ORGANIZATION AND MANAGEMENT OF INSTITUTIONAL FARMS OF MICHIGAN

by

GLENN A. SWANSON

A THESIS

Submitted to the Graduate School of Michigan State College of Agriculture and Applied Science in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE

Department of Farm Management

1942

THE END

ACKNOWLEDGMENT

The author wishes to acknowledge the assistance of Professor E.P. Hill of the Farm Management Department in making this study and to thank Mr. John B. Strange of the Michigan Department of Agriculture for providing many of the records without which the study could not have been made. -C.A.S.

TABLE OF CONTENTS

Organization and Management of Institutional Farms of Michigan

Glenn A . Swanson

For many years the State of Michigan has been operating farms in connection with 16 of its State Institutions. These farms range in size from 62 to 2330 crop acres. They include a total of about 12,500 crop acres, or the equivalent of 200 average size Michigan farms. Recently there has been renewed interest in the function, organization, and management of these farms.

Much study has been made of the organization and management of privately owned or operated farms but very little study has been made of institutional or public owned farms. Most of the public owned farms are large units and operate on large budgets as contrasted with the privately operated farms. Recent comments in regard to the State farms has shown the need of some additional and useable data concerning the mana agement and operation of these farms. It was with that thought in mind that this study was made.

The time available for this study did not permit a detailed study of each of the State Institutional farms. Since many features of the farms are very similar, case studies were made of two of the farms. The first part of the study covers some of these readily comparable items while the latter section is an analysis of the two farms. A general survey was made first to obtain the location, acreage and other items of information for all of the farms, and also to learn something of the policies and the administration and accounting

procedures which apply to all of the units.

The two farms selected for the detailed study of organization and management were the ones at the Kalamazoo and Traverse City State Hospitals. For both of these a complete farm analysis was attempted. Although there are many factors or conditions which might affect the reliability of such an undertaking as compared to one made of average farms, it was thought that such a study would throw some light on the subject of institutional farm management.

PURPOSE OF THE STATE INSTITUTION FARMS

When most of the State Institutions were started, provisions were made to establish farms in connection with them. This was done because farms are considered to have a definite place in the operation of such institutions. The following are a few of the important reasons for this belief: first, the inmates need some form of occupational training; second, the institutions use large amounts of farm produce; and third, the State farms could be used as a source of good foundation stock for the farmers and at the same time provide the institutions with an extra source of income.

The State Institutions are primarily maintained to rehabilitate the inmates as much as possible, and work or occupation of the body and mind is an important part of such. The farms provide much work that is of the proper type and level for many of the inmates. Many of the common farm enterprises can make use of a large amount of man power but

they still do not require a high degree of skill or training on the part of the well-supervised workers. Many persons consider the above the primary reason for having farms with the State institutions, and the general policy on most of the farms has been to provide as much inmate training as possible.

For most of the State Institutions, food purchases are one of the larger items of expense. Not only are large amounts of food used but also many of the inmates in the medical institutions are on special diets which require special foods at above average costs. Milk, fruit, and vegetables are commonly required foods in these special diets and are also foods which require a large number of men hours in their production. Thus many of the State Institutions, having both the extra requirement for these foods and the available low cost labor, have turned to filling their own needs as far as practicable. A large herd of Holsteins, and a large acreage of garden crops and fruit trees have become the policy of most of the state farms.

In the production of these huge quantities of food, surpluses occasionally arise on some of the farms. For the crops and livestock products such surpluses are rare, only a few institutions make a practice of placing any products on the open market. The Southern Michigan Prison has raised sugar beets for sale, while the Kalamazoo Hospital and Mount Pleasant Training School have sold some livestock products. Occasionally certain products are sold to other institutions. With the dairy cattle the story is different as many of the institutions regularly have an excess of breeding stock.

Since most of the state herds have exceptionally high production averages, many of the farms consider themselves a source of outstanding breeding or foundation animals. This is undoubtedly a better way to dispose of these animals than to veal or butcher the excess for meat consumption by the institution. Recently the policy has been to sell only the bulls whose dams have production records of at least five hundred pounds of butter fat.

ADMINISTRATION OF THE STATE FARMS

As with many State agencies, the administration of the State Institutional farms is more or less controlled or at least influenced by several governmental bodies. From a financial point of view the funds for operating and for capital expenditures for the farms come from legislative appropriation. These are separate from the funds provided for the institutions proper, but are granted at the same time. Then all expected cash expenditures for all purposes must be budgeted and approved by the State Budget Department. After the funds have been appropriated and budgeted, the actual expenditures must be requisitioned of and approved by the business manager of the institution. Thus the financial end of the business on an institutional farm differs much from the private enterprise and among other things requires much long time planning.

For several years the State Department of Agriculture*

*The Bureau of Animal Industry does this work in the Department of Agriculture.

has exercised a limited amount of general supervisory authority over all the State farms. Its main function has been to help correlate the operations of the various farms, especially aiding in joint purchases and in the livestock breeding programs. Besides furnishing a full time veterenarian for the farms, the Department has kept the herd records, recommended the breeding programs, and partially supervised the purchase and sale of breeding stock. There is very little visible evidence of the Department of Agriculture supervising the cropping programs to any extent.

The determination of the policies of the individual farms is usually carried out by the business manager of the institution and the farm superintendent. In some cases where the dairy superintendent is responsible directly to the business manager he helps set the policies for the management of the dairy herd. These policies are supposedly based on the needs of the institution for food and occupational therapy.

RECORDS KEPT ON STATE FARMS

As in all well regulated governmental insitutions, accurate and fairly detailed cash records are kept on the farms, Since expenditures are only made following a requisition, this is not a difficult job for a bookkeeper. The requisitions for cash are charged against the appropriation for the farm. The records do not stop at the cash accounts, but transactions between the insitution as such and the farm where no cash is involved are also entered in the expenses and in-

come. Thus in farm accounting terms they are keeping records not only on the entire farm but also some double entry accounts on each enterprise.

The record of the production of crops and livestock on the farms is kept on daily record cards as it is turned into the stores department. These record cards are summarized monthly and reports sent to the proper authorities, including the State Department of Agriculture. The dairy herds are on official test and production records are kept on each animal.

Inventories of all crops and livestock are made at the end of the fiscal year. In addition, monthly reports of the numbers of cattle, hogs, and poultry are made. Occasionally complete livestock inventories, with values, are made at different times during the year as they are requested by one of the administrative agencies.

Other records kept by some of the farms are the farm superintendent's field book and annual land use maps. The superintendent's field book usually contains a history of each field giving the crops grown, soil treatment, and other similar information. The farm maps usually record the same data only on annual maps instead of the field diary. Also during the later part of the winter or early spring each farm sends a statement of the crops to be planted or land use plan to the Department of Agriculture.

