

LIVESTOCK FARMERS IN MALAYSIA: KEY ISSUES IN DEVELOPMENT

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The paper examines the progress of livestock farming in Malaysia during the past decade and finds that many changes have taken place in the organisation of production. However, development has been very uneven. Broiler and egg production meet local demand and there is a minor but growing export of chicken meat. Similarly there is a net export of ducks. The pig industry has been especially successful, meeting all of the internal demand and providing steady exports. These segments have largely developed on their own, without any government assistance, other than the general umbrella of veterinary services. The ruminant sector on the other hand, despite considerable government assistance, remains relatively underdeveloped and Malaysia imports the bulk of its requirements of beef, mutton and dairy products. The farm case studies in this work show that the lack of government support to non-Malay farmers, especially failure to facilitate their access to secure land tenure, is having a major constraining effect of further development of this sector of agriculture.

Kertas ini meneliti kemajuan ternakan haiwan di Malaysia semasa sepuluh tahun yang lampau dan mendapati banyak perubahan berlaku di dalam organisasi pengeluaran sektor ini. Kemajuan ini, walau bagaimanapun, adalah tidak sama. Pengeluaran telur dan ayam dapat memenuhi permintaan dalam negara dan eksport daging haiwan ternakan yang sekarang masih kecil tetapi tetap berkembang juga. Begitu juga dengan eksport bersih ternakan itik. Ternakan babi terutama sekali didapati amat berjaya kerana bukan sahaja dapat memenuhi permintaan dalaman tetapi memberi peluang untuk dieksport. Industri ternakan ini membangun dengan sendiri tanpa apa-apa bantuan dari kerajaan (kecuali dari segi perkhidmatan veterineri). Sektor ruminan, di sebaliknya pula, tetap tidak berkembang walaupun kerajaan telah memberi banyak sokongan kerana Malaysia masih mengimpot keperluan daging lembu dan kambing serta tenusu. Kajian kes ladang di dalam penulisan ini menunjukkan bahawa kekurangan sokongan kerajaan kepada penternak-penternak bukan Melayu, khususnya kegagalan untuk membantu mereka mendapatkan tanah ternakan yang lebih kekal, telah membantutkan pembangunan yang lebih pesat yang boleh didapati dari sektor ini.

LIVESTOCK INDUSTRY: INTRODUCTION

Livestock rearing in Malaysia has traditionally been on a very small scale. Families kept a small flock of chickens and sometimes duck for both meat and eggs. These were unimproved stock, able to forage for much of their food. Goats were common, especially along the east coast. Local breeds of milk cows were distributed all over the country but they were never numerous. Buffaloes

were found in the flat lands, where they were used in ploughing the paddy fields. Native pigs were kept by the indigenous people and the Chinese brought other breeds in the 19th century; these newer pigs were reared in small numbers in both urban and rural areas.

As the towns developed, farm animals, especially swine, became much less welcomed in the built-up areas. At the same time, the larger number of urban dwellers, living a specialised non-agrarian life, meant a much greater demand for agricultural commodities. More perceptive farmers began to keep more chickens, ducks or swine to cater to this burgeoning market and over time they came to specialise in some particular aspect of animal production. Today while much of the ruminant sectors are little changed, there has been an almost complete transformation of the Malaysian broiler, egg, duck and swine industries compared with a few decades ago. In 1992, all of the pork and essentially all of the eggs, chickens and ducks consumed in the country are produced on large specialised farms. Feeds are imported from Asia, North America and elsewhere. The technology and the animals used in the chicken and swine industries are essentially the same as in Europe or North America. In a short period of time these segments of agriculture have changed from the traditional small scale operations to those with thousands of pigs or hundreds of thousands of chickens being reared in a modern industrial setting.

LIVESTOCK FARMERS

There is little reliable data on livestock farmers in Malaysia. Many farmers are engaged in livestock production as a part-time activity, either for family consumption or for extra farm income, or both. Statistics show that in 1976, 69,826 households in Peninsular Malaysia were involved in pig-rearing, 13,205 households in sheep-rearing, 86,517 households kept buffaloes and another 74,851 kept goats.¹ With widespread mechanisation of the rice-farms, buffalo-keeping has become less common. However, poultry and pig-rearing have intensified as farmers capitalised on the increased market demand within Malaysia and the opportunity to export, especially to Singapore. By 1983-84, there were 5,800 pig farms; 6,000 broiler farms and 6,500 layer farms in Peninsular Malaysia with about 100,000 people dependent on these farms for their sole or principal livelihood.²

Strong progress and expansion have occurred in the past two decades, particularly in the poultry and pig sectors. In terms of volume, poultry meat production in Malaysia attained a 15-fold increase between 1960 and 1989 while egg production increased 21-fold over the corresponding period. Malaysia achieved self-sufficiency in pork by the 1960's and in poultry meat and eggs by the early 1980's. By 1985, these two sub-sectors had become a multi-billion dollar industry. The total value of eggs and poultry meat production reached \$395.6 million and \$583.8 million respectively in 1985,³ while pig production was

valued at about half a billion dollars and earned about \$200 million in foreign exchange in the same year.⁴

In 1989, the livestock industry had expanded further with an increasingly commercialised pig and poultry sector continuing to produce well in excess of local consumption and a ruminant sector which, although unable to produce enough for local consumption, had made some progress. In that year, the ex-farm value of poultry meat and eggs at \$1.66 billion was 63% of the livestock production and 15% of the value of all agricultural products. Poultry meat production was estimated at 332,640 tonnes, providing an exportable excess of 57,000 tonnes over the local consumption of 275,000 tonnes. Growth in the production of eggs had also been impressive. In 1980, production was 2.1 billion. This increased to 4.32 billion in 1989 allowing a surplus of 422 million eggs for export (See Table 1).

