2.43	1.24	.17	-	1.05	3.50	10.67	.8	12.92
179	14.1	45.3	-	9.9	13.4	-	24.0	58.7	-	4.80	4.70	.81	.20	2.33	1.75	3.50	18.09	1.1	16.65
Aver.	7.7	19.4	1.2	9.6	11.2	.1	17.3	30.6	1.3	3.46	3.42	1.76	.14	1.12	1.51	3.50	14.91	1.7	8.77

Cost of Producing Wild Hay

Farm no.	Hours		Costs					Yield ton	Cost per ton
	Man	Horse	Man labor	Horse work	Machinery	Land	Total		
129	16.2	26.2	$3.24	$2.10	$.65	$2.00	$7.99	3.8	$2.10
179	18.0	29.0	3.58	2.32	1.15	2.00	9.05	3.2	2.83
121	4.6	7.0	.92	.56	.65	2.00	4.13	1.3	3.18
016	15.8	22.1	3.16	1.77	.88	2.00	7.81	1.8	4.34
112	6.8	8.9	1.35	.72	.65	2.00	4.72	1.0	4.72
159	13.0	18.0	2.61	1.44	.78	2.00	6.83	1.4	4.88
014	7.5	8.7	1.50	.70	.65	2.00	4.85	.9	5.39
109	6.9	9.7	1.39	.78	.65	2.00	4.82	.7	6.89
169	5.8	8.8	1.16	.71	.65	2.00	4.52	.6	7.53
199	3.6	5.4	.73	.43	.65	2.00	3.81	.3	12.69
Aver.	9.8	14.4	1.96	1.15	.74	2.00	5.85	1.5	3.90

Cost of Producing Corn Silage

Farm no.	Hours								Costs									Yield tons	Cost per ton
	To Harvest			Harvest		Total			Man labor	Horse and tractor	Seed	Twine	Cutter	Manure	Machinery	Land	Total		
	Man	Horse	Tractor	Man	Horse	Man	Horse	Tractor											
139	9.5	19.3	.5	20.6	31.6	30.1	50.9	.5	$6.02	$4.38	$1.00	$.67	$4.15	$2.18	$2.50	$3.50	$24.40	12.5	$1.95
121	6.4	15.1	.8	9.9	16.2	16.3	31.3	.8	3.26	3.13	.50	.34	2.06	2.80	2.50	3.50	18.09	9.0	2.01
026	10.8	23.2	1.0	9.2	17.4	20.0	40.6	1.0	4.02	4.04	.40	.46	2.05	.29	2.50	3.50	17.26	7.9	2.18
199	12.6	35.2	1.0	10.8	18.7	23.4	53.9	1.0	4.68	5.12	.85	.18	2.34	1.98	2.50	3.50	21.15	9.4	2.25
189	8.6	14.5	2.8	10.9	20.1	19.5	34.6	2.8	3.90	5.01	.62	.47	2.28	1.61	2.50	3.50	19.89	8.6	2.30
149	9.7	28.3	.4	10.7	19.4	20.4	47.7	.4	4.08	4.13	.59	.22	2.03	2.67	2.50	3.50	19.72	8.4	2.35
014	7.8	16.6	1.3	8.6	14.2	16.4	30.8	1.3	3.29	3.51	.85	.23	2.00	1.19	2.50	3.50	17.06	7.1	2.40
119	8.5	18.9	1.6	13.3	15.6	21.8	34.5	1.6	4.36	4.07	1.67	.24	2.61	3.14	2.50	3.50	22.09	8.7	2.54
159	5.3	10.0	2.1	10.8	18.0	16.1	28.0	2.1	3.22	3.48	.62	.27	1.91	1.85	2.50	3.50	17.35	6.8	2.55
016	10.4	30.3	-	16.8	28.1	27.2	58.4	-	5.44	4.67	.78	.57	3.21	3.72	2.50	3.50	24.39	9.4	2.59
109	8.6	13.9	1.7	7.4	12.6	16.0	26.5	1.7	3.21	3.16	.49	.31	1.78	3.14	2.50	3.50	18.09	6.9	2.62
169	11.7	38.0	.1	14.6	25.8	26.3	63.8	.1	5.26	5.17	.32	.39	2.88	1.34	2.50	3.50	21.36	7.9	2.70
216	8.9	16.0	1.9	12.1	14.6	21.0	30.6	1.9	4.20	4.00	.60	.27	2.11	3.22	2.50	3.50	20.40	7.4	2.76
118	10.9	16.6	3.3	16.0	23.8	26.9	40.4	3.3	5.38	5.19	.44	.57	2.95	1.49	2.50	3.50	22.02	7.6	2.90
112	8.5	12.9	2.1	8.8	14.7	17.3	27.6	2.1	3.45	3.90	.41	.32	2.13	2.76	2.50	3.50	18.97	6.5	2.92
018	16.8	44.7	-	11.6	22.2	28.4	66.9	-	5.67	5.35	.49	.22	2.87	2.12	2.50	3.50	22.72	7.7	2.95
113	15.6	35.8	-	8.5	14.8	24.1	50.6	-	4.81	4.04	.52	.31	2.17	3.51	2.50	3.50	21.36	7.1	3.01
129	10.8	28.8	1.6	8.4	13.6	19.2	42.4	1.6	3.83	4.71	.77	.37	2.09	3.79	2.50	3.50	21.56	6.8	3.13
179	11.9	38.6	-	11.2	18.6	23.1	57.2	-	4.62	4.58	.54	.28	2.33	2.67	2.50	3.50	21.02	6.4	3.28
111	9.0	23.8	-	12.0	19.9	21.0	43.7	-	4.20	3.49	.28	.16	2.10	2.76	2.50	3.50	18.99	5.2	3.65
Aver.	10.1	24.0	1.1	11.6	19.0	21.7	43.0	1.1	4.34	4.26	.64	.34	2.40	2.41	2.50	3.50	20.39	7.9	2.58