The State has set up a general accounting procedure which is followed by all the farms. Under this plan inventory

items, as machinery and equipment, do not depreciate until they are sold or otherwise disposed of. When a piece of machinery is purchased it is inventoried at cost and is held at that value as long as it is on the farm. The inventory values of livestock are handled in almost the same method. When the animal is born, or a given number of days afterwards, a set value is given it. This value increases according to a fixed schedule until the animal reaches a given age or production, then the value remains constant until the animal is sold or butchered.

All changes in inventories are entered into the fiscal summaries as incomes or expenses. When an animal is sold, butcherd or dies, its current inventory value is entered as expense against the enterprise and farm just as feed purchases hired labor, and veterinarian services. The amount that the young livestock increases in value is entered as an income to the business. Thus instead of recording a change in inventory they enter both an increase and a decrease.

All produce raised on the farm passes through a control account, supervised by the stores department where the records are kept. The stores record the quality and value of the product and this is credited to the proper enterprise. When the product is used it is charged to the proper enterprise or institutional department, although no funds are transferred. Thus when hay is harvested it is credited to field crops and when fed to the cattle it is charged to that enterprise. The annual fiscal records are on an enterprise basis and when they

are summarized no adjustment are made for these inter-enterprise double entry expense and income.

All records of production are for the entire farm only, without any breakdown as to production of individual fields. Even the superintendent's field book which shows the crops raised and the soil treatment by fields does not give this information except in a few cases.

The most complete source of data on amount of labor hired and wages is the monthly requisitions for the workers pay. The farm superintendent in most cases is the time keeper but all information seems to be turned over to the institutional managers office where the records are kept and the payments are made.

When any cash, as for labor or feed purchased, is paid out for expenses on the farm this is charged against the legislative appropriation for the farm. The only cash income for the farm, outside of this appropriation, comes from the sale of surplus produce which is most cases is breeding stock from the dairy herd. This cash income from these two sources must be sufficient for all cash farm expenses.

Two general summaries are made of the farm records. The stores department of the institutions make a monthly summary of the production and livestock. These summaries are taken from the daily record cards and are sent to the Department of Agriculture. At the end of the fiscal year the monthly production figures are totaled to obtain an annual record which is partially or completely published with the annual fiscal

report of the farm.

The other major summary report made out is the annualfiscal report. This is a summary of cash and non-cash expenses and incomes. In this report the farm business is divided into the following compartments: dairy, poultry, swine, fruit, garden, field crops, potatoes, power, improvements, and general. Thus the report might be said to be partially on an enterprise cost accounting basis. This cost accounting procedure is not complete in that the expenses are not completely carried over into the productive enterprises. The expenses and incomes for each of the enterprises are itemized by groups that fit into the general accounting system for the institution.

A few other summary reports are made out and are chiefly to assist in develpoing the budget. In some of these reports labor and cash expenses are summarized more completely than in the regular fiscal reports.

The primary reason for keeping the records on the farms seems to be to keep the fiscal operations straight. This is a requirement for all state supported institutions and the records are necessary inmaking out the budget prior to requesting the appropriation from the legislature. The dairy production records are needed in the breeding program which is being supervised by the Department of Agriculture. The other production records are required by the Department of Agriculture and are used by some institutions in their annual reports. The need for and use of other records is more or

less left up to the individual farm superintendents or institution managers,

Records set up with these general purposes in mind are apt to be of only limited use for analyzing the farm business. Part of the information needed to really study the operation and management of the farm is lacking. On neither of the farms studied could the number of litters of pigs farrowed be determined. In other cases so much extra material was included in the information desired that it was impossible to secure the information. Machinery and equipment expenses were divided into so ma ny accounts that an accurate figure could not be determined. The gross expense and income figures given in the fiscal reports include not only the cash transactions but also the inter-enterprise credits. Thus these figures are far in excess of the true figures. Still this enterprise cash accounting system is not carried out completely so the figures given are of little value in studying the farm business on the enterprise basis. The cash crop expenses, as fertilizers, seed treatment and spray materials , were covered up or lost in an entry termed agricultural supplies which included besides these, the raised seeds and other home grown produce used on the crops, even the manure in some places.

More serious than the lack of information or existence of excess material is the difficulty is securing that which is available in useable form. Many of the needed figures are not summarized and can be found only on the original records. Much information, as the number of workers and wages

paid, can be found only on the daily record cards or requisitions slips. In both institutions studied, data on the feed purchase and the hired labor was very difficult or impossible to obtain. Repair and maintenance expenses, especially on machinery, were anything but easy to sort out of a maze of itemized accounts. Much of the difficulty was due to the use of the names of institutional accounts in itemizing the farm expenses. In some cases ten or more summary items were listed that might well be mostly repair expenses.

Although the accounting procedures were the same for all the institutions, the actual accounting practices differed greatly between the various institutions. One farm will credit the manure to the dairy herd and then charge it to the field crops and garden, while another will forget it completely. At one institution the farm will be charged for the food for the hired labor and the inmates who work on the farm while on another the only labor charge will be the cash wages of the workers. Thus the comparing of data between the farms of various institutions is of questionable value. Even when adjustments are made for the apparent major differences, there is still many chances for errors to creep in due to variation in handling overhead charges as heat, lights and water.

Also there are several other charges which must be separated between the institution and the farm even though they operate on separate budgets. Many service charges, especially

for repair and maintenance, must be divided between the farm and the general institution itself. Also there is a certain amount of interchange of work that can not be accurately measured. The division of such charges in most cases is carried out by the individual institutions and uniformity is not achieved. This lessens the value of the figures for comparing the different farms.

Under the present accounting procedures capital charges, as the purchase of new machinery, are not included in the fiscal statements. Expenses for capital outlay, as new buildings and machinery, are either authorized by a separate appropriation or are budgeted in a separate account on the regular farm budget. These expenses are never charged off as a farm operating expense. As stated before all capital goods are carried on the inventory at the original cost until they leave the farm, or they are never depreciated as long as they are on the farm. Thus the total farm expense figures given in the fiscal reports are really the totals less the charge for capital expense. This again lessens the value of any attempt to compare these institutional farms with other farms where such expenses are charged against the farming business.