TABLE 1: MALAYSIA - LOCAL PRODUCTION AND CONSUMPTION OF POULTRY MEAT AND EGGS, 1960-1989

Year	POULTRY MEAT (TONNES)		EGGS (MILLION)	
	Production	Consumption	Production	Consumption
1960	21,300	23,700	208	357
1965	41,500	43,000	815	964
1970	61,000	93,700	1,113	1,118
1975	93,000	93,700	1,906	1,918
1980	114,500	117,200	2,111	2,311
1981	130,100	128,500	2,270	2,269
1982	142,000	143,700	2,373	2,373
1983	160,000	156,200	2,686	2,686
1984	180,000	177,466	2,892	2,814
1985	221,400	212,200	3,098	2,948
1986	248,800	234,150	3,267	3,087
1987	277,200	242,881	3,450	3,234
1988	290,000	253,000	3,701	3,381
1989 (p)	332,640	275,000	4,322	3,900

Source: Department of Veterinary Services, Ministry of Agriculture, Malaysia.

(p) = Provisional

As for the pig sector, it has developed to become a major component of the livestock industry, accounting for 40% of total meat produced in the country and with an ex-farm value of live pigs of M\$819 million or 31% of the total ex-farm value of livestock products. The 1989 production of pork was 176,000 tonnes, of which 153,000 tonnes were consumed locally with 23,000 tonnes available for export, almost exclusively to Singapore (see Table 2). In 1989, exports to Singapore were valued at \$172 million. Although the production of pork has exceeded local demand for some years, there is still considerable import of 3,000-4,000 tonnes processed products annually.

Compared with the other sectors, the ruminant sector is relatively underdeveloped and Malaysia still imports the bulk of its requirements of beef, mutton and dairy products. Smallholders produce most of the local beef and mutton. In 1989, production of beef (14,350 tonnes) and mutton (600 tonnes) was estimated at 31.5% of total consumption needs (see Table 3). For beef, consumption had risen by 98% from 20,479 tonnes in 1980 to 40,500 tonnes in 1989 while production had only increased by 10% from 13,013 to 14,350 tonnes during the same period. For mutton, consumption had increased 80% during the period 1981-1989 but production had declined slightly and only met 9% of local needs in 1989. Beef imports were valued at M\$130 million in 1989 whilst mutton imports were worth about \$16 million.

**TABLE 2: LOCAL PRODUCTION AND CONSUMPTION
OF PORK, 1980-1989**

Year	Production (Tonnes)	Consumption (Tonnes)
1980	122,584	122,808
1981	124,661	124,800
1982	126,737	126,746
1983	128,303	129,707
1984	137,297	136,247
1985	147,510	142,660
1986	141,350	129,455
1987	155,064	133,922
1988	167,200	147,382
1989 (p)	176,000	153,000

Source: Department of Veterinary Services, Malaysia.

(p) = Provisional

**TABLE 3: LOCAL PRODUCTION AND CONSUMPTION
OF BEEF AND MUTTON, 1980-1989**

Year	BEEF (TONNES)		MUTTON (MILLION)	
	Production	Consumption	Production	Consumption
1980	13,013	20,479	-	-
1981	12,148	20,533	641	3,893
1982	13,659	24,477	578	4,101
1983	13,275	24,160	586	5,383
1984	13,125	29,728	618	5,149
1985	12,420	32,973	580	6,302
1986	12,308	31,239	586	5,698
1987	12,365	34,071	496	6,595
1988	13,487	38,756	526	6,808
1989 (p)	14,350	40,500	600	7,000

Source: Department of Veterinary Services, Ministry of Agriculture, Malaysia.

(p) = Provisional

Milk production is also undertaken mainly by smallholders and has achieved substantial growth over the past decade through a sustained selective breeding programme. In 1975, 14.92 million litres was produced and this has risen in 1989 to 28 million litres (Table 4). Despite the encouraging increase, the amount produced in 1989 was only able to satisfy 14 per cent of local demand for fresh milk. Milk powder imports in 1989 were equivalent to 772 million litres of fresh milk and were valued at M\$557.8 million.

CASE STUDIES OF LIVESTOCK FARMS

The above brief survey of literature on the livestock industry indicates that there has been an encouraging increase in production over the last two decades. However, rather less information is available about the situation of the livestock farmers themselves. What little there exists also tends to show a less optimistic situation for many of the smaller-scale producers than might be deduced from the macro data. To obtain first-hand information on the situation of farmers and the problems they face, field studies were conducted on various farms. Data from these studies is presented here, and together with the information on the industry from official sources, form the basis for the conclusions and policy recommendations.

**TABLE 4: LOCAL PRODUCTION AND CONSUMPTION
OF MILK, 1981-1989**

Year	Production (million tonnes)	Consumption (million tonnes)
1981	14.92	468.73
1982	16.74	357.66
1983	18.91	518.21
1984	20.20	560.84
1985	21.80	489.06
1986	24.01	538.02
1987	25.00	608.40
1988	26.00	763.00
1989 (p)	28.00	800.00

Source: Department of Veterinary Services, Ministry of Agriculture, Malaysia.

(p) = Provisional

THE POULTRY SECTOR

The chicken sector is amongst the most modernised and concentrated sectors in the livestock industry. Until recently, all of the chickens and eggs came from small flocks in the villages. In the early 1950's, with increased urbanisation and higher incomes, market demand became stronger, encouraging thousands of rural families to keep more chickens. By the 1970's as demand become even greater, farms with several thousand birds began to appear. By the late 1980's, all of the large farms were quite automated and advanced, and similar to those in developed countries with breeding stock and technology imported directly from Western Europe and the United States.

The broiler segment of the chicken industry has been especially buoyant; per capita consumption in Malaysia is second only to Singapore in the Asean region. High consumption is due in part to the relatively high income levels and in part to avoidance of pork and beef by a large part of the population. Domestic consumption is expected to increase and exports to rise substantially. The continued expansion of chicken meat exports is another matter. As in the swine industry, essentially all of the feed is imported, causing the inputs other than labour to be quite expensive. Also, Malaysian use of medicated feeds late in the growing cycle leaves residues that are not acceptable in developed countries. It is likely too that Thailand, Vietnam and China which produce their own feed and have lower wage rates than Malaysia will be able to undercut Malaysia other than in the live and fresh market in Singapore.

Farm incomes vary greatly. The huge poultry farms may easily gross several million dollars per year. However a majority of the small and medium-scale livestock farmers remain poor in part because the present marketing structure involving middlemen and other intermediaries does not ensure proper returns to the farmers. Poultry farmers' share of the consumer dollar has dropped from over 70% in the 1970's to 65-68% between 1980-85. The farmers' marketing margin for eggs was somewhat higher at 81-82% (See Table 5 on estimated farmers' share of the consumer dollar on broiler sales for 1981-1985). Efforts by poultry farmers to beat the present marketing system have not been very successful due to the lack of organisation and cooperation among themselves, their dependence on middlemen for both credit and market information, and the inability of small and middle-sized operations to fulfill volume contracts or to provide broiler chickens on a daily basis.

Chicken Farm 1: Once an extremely specialised operation producing only baby chicks, this farm is an example of an enterprise attempting to cope with rapidly changing economic realities. The farm began "small" a few years ago, using American stock to produce 200,000 baby chicks per month. The owners built up the business and gradually increased their capacity until in February

TABLE 5: FARMERS' SHARE OF THE CONSUMER DOLLAR ON BROILER SALES, 1981-1985

Year	(National Average M\$/Kg)			
	Ex-farm * Price (M\$)	Wholesale ** Price (M\$)	Retail Price (M\$)	Farmers' Share of Retail Price (%)
1980	2.54	2.92	3.59	70.7
1981	2.78	3.12	3.78	73.5
1982	2.85	3.23	4.20	67.8
1983	2.53	2.94	3.85	65.7
1984	2.37	2.98	3.65	65.0
1985	2.20	2.53	3.35	68.3

Source: * FLFAM, Annals of 1986.

** FAMA 1986.

1989, they were producing 1.2 million chicks per month; a considerable number were being sold to Kentucky Fried Chicken. Other breeders were also expanding into a relatively buoyant market. In February 1989, Kentucky Fried Chicken came on line with a very large new hatchery and in that month alone there was

an estimated surplus of 6 million chicks in Malaysia. All the independent hatcheries lost a great deal of money during this episode and are now fighting for a share of a much smaller market.

This is a large operation, well-capitalised, with modern facilities built on owned land. Since the farmers now find themselves well-equipped to turn out large numbers of a product that is difficult to sell, they have moved to a smaller office, cut back on staff, and tried to reduce other overhead costs. They are also now growing many of their own chicks as broilers. Other income is being generated by selling eggs, but these are from the breeding stock and are sold at or even below cost. Problems abound for this farm, but they are problems of economics and business which have resulted from poor market forecasting and competition from other large companies. As a beginning, the enterprise expanded its capacity with a blind eye to the fact that many others were doing the same thing; now it is stuck with capacious facilities and locked in fierce competition for a smaller market share. It is ironic that this was one of the most modern facilities encountered and perhaps the one in the most precarious financial health.

Chicken Farm 2: Located on rented land in a rubber estate, this appears to be a farm that barely provides the family with a living. Three family members have constructed a home and seven chicken houses on 2.5 acres of land and rear batches of 7,000 broilers. Baby chicks are purchased and the family members tend them until they are just over 50 days old. All of the feeds are completely mixed when brought to farm and the feeding and watering is done by hand. The farm has a gasoline-powered pump for the well but there is no electricity. Mature chickens are collected by a buyer and taken to his facility for processing. This little farm is "modern" in terms of the hybrid chickens, prepared feeds, medication, and disease control but the farmers live and work under relatively primitive conditions. Family members labour long and hard under a situation that has severe health and financial risks.

The major problem is not the long hours and hard work. Instead, it is the unnerving economic situation. When the chickens are mature they must be sold; if kept just a few days beyond the optimal time they will quite literally have eaten up any profits. Thus the farmers always operate on a very narrow margin and if they are forced to sell into a flooded market, they may do so at a loss. An operation of this size, without any sort of financial backing, will go under if subjected to even one or two episodes of that type.