LOCATION OF THE STATE INSTITUTION FARMS

Sixteen of the State institutions operate farms. These are located mostly in the southern and central parts of the

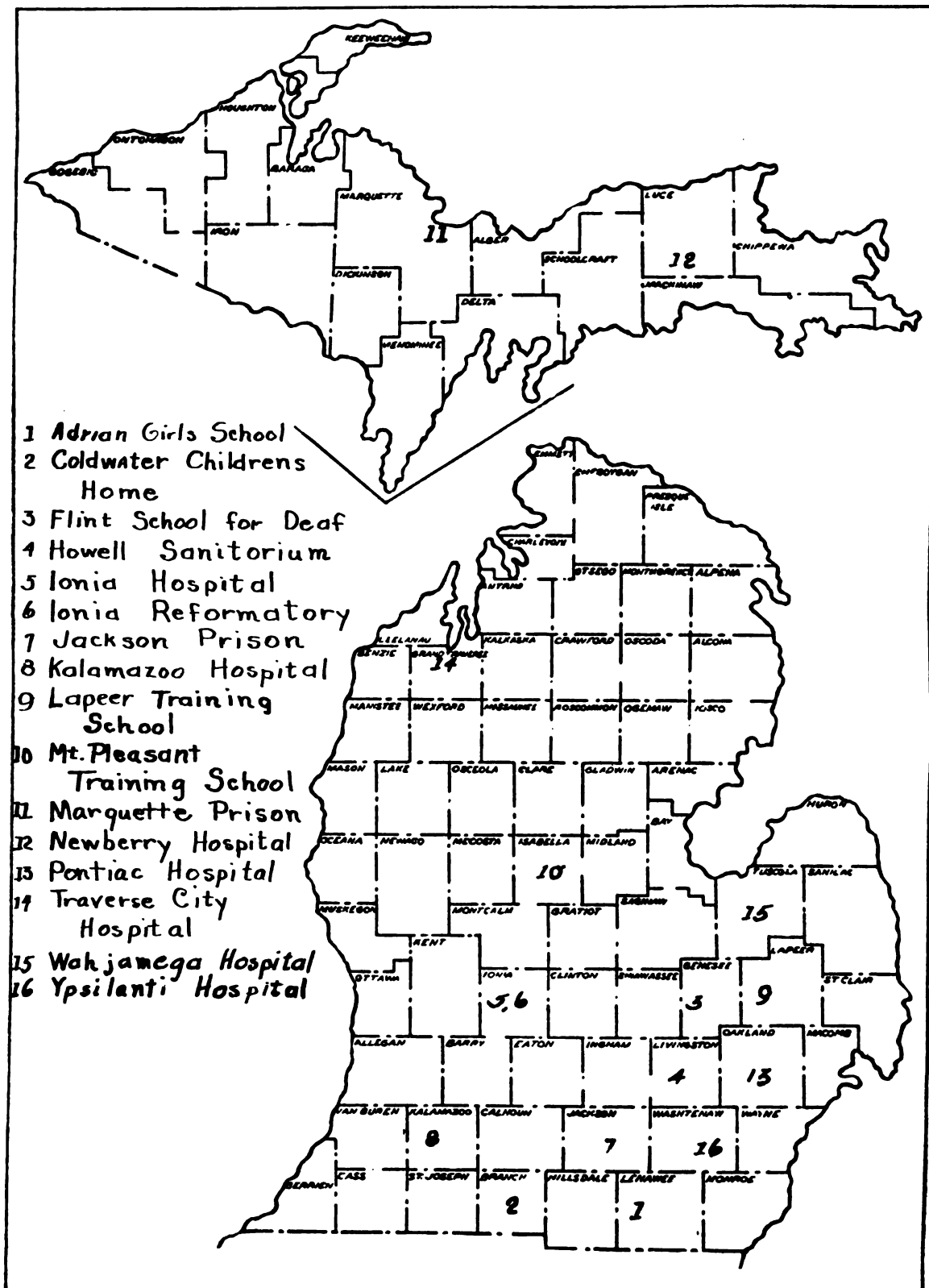
State, although two are in the Upper Peninsula. The spot map on page 14 shows the location of these farms.

These farms vary greatly in size. The one at the Girl's Training School at Adrian being the smallest with only 62 crop acres* and 9.7 cows in 1941 while the prison farm at Jackson has the largest crop acreage, 2330 acres, and the herd at the State Hospital at Lapeer is the largest with 179 cows. Table 1 lists the farms with their crop acreages and average number of cows for 1941. These two measures of size

Table 1. Crop Acres and Number of Dairy Cows at Michigan Institutional Farms, 1941

	Crop Acres	Dairy Cows
Adrian Girl's School	62	12
Coldwater Children's Home	191	0
Flint School for Deaf	254	25
Howell Sanitorium	420	61
Ionia Hospital	444	48
Ionia Reformatory	1111	64
Jackson Prison	2330	193
Kalamazoo Hospital	1130	108
Lapeer Training School	911	222
Mt. Pleasant Training School	411	55
Marquette Prison	472	41
Newberry Hospital	580	75
Pontiac Hospital	631	118
Traverse City Hospital	782	119
Wahjamega Hospital	859	62
Ypsilanti	819	66
State Total	12,447	1,880

* The term "crop acres" is used in this report as it is the designation used in the records on the institution farms. It includes all land in crops, plus tillable pasture and orchard and is closely comparable to tillable acres. In most of the reports it varied slightly from year to year



LOCATION OF STATE INSTITUTIONAL FARMS

were chosen because they are most representative of the farm business. Dairying or milk production is the most important enterprise on all the farms. Crop acreages are practically the only other figures that are at all readily available for all the farms and are on a comparable basis. The total acres in the farms is not given by all of the institutions.

KALAMAZOO AND TRAVERSE CITY FARMS

The farms at the State Hospitals at Kalamazoo and Traverse City were selected for case study because of their similarity in size of business and type of inmate help available. Both of the institutions are hospitals for the mentally deficient. Although the farm at Kalamazoo contains more acres of crop land, the size of the dairy herds are approximately the same, with the Traverse City herd averaging about ten cows more. The two farms are located in different types of farming areas and the difference in climate and topography affects the farming operation to a marked degree.

Originally complete comparisons as to organization and management of the two farms were planned, but this had to be given up due to the difference in accounting practices. Practically all of the factors not affected by the difference in climate were affected by the accounting. An attempt is made

---

even though no change in total farm land could be found. This may have been due to a change in the idle land, in the recording of data, or in the amount of land use by the institution for non-farming purposes.

in a very limited way to compare these farms with those of the farmers in each area who are cooperating with the Farm Management Department at Michigan State College in their farm accounting project. In making the report each farm will be considered separately.

THE KALAMAZOO STATE HOSPITAL FARM

The farm ar the Kalamazoo State Hospital consists of three separate units with separate buildings and equipment. The Colony farm contains 672 acres*, of which 251 acres are rented for cash, Most of the land is level upland silt loam with a few slopes that are too steep to cultivate. The hogs and about half of the dairy herd is kept on this unit. Approximately 185 inmates live there. The farm buildings for this unit are about three miles from the main grounds of the institution.