Chicken Farm 3: All of the farms and farmers exhibit some degree of success; this particular example seems to illustrate how very hard work combined with careful planning and calculated risks can enable a small business to become a large one. This was not even a farm in the early 1980's but was a minor processor buying live chickens from various growers and slaughtering the birds in the local wet market. In the mid-1980's, the family members built a

small processing plant on squatter land; the facility is quite small but is operated very efficiently. Birds are slaughtered, scalded, plucked mechanically, eviscerated, sorted by weight, and cooled. After being chilled, they are taken to various local shops, markets and restaurants. Some live birds are sent to the markets in nearby towns and cities. In 1988, as the family members became more confident in their ability to operate an expanding business, they began growing a few thousands of their own broilers, the idea being to, whenever possible, buy live chickens from others when the price is low and slaughter their own when prices are high. They have become quite efficient at growing broilers and have expanded in that area also; by early 1990, they were setting out 80,000 chicks each month.

It is exceedingly difficult and expensive to buy suitable property in Perak so the family has the chickens on land they have rented from other squatters or have occupied through some other temporary arrangement. Chickens are grown in seven different locations. Large chicken sheds are built at each site, along with a house for at least one employee. There is no electricity at these sites and water is from a well. A major problem, and one that would not occur with a modern land holding system, is that the facilities are scattered over a large geographical area; if clustered together, the operation would run more smoothly and efficiently. An immense amount of time is wasted in simply visiting seven different sites, especially when none of them are served by a proper road. Also, if broilers are grown in a secure environment the loss from disease and theft is three to four percent; if grown in isolated locations it rises to about eight percent or more, the increase being principally due to theft.

In an effort to consolidate the operation, the family has looked into buying land. Small amounts of land are available, without roads, electricity or water, for between fifteen and twenty-five thousand dollars per acre. In comparison, land in some developed countries such as in the Central Valley of California, with an established orchard or vineyard, paved roads, electricity, and an irrigation system costs only thirteen to fifteen thousand dollars per acre; open agricultural land, with all of the infrastructure, is about ten thousand dollars per acre. Some Malaysians obtain agricultural land at little cost but others who have to buy it on the open market commonly find the price to be prohibitive.

This family business is doing very well; annual turnover is now in the millions of dollars. It is constructing a modern processing and cold storage facility in an industrial suburb, rationalising and legalising that aspect of their operation. But, without land, the owners live a precarious existence, subject to theft, pressure and financial blackmail. In terms of technology, the business is not especially modern or innovative; it has become successful because of the hard work, calculated risks, and imagination of the owners.

THE POULTRY SECTOR: FUTURE PROSPECTS

As Malaysia follows a "commodity approach" in its agricultural development, various areas amenable to large scale production have expanded and undergone vertical integration. This strategy is epitomised by the activities of Kentucky Fried Chicken, which now has everything from breeding stock and hatching facilities to ubiquitous fast food outlets. The larger scale of farms results in slightly cheaper chicken to consumers but means also that there are far fewer growers/entrepreneurs and more wage labourers. As the surviving farms become larger, it is likely that the prices of chicken and eggs will remain relatively low. While this is initially beneficial to the consumer, extreme concentration can be dangerous as it facilitates price fixing. Another point to consider is that the relatively rapid concentration of the broiler and egg industries has been accompanied by the failure of many smaller operators and much abandonment and wastage of millions of dollars worth of buildings and equipment.

THE PIG SECTOR

During the past few decades the pig industry has continued its rapid development and become more advanced, efficient and concentrated. While the number of pigs has tripled there are now only one-quarter as many farms. The trend of increase in animals kept per farm has continued in recent years. In Johore, for example, the total number of pig farms dropped from 297 in 1982 to 262 in 1985 but the average farm animal size increased from 696 pigs to 1,025 pigs in the corresponding period. The pattern has been similar in other states. Table 6 shows the comparative number of pig farms and farm animal sizes in 1982 and 1985 in the major pig-producing states. Many small farms have been closed down due to government regulation. Many of these, however, would have been forced out by economic considerations; the fact is that pig farms are getting larger and more efficient or they are going out of business.

The growing concentration of the pig industry has both positive and negative impacts. On the positive side, many of the newer and larger operations are located well away from population centres, often on large tracts where pig waste can be kept on site and away from streams. Veterinary services can be more easily provided to one large farm than to several small ones and the large operator is more likely to be able to deal quickly and effectively with disease

TABLE 6: NUMBER OF PIG FARMS, AVERAGE FARM ANIMAL SIZES AND TOTAL NUMBER OF PIGS IN SELECTED STATED FOR 1982 AND 1985

		Total No. of Pigs	No. of Farms	Av. Size of Farms (Heads)
Negri Sembilan	1982	285,062	625	456
	1985	290,726	627	463
Penang	1982	209,235	1,439	145
	1985	174,862	2,182	80
Melaka	1982	92,808	232	400
	1985	95,609	211	453
Johore	1982	206,760	297	696
	1985	268,614	262	1,025
Selangor	1982	307	1,052	292
	1985	450,458	688	654

Source: Figures from Jabatan Haiwan, 1987, p. 7-12.

problems. Also, the high standard of husbandry attained by the large operators enables them to produce superior animals acceptable to the export market. These large farms, with their economies of scale, are also able to produce meat at a slightly lower cost and, because of their size, weather temporary vicissitudes in the market, providing more stability to the sector.

Other factors have also led to changes in the pig industry. Towns are expanding and the population is moving closer to many previously isolated pig farms. Pollution problems and religious sensitivity among the Muslim community have resulted in stringent control over the management and siting of pig farms. The National Agricultural Policy stipulates that pig farming can only be carried out in gazetted areas where farmers are obliged to establish modernised husbandry systems and where they are required to manage pig farms as commercial enterprises and not as a way of life or a subsistence livelihood. The implementation of the Town Council by-laws in Perak, for example, resulted in the closing down of numerous "non-viable" farms in Krian (from 356 farms in 1981 to 63 farms in 1985) and Hilir Perak (from 195 farms in 1981 to 70 farms

in 1985). Elsewhere the Municipal by-laws require that pig farms be licensed (for example, Selangor and Penang) while under the Pig Rearing Act imposed in Johore (1975), Trengganu (1976), Melaka (1980) and Negeri Sembilan (1981), pig licences are issued only on a yearly basis by the Director of the State Veterinary Services Department who may impose conditions necessary to control pollution from pig waste. A sizeable percentage of smallholding farms have had their licences withdrawn on account of 'violation' of the Pig Rearing Act. It is not unreasonable that pig farmers be forced to deal with pig waste. The dumping of waste materials into streams is not allowed in developed countries and should not be allowed in Malaysia.

In 1988-1990 a number of swine farms were studied to learn how they operated, how they were faring economically, and what the farmers saw as problems that hindered their operations. Three rather typical farms are discussed below.

Pig Farm 1: The efforts of the farmer here are concentrated on pigs but the farm is more diverse with a degree of integration. The farm has about 750 pigs, including the parent stock; in addition there are 250 rabbits, several dozen chickens, a few turkeys, and a four acre pond where the pig waste are contained. Including the pond, the farm occupies about 6.5 acres of land. On the first field visit, the farmer said that the land "belongs to a friend who allows me to use it" but by the third visit he spoke of being a squatter, as were all of the others nearby. He has been farming here for sixteen years.

The piggery is well constructed, although a number of years old. All of the pigs which are managed to a high standard are from the farm's parent stock. There is a small feed mill in a separate building where the ingredients are prepared and combined. None of the pigs are sent to Singapore but instead go to the Ipoh abattoir. A high volume, low pressure hose is used to wash the pigs and the pens at least once each day. None of the waste leaves the farm; all of it goes into the old mining pool adjacent to the pig pens.

When the farmer was asked, "Do you have any problems?", his answer was, "No". This was an interesting answer especially when it was observed that the farm is more than two kilometers over a rutted and almost nonexistent track from the nearest maintained road; it has no electricity and the farmer does not have any title to the land, and so can be forced off at any time. Asked further, "What would you do if you owned the land?" the farmer emitted a sharp "Oh!" and spoke rapidly of how he would invest in a larger and better piggery and develop the farm in a more proper way. While he sees "no problem" with his present status, he knows that he could be much more productive if he had secure title to the land.

This farm is a contributor to the Malaysian economy but the lack of land tenure is a constraint on modernisation or expansion. Although the farmer dreams of

owning the land and quite literally blurted out his vision of what he could do with it, he is resigned to the feeling that it can never happen.

Pig Farm 2: This was once a large farm with 700-1,000 pigs and has been in operation at its present location for more than twenty years. Built on a low hill for proper drainage, the farm was a model operation in its early years; it had its own breeding programme and was a profitable farm. About seven years ago, the farmer embarked on a modernisation programme with an eye toward expansion. He constructed a large concrete-floored brick building to house a large feed mill and to store feeds and ingredients. Extending from it is a new piggery to house the breeding stock and some of the other pigs. An adjacent mining pool was to contain the pig waste. Shortly after the new facilities were completed, the farmer lost his Temporary Occupancy Licence (TOL) to the land, as the land was allocated to a housing developer.

Without any title to the land and subject to eviction on very short notice, the family is afraid to invest in the farm. As a consequence, the farm now has only 200-300 animals and cannot support a breeding programme so piglets must be purchased from others. The newer facilities are essentially abandoned and the family has pulled back to the now relatively antiquated building where they began many years ago. Three family members work the farm, caring for the animals and preparing the feed. All of the pigs go to the local abattoir. This unfortunate farm provides an illustration of some of the problems bedevilling Malaysian agriculture and how they inhibit both modernisation and productivity. First, a casual observer would conclude that the farmer and his family are behaving irresponsibly and misusing the land; after all, the buildings are becoming run down and the farm area is poorly maintained. In fact, when he may be forced to move at any time, it would not be rational for the farmer to continue to invest in a property that may have to be abandoned. Secondly, the farmer has not been able to use most of the new facilities already constructed. This wasted investment in abandoned structures nearly put the family into bankruptcy; it is a ruinous loss for them and one of the same amount, if not the same importance, to the nation. Had the farmer not lost his TOL he would now be producing far more animals for sale and might be exporting to Singapore. If the expansion had occurred the farm would now employ several additional people and be a more significant contributor to the economy. Despite the land being allocated to a housing developer eight years ago, no preparatory work or construction has occurred. At best, the TOL was revoked prematurely, perhaps because of a lack of planning by local authorities. In any event, the initiative of the family has been stifled and it has lost most of its capital.