The Brook farm unit contains 476 acres of which 176 acres are cash rented, and 84 acres are share rented. Most of the crop land here is eitherm muck or a border soil, the rest being the surrounding hilly upland. The rest of the dairy herd is kept on this unit. There is also an inmate cottage on the farm. This unit is located on the opposite side of Kalamazoo and slightly farther from the home unit/

---

*All crop figures and acreages are averages of the years 1937, 1938 and 1939 and livestock expense and other figures are for the three fiscal years starting July 1,1937, unless stated otherwise.

The home farm is the smallest of the three units, and consists of 178 acres. This is made up mostly of small pieces around the institutional grounds. Much of it is very hilly with some low muck spots mixed in. Even though it is very split up there is some very good muck and heavy soil. No stock is kept on this unit as most of it is near enough to be partially operated by the Colony unit.

The total farms contained an average of 1246 acres for the three years studied, This amount varied from 1200 to 1275 acres and most of this difference was due to changes in the acreage of rented land. Approximately 90 per cent of this acreage was tillable land. The average gross farm income, both cash and credits, was $58,453.* The average gross expenses on a similar basis were $49,116 leaving an average profit** of $9,337. See Table 2.

Table 2. Size of Farm Business at Kalamazoo State Hospital 1937-39***

Items		1937	1938	1939	Average
Total acres operated	No.	1196	1273	1270	1246
Acres rented	No.	438	473	475	462
Crop acres	No.	1078	1188	1176	1116
Gross income	$	52,515	61,889	59,954	58,543
Total expenses	$	48,728	47,406	51,213	49,116

*This figure is the total income listed in the annual fiscal reports less the value of livestock disposed of during the period less the value of farm products used on the farm.

**All capital charges must be deducted from this before a true profit figure can be determined.

***Source: Farm Superintendent's Field Report, Annual Fiscal Report of Institution, and Monthly Production Reports

During the three years over one-third of the tillable land was in hay and pasture, about one-fourth was in small grains and seedings, one-sixth in each corn and garden or orchard and one-twelvth in other crops. The crop program is governed by the needs of the institution. Thus a large acreage is devoted to producing vegetables and fruits and the rest is used to feed the dairy cows and hogs. During the years 1937-39 approximately one-half of the livestock feed was purchased due to the heavy livestock program. The aver-

Table 3. Crop Program of Kalamazoo Hospital Farm 1937-39

Item	1937	1938	1939	Average
Percent of tillable acres in:				
Hay	33	25	38	32
Pasture	6	4	5	5
Corn	18	14	14	16
Oats	3	5	7	5
Barley	6	13	6	8
Wheat	8	5	5	6
Seedings	4	6	2	4
Orchard	6	5	5	5
Garden	9	12	11	11
Other	7	11	7	8
Yield per acre:				
Hay	Ton 1.7	2.1	1.6	1.9
Oats	Bu 54	68	40	53
Barley	Bu 25	26	19	24
Wheat	Bu 30	26	19	26
Corn*	-	-	-	-
Value crops produced per tillable acre**	$26.34	27.52	20.04	$25.24
Crop sales, total	$ 232	117	4	118
Feed purchases, total	$11,255	16,783	19,126	15,588

from Institution's Stores Department. This applies to Tables 2 to 9.

* Corn yields are not given because the acreage was not divided between corn for grain and silage.

**These figures include garden and orchard.

age value of crops produced per tillable acre was $14.78 (this is figured without the garden and orchard).

The dairy herd was being enlarged during the period. The total productive animal units was increased from 224 to 298 and the tillable acres per animal unit decreased from 4.5 to 3.6. Also feed purchases increased from $11,255 to $19,126. On the other hand livestock income per tillable acre increased from $38.60 to $47.45. The increased livestock program has been due to the need of more milk as part of the supply is still being purchased. Table 4 summarizes

Table 4. Livestock Program at Kalamazoo State Hospital Farm, 1937-39

Item		1937-38	1938-39	1939-40	Average
Productive animal units		224	242	298	257
Tillable acres per p.a.u*		4.5	4.4	3.6	4.1
Livestock income per tillable acre	$	38.60	40.72	47.45	42.32
Dairy:					
Milk cows	No.	107	118	126	117
Milk produced per cow	Lbs.	11,254	11,497	12,786	11,879
Dairy credits, total	$	27,482	29,571	35,188	30,475
Dairy credits per cow	$	256	251	281	260
Cattle income	$	4,884	4,171	4,945	4,667
Costs per p.a.u.:					
Feed and bedding	$	109.86	116.50	128.65	118.29
Labor	$	27.74	31.53	32.62	30.69
Partial net cost of producing milk per cwt.**	$	1.76	1.76	1.76	1.76
Hogs:					
Sows	No.	57	60	67	61
Hogs sold	No.	2	2	72	25
Pork produced	Lbs.	59,010	80,700	108,097	82,602
Income from hogs	$	7,985	9,749	11,072	9,602
Partial net cost of producing pork per cwt.**	$	9.82	9.55	8.36	9.10

* Productive animal unit.

**These costs do not include most capital charges, as building depreciation, etc.

the livestock program of the farm for the three year period.

During the period studied the dairy herd averaged 117 milk cows with an average production of 11,879 pounds of milk. All of this milk was used in the institution and was credited to the farm at the rate of $2.25 per hundred pounds which made the annual milk sales average $30,475. Other cattle income amounted to $4,667 per year, most of which came from the credit for beef and the sale of surplus breeding stock. A "partial net cost" figure for producing milk was calculated by subtracting the cattle income and change in inventory from the total expense* of the entire herd. This "partial net cost" figure does not include any charges for use of buildings, depreciation on equipment, or interest on investment. For each of the three years this "partial net cost" was approxiamtely $1.76 per hundred pounds of milk. An accurate comparison of these cost figures with other studies was impossible as no study could be found that was made on exactly the same basis. Any attempt to adjust the figures by estimating the omitted costs would, at best, be subject to much inaccuracy. The depreciation on buildings and equipment has never been determined, building maintenance and general expenses are entered in separate accounts, and manure credits are not given. Also their dairy records are kept on a herd basis.

---

* This figure is the total expense figure stated in the fiscal report less the inventory value of the stock sold, butchered or died during the year.

Hogs were the only other productive livestock enterprise besides the cattle. These were kept to produce part of the fresh pork needed by the institution and to make use of the garbage that is available from feeding the large number of patients and help. The average number of sows kept was just over 61 for the three year period. The general plan was to breed gilts and butcher them after they have raised their first litters. The pork production averaged 82,602 pounds which was valued at $8,960.40. 73 hogs were sold the last year and only three during the first two years. A "partial net cost" figure similar to the one for milk was calculated for the pork and it amounted to $9.10 per hundred pounds for the period. This figure, of course, includes only a few of the capital charges.