Lastly, the frustration and helplessness felt by these people is not difficult to imagine. They have worked long and hard to establish a successful farm and now much of their investment has been wasted and they may have to abandon the remainder, losing their livelihood and their home of the last twenty years. And they have nowhere to go to continue farming. What does this insecurity

and lack of hope dō to industrious people who continue, against all odds, to be a contributor to the Malaysian economy?

Pig Farm 3: An excellent example of a modern, mechanised farm, this operation has about 5,000 pigs. The land is owned by the grower. All of the buildings are well constructed and quite new; the place is very clean, with all of the pigs and floors washed at least once each day. They have a complete breeding programme, using mostly Landrace and Yorkshire as grandparent stock, and breeding the F-1 generation females to Duroc boars to get the animals that are fed out and marketed. This is not merely a "family farm"; family members work here but there are six additional fulltime employees. This is an example of agribusiness, with the operator following the market trends of pork in Singapore and perhaps even the price of soya bean futures in Chicago. Feed grains are milled on the farm and mixed with other ingredients to make the blends required by animals of various types and ages. All of the feeding is by hand, although a few of the other very large farms have automated feeding systems.

Most of the pigs enter the Malaysian market and the grower also has a contract to send 360 pigs per month to Singapore. These latter animals are separated from the others at an early age; they are the ones with good confirmation and which show promise of remaining fairly lean. These animals are then maintained and fed apart from the others because its export outlet, Singapore, is stricter about medicated feeds and other treatments. All of the pig waste remain on the farm. Some of the material is recovered, dried, and sold as fertiliser; the high water content makes pig waste very difficult to handle but this farm is doing an excellent job. Remaining materials flow into a lagoon.

All farmers and businessmen have problems and this farmer is no exception. His, however, is an almost idyllic life when compared to the preceding examples. He has problems of economics; sometimes the price of pork is at or perhaps even below the cost of production or the price of maize and soya beans suddenly jumps. But these are problems of business, of buying and selling; he doesn't worry about having to move tomorrow and losing his investment and livelihood.

THE PIG SECTOR: FUTURE PROSPECTS

Pork production is one of the few truly bright spots in Malaysian food agriculture. The country's farmers grow enough for local consumption. They export thousands of live animals to Singapore each month, and the export of meat products is increasing. It is likely that they will capture a larger share of the Singapore market. There are a number of real and potential problems, however. All of the grandparent stock is imported, as is most of the technology and virtually all of the feed. While the Singapore market beckons, others are in

competition there. Political and religious considerations also act as a damper to further development.

Middlemen pose less of a problem to swine farmers than to most other sectors of food agriculture as most of the individual operators are large and sophisticated enough to be well informed on market prices and trends. Long-term contracts will continue this trend but as long as the overwhelming share of pork in Malaysia is for the "warm market" there will be sharp fluctuations in producer prices. As urbanisation continues and more women enter the work force, there will be an increased demand for refrigerated or processed pork which can be bought on the way home from work. This trend, along with the opportunity to export chilled or processed items, may lead to greater stability, however.

THE RUMINANT SECTOR

The ruminant sector is poorly developed. Sheep and goat farms are essentially smallholder enterprises. Most farmers practise semi-extensive or extensive type of farming, grazing the animals in the wayside and between the rows of orchard trees and plantation crops. The average sheep flocks are in the range of 5-20 breeding ewes; goat flocks are smaller. Few of these animals are given supplementary feed other than crop residues when available. In recent years, there has been an effort to develop both large and small scale pasturing of sheep and goats in oil palm plantations. Fencing and herding remain a problem but the potential for damage by the animals is less in this setting. One severe limitation, however, is that in a mature palm plantation there is little food for the animals and the little available has a low nutritive value.

Lately, the government has imported several thousand sheep in an effort to increase the number of animals in the country and improve the standard of the animals. Most of these new sheep are to be grazed in large plantations. There have also been attempts to develop a better standard of goats through production of a local-European cross that will be harder larger and give more milk than the local animal.

A large percentage (>80%) of the beef animals in Peninsular Malaysia are kept by smallholders. The Kedah-Kelantan breed of cattle, which produces about 60% of the domestic supply of beef, is concentrated in the northern border states where the per capita income is lowest. Productivity is poor and the smaller farmers rarely introduce improved genotypes. Calf mortality is high, growth rates are low and mature animals are fairly small. Most of the animals are simply grazed, with little supplementary feeding. Malaysia imports about sixty-five percent of the beef consumed in the country; imports will continue to be very substantial for the foreseeable future. It is unfortunate that the abundant abandoned land is not used, at least in part, to produce more beef.

Most buffaloes are owned by small-scale farmers and graze on the farm or in waste or unused land nearby. A high percentage of the swamp buffaloes are kept by rice farmers in Kedah, Kelantan and Trengganu where they were widely used until recently in preparing the fields for planting. Nearly all of the river buffaloes are in the states of Perak and Selangor, and are kept for milk production. Most are owned by Indian squatters, who graze them on unused land; the more progressive farmers give the cattle prepared feeds and some bring in grass as well. There is no effective programme to upgrade the herds. It is estimated that one-third of the calves die within a year of birth due to poor nutrition and the absence of medical care. Poor nutrition, parasites and disease all contribute to slow weight gain and low milk yields.