A few of the expenses and efficiency factors are given

Table 5. Expense and Efficiency Factors on Kalamazoo State Hospital Farm. 1937-39.

Items		1937-38	1938-39	1939-40	Average
Gross income per til.A.	$	49.47	54.86	52.64	52.37
Total expenses per til.A	$	45.04	42.02	44.96	44.01
MAN LABOR					
Men hired	No.	21	23	23.8	22.6
Inmate workers	No.	97	95	95	95
Man labor expense per til.A.	$	15.36	13.03	14.95	14.73
POWER AND MACHINERY					
Horses	No.	38	37	36	37
Tractors	No.	8	8	8	8
Total horse power of tractors		127	127	127	127
Feed bought per til.A.	$	10.44	14.52	16.79	13.97

in Table 5. The total expenses, after inter-farm credits

deducted, averaged $49,116 or $44.01 per tillable acre. This seems very high but is partially due to the heavy livestock program and the large acreage of fruits and vegetables. A very complete breakdown of these expenses was impossible due to the methods of keeping records. The expense for labor and feed purchased were the only important ones that could be accuratley determined.

The labor expense includes only the actual cash paid out to the hired farm employees. Many of the workers received their meals and lodging at the institution but this is not charged against the farm, at least not in the fiscal report. Of the 22.5 farm employees, six were classified as supervisors and the rest as farm hands. The annual labor bill was $16,331 or about $726 per man. Most of the hired man are kept on the year round with little extra help in the summer.

The man labor expense per tillable acre averaged $14.77. The value of this figure is questionable because of the large dairy herd. An attempt was made to determine the number of productive man work units but this was given up due to the large acreage of orchard and garden. Also the use of an unknown amount of inmate labor would lower the reliability of any figures on productive days work per man.

The inmates make up part of the labor supply for the farm. During the regular season these workers are available for nine hours of work for five days a week, but at least one half hour each day is used in going to and from work. The inmate helpers are not forced to work and some do not work.

Also the value of some of the inmates as farm workers is limited by their ability. All the teamster are inmates and also one tractor driver. The inmates are not paid for this work and no charge is made against the farm.

The only improvement expenses included in the fiscal report was an account termed "improvement maintenance". Whether or not this account included repair or maintenanee items only is not known as the amount seemed rather high the first year for just expenses for repairs. These funds for capital expenses are usually in separate or earmarked appropriations.

A more complete picture of the power and machinery is shown in the appendix than is given in Table 5. The size of these tractors is given in drawbar horsepower according to the Nebraska field tests except where such rating is lacking, in which case the manufacturer's rating is used. No accurate cost figures on either power or machinery costs are available. The tractors and truck expenses were combined with the costs for the horses, so these figures may present a fair picture of the power operating costs per acre. Other machinery costs are spread out through so many accounts and included in so many different entries that attempting to determine the total figure would recuire too much guess work.

TRAVERSE CITY STATE HOSPITAL FARM

The 800 acre farm at the Traverse City State Hospital is

divided into two units, but there all the livestock is kept on the home farm. The west farm contains 160 acres of rolling upland loam soil. Very little of this land is sufficiently level to be cultivated without danger of serious erosion. Int fact good conservation practices would probably require that much of the 160 acres never be used for cultivated crops. About 40 acres of orchard has been set out in attempt tp make some use of the land. This farm was purchased about ten years ago when more land was needed, but undoubtedly very little good judgment was used when this piece of land was selected. It is located less than a mile from the home farm but this is up a fairly steep grade most of the distance.

There are about 730 acres of farm land on the home farm or at the institution. About one-half of this is muck or an old cedar swamp which has been cleared and tiled except for 30 to 40 acres. The rest is mostly rolling upland, much of which is nontillable. There is some woods and considerable waste land due to roads and partial use by the institution. All of the livestock and practically all of the machinery is kept at the home farm.

The two units contain about 890 acres of which about 70 per cent is classes as tillable. Although the land has not changed, the amount that was classed as tillable varied somewhat between years. The only apparent reason for this was that more of the waste lands or slopes were cropped some years. The average gross income and expenses were $69,701 and $60,551 respectively after the inter-enterprise incomes

and expenses were removed. The average labor supply was 26.4 employees and about 75 inmates.

Table 6. Size of Farm Business at Traverse City State Hospital 1937-39

Item		1937	1938	1939	Average
Total acres operated	No.	890	890	890	890
Acres rented	No.	0	0	0	0
Crop acres	No.	594	672	677	684
Gross income		$71,107	70,786	67,211	69,701
Total expenses		$61,396	58,271	61,703	61,123

Most of the tillable land was used for the fairly high valued crops that would fit into the plan of producing food for the institution. The cropping program was roughly 34 per cent of the tillable land in hay and pasture, 11 per cent in small grains and seeding, 23 per cent in corn, 24 per cent in orchard and garden, 7 per cent in potatoes and .4 per cent in other crops.

The yields of most of the crops were fair to high. The potatoes averaged 239 bushels per acre, the barley averaged 27 bushels per acre and the hay about 2.1 tons per acre. The corn acreage was not accurately divided between that harvested for silage and grain, but allowing sufficient acreage to produce the silage at a yield of ten tons per acre, the grain would yield 37 bushels of shelled corn per acre.

Both the use of high valued crops and the yields were reflected in the value of crops per tillable acre. With the garden and orchard taken out this figure was $26.17 and even with the potatoes removed, the value of just the feed

crops was $21.71 per acre. The fact that about 300 tons of hay are bought every year may be part of the reason that such a cropping program can be followed with satisfactory results.

Table 7. Crop Program of Traverse City State Hospital Farm 1937-39

Item		1937	1938	1939	Average
Percent of til. A. in:					
Hay	%	17	32	28	26
Pasture	%	9	6	6	7
Corn	%	25	23	19	23
Oats	%	11	0	4	5
Barley	%	7	6	4	5
Seedings	%	0	0	0	0
Potatoes	%	7	6	8	7
Garden	%	9	10	13	11
Orchard	%	12	12	14	13
Other	%	2	4	6	4
Yield per acre:					
Hay	Ton	3.4	1.4	2.1	2.1
Oats*	Bu.	0	0	0	0
Barley	Bu.	24	17	46	27
Potatoes	Bu.	254	205	267	239
Corn**	Bu.	0	0	0	0
Value crops produced per til. A.	$	49.60	51.46	43.14	48.10
Crop sales, total	$	0	0	0	0

As at Kalamazoo, an intensive livestock program is also followed at this farm where the average livestock load was 305 productive animals units. This was one animal unit for each 1.6 acres of tillable land in feed crops, as compared to

---

* No production figures for oats could be found for these years.