Traditionally the Local Indian Dairy (LID) cattle have been the mainstay of the dairy industry. The LID is relatively small and yields, under reasonably good conditions, an average of about 900 kg. of milk per year, less than 17% of that expected of dairy cattle in developed countries.⁵ In fact most of the LID cattle perform at well below their potential levels due to the general standard of care they receive. A very high percentage of the dairy "herds" number only 2-5 animals; many of these farmers are landless and graze the cattle along roads, on abandoned mining land, and in other waste spaces. Supplementary feeds are almost unknown on these tiny farms.

Cattle sheds commonly have a dirt floor, are very difficult to keep clean, have no electricity, and usually have a leaky roof; these conditions encourage various diseases and infections. Mastitis is a potential problem everywhere but is especially common in these situations. As a result a great many cows have lost one, two, or even three quarters of the udder and so are even less productive. These farmers aspire only to provide milk for the family and almost never have any to sell. We have not used any of these tiny and unfortunate "farms" as case studies but have instead selected from those which sell milk on a regular basis.

Dairy Farm 1: This farm is very small in area but the farmer and his wife and children manage it intensely, utilising about two-thirds of an acre, which they own. The barn is well constructed, with a concrete floor, proper mangers, and wide eaves for shade. A wooden floored pen raised above the barn floor holds the calves. The better female calves are kept to replace the present milking cows and the others are grown for beef. Cows are bathed twice each day and the barn is always clean. Much of the space not occupied by the barn, house and driveway is planted to napier grass which is cut and fed to the cows and calves. Manure from the cattle is spread on the napier plot or sold to vegetable gardeners.

All of the fifteen milk cows except the most recent arrivals are sturdy, healthy animals. Artificial insemination is provided by the government so the resultant cattle are also good animals. Pelleted feeds are given to the cattle, as are sago waste from a processor near Sungei Siput. Cows are milked by hand twice each

day, beginning at 5.00 am and again at 5.00 pm. Production is very heavy, with each cow giving several litres at each milking. A hired man takes the first milk, in one-litre bottles, on his motorcycle at 6.30 am; the owner takes another load of about 35 litres at 8.00 am. Any milk that is unsold is fed to the young stock.

The farmer and his wife are industrious contributors to the Malaysian economy; in a small but meaningful way they are producing an import substitution commodity. Their major problem is that they feel that their talent and industry are not fully utilised; they would like to be able to expand their operation to several acres. In late 1989 they bought two cows for five thousand dollars from a farmer who had been given them by the government. In mid-1990 the farmer bought three more cows from another farmer who had been given them; these animals had been cared for very poorly, however. One subsequently died. Even in such poor condition they cost an average of \$2,000. This acquisition filled their barn and brought the small farm to the point of congestion. With additional land the family could plant more grass, increase their herd size and help both themselves and the economy. This farm and others like it have an important role to play in the Malaysian economy. The farmer has asked for cattle and land from the government but received no reply. However, he has been efficient enough to make a profit, even when paying a high price for animals.

Dairy Farm 2: This farm is operated by a squatter family which occupies about 1.5 acres of government land. They have applied for adjacent vacant land and for a land title several times since 1979; their file of petition and requests to the state government, bolstered by letters from the Veterinary Department and others, is 4 centimeters thick, but they have never received a reply from the government. The dairyman has been here for eleven years after being in another location for four years. There are now 19 milk cows, down from 35 a few years ago. They are milked twice per day and the milk is collected each morning and evening by a vehicle from the local collection center.

Hard work, frustration, hardship and perseverance against great odds etch out the story of this farm. There is no electricity provided, the road is maintained by the farmer, and the water is from a well. A generator provided electricity for pumps, appliances and the milking machine. Cattle are given some pelleted feed and also sago waste brought from a local processing plant. There is a small pasture area near the barns and, in late afternoon, the cattle are driven to graze on small waste areas nearby. In earlier years there was abundant grazing land along the river; now, however, much of the area has been taken up by squatter tapioca farmers. There is still a large area of open land in the low foothills behind the farm but its use is prohibited.

In the past years, this was a very good farm; often the most productive in this part of the country; two years ago, however, the people were given two months

to get off the land. The order has not yet been carried out but this little farm has become, in microcosm, an example of how the land tenure system stifles investment, wears down good people, and inhibits agricultural production. Unable to get any sort of land title and not knowing when they will be forced off the land, the farmers are afraid to invest in new buildings, equipment, or animals. As a result, the barn is deteriorating, other buildings are in need of repair, and many of the cows are past their most productive years. Although this remains one of the two or three most productive dairies in the area, it is in decline. The farmer has asked the government for cattle and been refused. Wanting to continue as a dairyman here or in some other location, the farmer has on several occasions applied to the government for land but has received no reply. The family has become weary and frustrated. It seems likely that the farm will become less productive and may finally cease to operate, a tragedy for the family and a loss to the country.

Dairy Farm 3: This farmer has 17 cattle but in 1989 was milking only three. He lives by the paved road in the village; his barn is nearly a kilometer away so quite a bit of time is lost in travel. There is electricity in the house but not at the barn. The barn is a good one, with a concrete floor, concrete mangers, a storeroom, and a proper corrugated roof. All of the building materials, barbed wire, and some additional assistance were given by the government.