**The division of corn acreage between grain and silage as shown in records, gave yields of corn for grain of 42 to 38 bushel of shelled corn per acre.

Table 8 Livestock Program at Traverse City State Hospital Farm, 1937-39.

Item		1937-38	1938-39	1939-40	Average
Productive animal units	No.	200	210	215	205
Tillable acres per p.a.u.	No	1.7	2.0	1.7	1.8
Livestock income per tillable acre		$ 117.51	93.89	100.07	102.07
Dairy:					
Milk cows	No.	125	126	125	129
Milk produced per cow	Lb.	11,656	11,803	11,621	11,693
Dairy credits, total		$34,040	34,563	36,064	35,089
Dairy credits per cow		$ 272	274	272	272
Cattle income		$ 6,263	5,825	5,240	5,809
Costs per p.a.u.					
Feed and bedding		$132.87	165.55	146.91	145.95
Feed and bedding*		$133.48	132.34	128.10	125.78
Labor		$ 35.11	39.20	38.18	37.83
"Partial net cost" of producing milk per cwt.		$ 2.06	2.37	2.13	2.18
"Partial net cost" of producing milk per cwt*		$ 1.95	2.04	2.01	2.00
Hogs:					
Sows	No.	38	35	40	38
Hogs sold	No.	0	0	0	0
Pork produced	Lb.	34,586	38,718	36,845	36,716
Income from hogs		$12,735	8,857	7,287	9,052
"Partial net cost" of producing pork per cwt.		$ 7.36	8.04	5.87	7.05
Poultry:					
Hens	No.	387	514	590	496
Eggs pr duced per hen	No.	190	190	177	186
Egg credits per hen		$ 3.20	3.59	3.86	3.96
Egg sales total		$ 1222	1,844	1,771	1,446

6.2 for the average farmer in that part of the state for the same years. The livestock income per feed crop acre averaged $116.22. The demand for milk and the purchase of feed make this intensive program possible.

* Figures adjusted to be as near comparable to those of the Kalamazoo Hospital Farm as practical.

Dairying is the important livestock enterprise. During the three years an average of 129 cows were kept which made an average production of 11,693 pounds of milk credited at the value of $272. The cattle income, other than milk, amounted to $5,309 per year. A "partial net cost" figure was also calculated for this herd. As at Kalamazoo no capital and building charges were included. This figure was $2.18 per hundred weight when a manure credit was allowed. This "partial net cost" is not comparable with the one for Kalamazoo because some extra charges were included as feed for the hired labor and inmate helpers. Then some feed prices were out of line, mangles were entered at $0.62 per crate or $22.50 per ton at Traverse City and at $4.00 per ton at Kalamazoo. After these charges and credits were made comparable as possible between the two farms, the "partial net cost" for Traverse City was $2.10 per hundred weight or $0.24 more than the Kalamazoo figure.

Hogs are also raised at Traverse City to help supply fresh pork and consume the garbage. The only records on these were found in the monthly production sheets and the annual fiscal report. A n average of 38 sows were kept and 417 hogs were butchered to furnish 86,716 pounds of pork. The "partial net cost" per hundred pounds of pork was $7.05, which is over $2.00 less than the Kalamazoo "partial net cost". How much of this difference is due to 'better' bookkeeping and how much to better farming could not be determined.

A poultry flock is kept at Traverse City. The general program is to purchase about 2000 chicks in the spring and place about 600 pullets in the laying house after the old hens have been killed in September. The records at the State Agricultural Department gives the average number of hens as 496 with a production of 186 eggs per bird. The farm fiscal report shows the total production of 7,655 dozen eggs per year which are credited at 19.1 cents. The "partial net cost" figure on these comes out to be 25 cents per dozen. The fiscal reports show an average annual loss of $478.84 on the poultry flock.

The gross expenses averaged $95.36 per tillable acre. These of course do not include very many of the capital charges connected with a farming business. With this high expense it is necessary to do more than just raise feed crops on the farm.

The labor expense in the records on this farm included not only the cash paid out but also the food for the farm employees and part of the inmate workers. This total labor charge amounted to $45.18 per tillable acre. During the period studied an average of 6.3 employees with supervisory duties and 20.1 farmhands were hired to work on the farm. One cook for the farm cottage was included in this group.

An average of 75 to 80 inmates worked on the farm. This number is much higher in the summer than during the remainder of the year. About 20 worked in the dairy barn the year

round. These inmates were away from their cottages about seven hours per day so they actually worked only six to six and a quarter hours. Here also none of the inmates were forced to work and some did not. None of these workers did any teaming or worked with machinery. The types of work that inmates were allowed to do at each farm seemed to be determined by the medical advisor.

The only building expenses given in the fiscal report were included in the improvement maintenance account. These amounted to $5.51 per animal unit annually for the three years.

Machinery expenses are too spread out to assemble in any useful figures. The power for the farm was furnished by ten horses and three tractors. Thus the power for each hundred acres of crop land was 1.5 horses and 0.3 of a tractor. This fraction of a tractor amounts to ten horse power according to the Nebraska Field Test Rating.

Table 9. Expense and Efficiency Factors on Traverse City State Hospital Farm, 1937-39

Item		1937-38	1938-39	1939-40	Average
Gross income per til.A.	$	119.71	105.34	105.52	109.95
Total expenses per tillable acre	$	103.36	86.71	95.87	95.36
MAN LABOR					
Men hired	No.	27	26.1	26.2	26.4
Inmate workers	No.	75	75	75	75
Man labor expense per tillable acre	$	47.47	38.46	40.75	45.18
POWER AND MACHINERY					
Horses	No.	10	10	10	10
Tractors	No.	3	3	3	3
Total horsepower of tractors	No.	69	69	69	69

COMPARISONS WITH INDIVIDUALLY OWNED AND OPERATED FARMS

Any attempt to compare these farms with any other is not only difficult but also very risky from the standpoint of good farm analysis. As already stated the difference in accounting practices limits the value of any comparison between the two farms. Then in comparing them with the private commercial farms still more obstacles are encountered. In spite of these handicaps, this was tried in two ways. The two farms were compared to each other and each one was compared to the average of the farms that are in the Farm Management Department's farm accounting project. The records of farms in Area 2* were used for the farm at Kalamazoo, and Area 12** figures were used for the Traverse City farm. In this part of the study all figures which were greatly affected by the accounting procedures were avoided as much as possible.

Size of Business-- In size of business the only comparison made was between the two institutional farms as both are much larger than the average of the private farms. The total expenses at Traverse City were about 23 per cent more than at Kalamazoo on 57 percent fewer tillable acres, but they kept about 10 per cent more cows or 19 per cent more productive animal units and had 17 per cent more hired help to do the work.

---

*Area 2 includes the counties of Kalamazoo, St.Joseph, Cass and parts of Barry, Allegan, Calhoun, and Branch.

** Area 12 includes the counties of Wexford, Missaukee, and parts of Grand Traverse, Benzie, Manistee, Kalkaska, Emmet, Cheyboygan, Antrim, Charlevoix and Otsego counties.

The Crops Program--Of the two institutional farms, the one at Kalamazoo has more acres in small grains and seedings and less in corn and fruit. Comparing the Kalamazoo farm with the Area 2 farmers*, more of its crop land was in orchard and garden and less in wheat and pasture while corn and the other small grains were about equal. The Traverse City farm was much more intensively farmed than those of the farm account cooperators in Area 12. They had a smaller amount of their land in hay and pasture and more in fruit and vegetables. The Area 12 farmers pastured about 81 per cent of their tillable land while only 7 per cent was used for that purpose at the institutional farm.

In regard to crop yields the institution farms stood above the regular farmers. A detailed report of their yields can be found in Table A of the appendix. For hay, corn, oats, barley and wheat the Kalamazoo farm out-yielded the Area 2 farmers by 4 to 66 per cent. On crop yield index basis, Kalamazoo was 116 and the regular farmers were 100. At Traverse City only the hay and potato yield could be compared and the institution farm ranked 55 per cent ahead of the cooperators on the crop yield index for these crops.

The value of crops per tillable acre also gave the edge to institutional farms. When the orchard and vegetable crops were deducted these figures were thus: Kalamazoo $14.28:

---

* All figures for the farm account cooperators farms are area averages for the years of 1937, 1938, and 1939.

Area 2 $13.21; Traverse City $19.41; and A rea 12 $14.15. These figures reflect the higher valued crops and higher yields on the Traverse City farms.

The Livestock Program--The total number of livestock is much larger on the institutional farms. When placed on a tillable acre basis, these figures become more comparable. Kalamazoo had 3.6 productive animal units per tillable acre, Traverse City had 1.6, Area 2 had 5.5, and Area 12 had 6.2. This also showed the more intensive live stock program at the institutional farms.

Kalamazoo had a record of 11,879 pounds of milk per cow per year, Traverse City had 11,693 pounds. The institutions have built up their production per cow far above the average for the State. The markets that the institutional farms had for their milk gave them the advantage in dairy sales per cow to such an extent that these figures are not comparable. Traverse City had a sales per cow of $272* , Kalamazoo had $260* , Area 2 farmers had $107, and Area 12 farmers had $87.

As the institutions do not have records on the number of litter farrowed, the only hog figures that are in any way comparable is the income per sow. These figures are as follows: Kalamazoo $157. Area 2 $176, Traverse City $255, and Area 12 $121.

---

* Both institution farms credited their milk at $2.25 per cwt. and although the production per cow was higher at Kalamazoo, the dairy sales per cow was more at Traverse City. The latter figure was calculated by dividing the total credits for milk by the average number of cows.

Expense and Efficiency Factors-- The expense and efficiency factors are very difficult to compare between the institutional farms and those of the cooperators in the two areas. At the institutions much more money was handled regardless of what basis it is put on. Expenses per tillable acre were two and a half and over six times greater on the State owned farms. They also spent more money in proportion to the amount that they took in. The expense per one hundred dollar income is as follows: Kalamazoo $87, Area 2 $76, Traverse City $89 and Area 12 $78.

The results of some labor efficiency measurements are given in Table 10. These are of questionable value because of the differences in accounting and purposes of the business but they may throw some light on the labor situation of the farms.

Table 10. Labor Efficiency Factors on Kalamazoo and Traverse City State Hospital Farms and Farms of Account Cooperators in Areas 2 and 12, averages of 1937-39.

Items		Area 2	Kalamazoo	Trav.City	Area 12
Men employed	No.	1.9	22.6	26.4	1.7
Expense per tillable acre		$ 7.13	14.77	45.18	8.16
Tillable acres per man	No.	75	49	24	57
Productive animal units per man	No.	13.6	11.4	11.6	9.3

The institutional farms and those of the farmers could not be compared as far as their improvement and machinery costs were concerned. A comparison of power might be made

on the basis of tillable acres per horse, but this would disregard the tractor power. For the three year period Kalamazoo had one horse for every 30 acres of tillable land, Area 2 farmers had one for every 43 acres. The ratio for Traverse City and Area 12 farmers were 1 to 63.1 and 1 to 40 respectively.

SUMMARY

The farm policy for the State Institutions has two important features, The first of these is to produce a portion of food needed by the inmates and staff and the other is to provide work or training for the inmates.

Although either the State Hospital Commission or the State Correction Commission has charge of the administration of the farms, this phase is more or less marked by joint supervision with other State agencies. The Department of Agriculture has a major role in the actual management of the farms while a few other governmental bodies have some influence, especially through financial control.

The outstanding feature of the accounting procedures use by the farms is the stress placed upon the financial part of the records. Except for the dairy figures, most other information is difficult or impossible to obtain accurately.

The general organization of the farms studied seemed to be well adapted to the policies of producing food and

providing work, The dairy production is the strong part of the farm business and, in general, crop yields were well above the average. At the Kalamazoo farm the land utilization program could be questioned in a few places. The data on labor, machinery, and other expenses were in such form as to be of little value in making an analysis of this phase of the farm business.

CONCLUSION

Considering the needs of these institutions the general program for the farms seems to be along the right lines. As with most farms, either publicly or privately owned, there are places where the administration could be improved. The results obtained would probably be better if the Department of Agriculture would do as much for the crops and other livestock as they are now doing for the dairy herd. Their guidance and coordinating efforts have undoubtedly helped obtain the high milk production records, and should be helpful to the rest of the farming business. Both farms studied had many strong points in their programs. The State Department of Agriculture could assist all the institution farms by picking up the good festures of their farm management program and passing them on to others. The other governing bodies could also make contributions to improve these farms. Several differences in administration between the various institutions need to be ironed out. For example, why should

there be so much difference between the type of work done by the inmates as there is at the farms studied when the same class of inmates is at both places.

Perhaps the biggest place that these differences exist is in the accounting practices. These should be standardized between the institutions. The main purpose for keeping records on a farm is to provide information suitable for the study and improvement of the business. One of the best means by which a farm manager may check his achievements is to compare them with someone else's . Because of the type of business, it is very difficult to compare institution farms with private ones, but comparisons between the various institutional farms would be very helpful. Such comparisons will be of very limited value as long as major differences in bookkeeping methods exist.