While the farmer does not have title to any land, his cattle are able to graze on an area of land near the barn and also have access to a large area of pasture established by the government. The pasture project has an interesting history. It seems that this farmer, who is also a village headman, and several of his villagers claimed to be desirous of becoming dairy farmers and were in need of pasture for the forthcoming animals. The government cleared sixty acres, established permanent pasture over the area, and fenced and cross-fenced it into a number of fields. It seems that only two, and certainly not more than four, of the petitioners were ever actually interested in dairying; in order to get a large pasture area, however, the scheme required a large number of farmers, most of whom were "ghosts". Despite the project being an obvious scam, money continues to be spent on it. A gravel road was constructed more recently and in December 1989, a water pump, watering troughs, and hundreds of meters of pipe were being used to develop a cattle watering system. It was not possible to determine how many cattle were given to participants in the project. Two of the men remained as dairy farmers in 1989, milking a total of about six cows.

Cows were milked twice each day, at 7.00 am and 7.00 pm, and the milk collected by a truck from the local center. Milk production was quite low; during the period of study in 1989, the cows were producing only a total of about seventeen litres per milking. The cattle seen are good breeds but the animals do not have a robust, glossy appearance. Their low productivity and general appearance are probably due to a lack of adequate supplemental feed. Otherwise, management seems good, with the cows' udders being washed and disinfected and antibiotics used to treat mastitis. By late 1990, milk production

had decreased even further. Only one of the several initial farmers was milking cows; his yield had dropped so low that the milk was no longer picked up by the MCC. The farmer's cows were in very poor condition. The other nearby barns seemed to be abandoned and no other cattle were in evidence; these animals have presumably been butchered for meat or sold as live animals to other farms.

This cluster of small dairy farms and the large pasture area have been very expensive for the country. The large area of forest was cleared and the pasture established, fences, roads, and a water system were completed, and barns and other facilities were provided to the farmers. An undetermined number of cattle were also distributed. All of these required large amounts of money, and by late 1990 the project was not providing a litre of milk to the national dairy effort. Some of the farmers may have reaped a one-time windfall by selling materials and animals, but that income was due to their connections, not from agriculture.

DAIRY SECTOR: FUTURE PROSPECTS

The dairy sector is one of great potential and frustration. The government has spent a great deal of money and manpower in an effort to increase milk production. Some of the earlier efforts were ill-conceived or simply encountered too many problems; the milk collection center idea, on the other hand, while quite expensive, has helped to increase milk production, bring more money to some farmers, and provided a focus for dairy-related activity and information. Perhaps the greatest weakness in the current effort, giving cattle to "deserving" farmers, is that animals seem to be awarded, in many or most cases, to people who have no interest in becoming dairymen. Beyond that, the government has demonstrated little interest in knowing if the original grantee retains the cows. The scheme has become, in large part, one whereby well-connected or otherwise "deserving" farmers are given expensive imported cattle, which they then sell to a real farmer. Those cattle which are not eaten do improve the national cattle herd, but it would seem wiser to have given them to truly deserving and committed farmers in the first place.

GENERAL CONCLUSIONS

Progress has been very uneven in the animal sector of Malaysian agriculture. Broiler and egg production meet local demand, and there is a minor but growing export of chicken meat. Similarly, there is a net export of ducks. The pig industry has been especially successful. These segments have developed on their own, with little government assistance, other than the general umbrella of veterinary services. While these segments have been very successful in the production area, they remain almost completely dependent on imported feeds and technology. The ruminant sector has shown little progress despite the considerable amounts of money spent by the government.

According to a recent paper, "the tens of billions of ringgit spent on agricultural growth and development still leave agriculture in poor shape despite having some significant achievements to its credit. With more cogent policies and programmes, the industry could nearly double the present level of farm output, with only modest increases in the workforce and relatively small increases in imports."⁶ What the paper has omitted to mention is that the target groups for government support and assistance need to be selected more judiciously if policies and programmes are to succeed. Although the case studies conducted did not specifically focus on the variable of ethnicity and its impact on agricultural development, enough instances arose from the field work to indicate that lack of government support to non-Malay farmers, especially in terms of facilitating their access to secure land tenure is having a major constraining effect on Malaysian agriculture. Malaysia has abundant land available to facilitate the expansion of the livestock sector as well as other agriculture sectors. Livestock production could be increased quickly and substantially if land were made available to legitimate farmers. In addition to the vast areas still unalienated, there are an estimated 890,000 hectares of idle agricultural land in Peninsular Malaysia alone. However, thousands of proven farmers, who are now squatters, cannot even get a response when they petition for land. If only land were made available to deserving farmers regardless of their ethnicity, the livestock production of the country could be substantially boosted without the need for massive government aid programmes.

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NOTES

- ¹ 1976 Agricultural Census, Ministry of Agriculture, Kuala Lumpur, 1977.
- ² Federation of Livestock Farmers' Association of Malaysia (FLFAM), *Annals of 1985 and Data Supplements*, Kuala Lumpur, 1986, p. 134.
- ³ Oh Beng Tatt, The Poultry Industry in West Malaysia, *Malaysian Livestock Directory & Index 1986/87*, p. 85.
- ⁴ Low Kan, Status, Constraints and Future Potentials of the Pig Industry, *Malaysian Livestock Directory & Index 1986.87*.
- ⁵ Ahmad Mustaffa bin Hj. Babjee, "The Animal Industry in Malaysia: Prospects and Challenges in the 90's", August 1989, p. 17.

- ⁶ Mohd. Ghazali Muhuyidin and Abdul Aziz Abdul Rahman, "Malaysia's Agriculture in the Year 2000", *Malaysian Agriculture Policy: Issues and Directions*, Universiti Pertanian Malaysia, Kuala Lumpur, 1988, p. 286.

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