Changes should be made in the records to increase their usefulness. On the whole, sufficient data is kept to provide for a fair analysis of the farm business but much of it is so buried in other material that it is practically useless. Better methods should be worked out for summarizing the records so that the more pertinent information is more available. The present procedure of separating the data by enterprises or compartments should be carried out more completely.

As this study is based upon records that are now two crop seasons away, suggestions on the organization and management may be somewhat out of date. As was stated before,

little can be said about the expense and income factors on institutional farms. Compared to private farms the costs are high, income is also up, and in many respects they conduct a different type of business.

The crop records at Kalamazoo showed that oats out-yielded barley in total digestible nutrients by over 50 per cent. The corn acreage produced nearly two and one half times more feed per acre than that sown to barley. These results would indicate that the small grains, perferably oats, should be limited to the needs for nurse crops and corn should be used to produce the grain. For the years 1937-39 the acreage devoted to the seeding alone of legumes and to unharvested crops, as green manure crops, seemed unusually large. Since large amounts of feed are purchased, very careful studies could be made to determine what proportion of the roughages and of the grains should be grown. The plan of using the "Home farm" at Kalamazoo for orchard and garden should be continued with more emphasis on the fruits.

At the Traverse City farm the yields were very good except for the small grains. The acreage of these probably should be limited to nurse crops and the hay fields left as many years as they are productive so that less seeding is necessary. Since succulent feeds are considered so necessary by the herdsmen the possibilities of grass silage could be further studied. This would cut down the needed corn or cultivated acreage. Also if the reported yields of mangles are

customary, more of these could be used to replace part of the silage corn. Greater use of windbreaks might help in lessening the wind damage on the muck lands.

The dairy herds seem to be giving as good results as any of the enterprises on the farms. Since milk is one of the most important and expensive foods needed at the institutions, the dairy herd should produce as much of their requirement as possible. This may mean fewer heifers to be sold. These animals were selling for about one hundred dollars a head during the years 1937-39, and it is very doubtful if they were sold at a profit. The information on the rest of the livestock is rather limited. The difference in the "partial net cost" of producing pork between the two institutions as shown by the fiscal records would indicate that some thought should be given as to why this difference should exist. The poultry flock at Traverse City was in the red for two of the three years covered by the study.* This enterprise would need very high theraputic value to justify these results. The practice of replacing the entire flock with pullets each year is questionable.

It is difficult to make an analysis of the efficiency factors on institutional farms. The using of hired labor to drive two-horse teams is very questionable. Unless the

---

* From the annual fiscal report, and it does not include most of the capital costs.

horses can be driven by the cheaper inmate workers their number should be very limited on the farms. On the other hand the amount of tractor power and other machinery needed to do the farming at these institutions should be investigated. Maybe the use of two shifts during the rush seasons would greatly reduce these requirements.

A couple of other comments might be made concerning the Traverse City farm. Since so much feed has to be purchased every year it would seem advisable to add 150 to 200 more acres of good farm land to the unit. This would lessen the need of cultivating so much of the west unit where costs are high and results are only fair. The present plan of keeping this unit into cultivated crops should be continued. An alternative of this suggestion might be to keep fewer cows and buy part of the needed milk.

These farms are set up in such a way that good results should be expected. The units are large, and well-equipped, the soil is above average, and they are well-backed financially. The expensive item of production is hired labor which some persons claim is off-set by the free inmate labor. Proper organization and management should result in costs as least as low as these of the average private farmer.

APPENDIX

Table A. Power and Machinery at Kalamazoo State Hospital, 1937 to 1939

Tractors: Make	Model	Drawbar Horsepower
John Deere	D	23.90
John Deere	D	23.90
Farmall	f-14	14.84
Farmall	f-14	14.84
Parrett		15.
Parrett		15.
Centaur		10.
Bolen	A.P.	1.
Total horsepower of the 8 units		130. 48
Horses: Number		37
Power per 100 tillable acres:		
Horses		7.3
Tractors		11.5 H.P.
Machinery Inventory (at original cost)		$30,359.91

Table B. Power and Machinery at Traverse City State Hospital, 1937 to 1939.

Tractors: Make	Model	Drawbar Horsepower
John Deere	A	18.43
Caterpillar	22	25.21
Caterpillar	22	25.21
Total horsepower of the 3 units		68.85
Horses: Number		10
Power per 100 tillable acres:		
Horses		1.5
Tractors		10.9 H.P.
Machinery Inventory (at original cost)		$12,265.89

Table C. Farm Analysis Factors of the Farms at Kalamazoo and Traverse City State Hospitals and of Farm Account Co-operators in Areas 2 and 12. Averages of 1937, 38 and 39.

		Area 2	Kalama-zoo	Traverse City	Area 12
SIZE OF BUSINESS					
Total acres operated	No	131	1246	830	179
Acres tillable	No	142	1116	674	97
Gross income	$	3384	58,453	69,701	1,974
Gross expense	$	2454	49,116	60,457	1,512
EXPENSE AND EFFICIENCY FACTORS					
Total labor expense	$	1016	16,331	26,059	732
Labor expense per til.A.	$	7.18	14.77	45.13	8.16
Men	No	1.9	22.6	26.4	1.7
Work horses per til. A.	No	3.3	37	10	2.4
CROP PROGRAM					
Per cent tillable acres in:					
Hay	%	21	38	27	33
Pasture	%	18	5	7	21
Corn	%	19	16	13	13
Oats and Barley	%	9	13	11	8
Wheat	%	14	6	0	3
Potatoes	%	1	0	7	6
Garden and orchard	%	1	16	24	1
Yield per acre:					
Hay	Tons	1.6	1.9	2.1	1.3
Corn*	Bu.	41	-	-	27
Oats	Bu.	32	43	0	27
Wheat	Bu.	20	26	-	13
Potaotes	Bu.	-	-	279	168
Value of field crops produced per tillable acre	$	13.21	14.78	26.17	14.15
LIVESTOCK PROGRAM					
Productive animal units	No	25.8	257	305	15.8
Til.A. per p.a.u.	No	5.5	3.6	1.6	6.2
Income per til. A.	$	15.51	47.70	116.32	11.32
Dairy cows	No	9.7	117	129	8.6
Dairy product sales per cow	$	107	260	272	83
Dairy products sales, total	$	1039	30,475	35,089	715
Sows	No	2.8	61.3	38	.8
Hog income, total	$	493	9,602	9,653	97
Hens	No	82	0	496	47
Poultry and egg income	$	202	0	1809	118

* Corn yields not computed for institutional farms as acreage is not accurately divided between corn for silage and grain.

ROOM USE ONLY