TROPICAL PASTURE AND LIVESTOCK DEVELOPMENT—AUSTRALIAN OPPORTUNITIES IN THE ASEAN REGION†

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ABSTRACT

In this paper the development of the ruminant livestock industries in the ASEAN countries (Thailand, Malaysia, Singapore, Indonesia, Philippines) is documented and prospects for future development and expansion are explored. Important limitations of finance, trained personnel and technical inputs are described, and the role of Australian pastoral industries in meeting these limitations through commercial involvement in live cattle exports (slaughter and breeding), development inputs (seeds, fertilizers, machinery), management expertise, education and training, and joint venture involvement are examined. Finally, methods of achieving closer co-operation are discussed and a strong plea is entered for the development of an International Pasture Research Institute for the South Asian Tropics.

The traditional view of the Australian livestock markets was that we sell basically meat, wool and dairy products at competitive prices. The approach has been —"this is what we produce, come and get it". A great deal of effort has been expended on maintaining or expanding traditional markets for meat in the U.S.A., the E.E.C. and Japan, and recently in the developing markets of the U.S.S.R. and certain Arab states including Egypt. More recently there has been greater efforts to find new markets and to supply markets with the type of meat required, e.g. live sheep exports to the Middle East.

In the last two years, Australia has begun, at last, to take a greater interest in trade opportunities with the countries in our immediate region of south east Asia, the so-called ASEAN countries (Thailand, Malaysia, Singapore, Indonesia, Philippines). Australia has been forced to take note of the commercial possibilities because of the recent excellent economic performance in these countries, as shown in Table 1.

TABLE 1

Population, rates of real growth, and average beef consumption per head in the ASEAN countries.

Country	Population[1] (mill.)	Real Growth Rate %[1] 1976	1977	Average Beef Consumption[2] (kg person^{-1} yr^{-1})
Thailand	43.490	8.2	6.2	2.2
Malaysia	12.454	12.0	7.7	2.2
Singapore	2.284	6.8	7.5	2.1[5]
Indonesia	139.635	6.9	7.0	1.0
Philippines	45.920	7.3	5.8	3.0
				1.66[3]
Australia	13.548[4]	—	2.0	65.0

[1]Asian Development Bank Annual Report (1977-78).
[2]F.A.O. Production Year Book (1976-77)
[3]Weighted mean.
[4]Australian Year Book (1977).
[5]Year Book of Statistics (Singapore) (1974-75).

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In terms of a total market of steadily increasing income the ASEAN region offers enormous potential. If beef consumption were to increase by 1 kg per person over the whole region this would require the slaughter of approximately 1,130,000 head (assuming a liveweight of 400 kg and dressing % of 54%). How feasible is such an increase in consumption in relation to the livestock populations in the region? The total numbers of cattle and buffalo in the region are shown in Table 2.

TABLE 2

Total cattle and buffalo population and ratio of large ruminant livestock to humans in the ASEAN countries [*F.A.O. Year Book* (1976-77)].

Country	Cattle (mill.)	Buffalo (mill.)	Ratio Ruminants: Humans
Thailand	4.296	5.379	0.220
Malaysia	0.423	0.298	0.060
Singapore	0.009	0.003	0.005
Indonesia	6.765	2.786	0.070
Philippines	2.323	5 000	0.160
Total	13.816	13.466	—
Australia	33.434	—	2.470

Based on a 10% turnoff for cattle and a 6% turnoff for buffalo, and allowing for a lower dressing percentage in the buffalo (McDowell, 1972, p. 590) we can calculate that the total herd turnoff approximately matches the estimate of average per capita beef consumption (Table 1). Thus if beef consumption is to be increased by 1 kg per person in the region, then this will require a marked increase in the total herd (of the order of 55%), or a large increase in beef imports.

If Australia is to increase its beef exports to this region it is more instructive to look at the constraints rather than the potential market. The constraints are not in the desire of people to purchase beef nor in the ability of many to pay Australian prices, which are very competitive. An important limitation is Government policy which aims to restrict imports and the outflow of foreign currency. The second major constraint is the lack of a beef marketing infrastructure outside the major cities. The lack of distribution networks, refrigeration, or simple processing makes distribution in secondary towns difficult. There would seem to be opportunities for Australian entrepreneurs to develop joint venture operations for the importation, storage, processing and distribution of Australian raised beef.

However the main aim of this paper is not to examine the traditional beef export potential, but to examine the commercial possibilities of other inputs associated with the development of the livestock sector in the ASEAN region. There is undoubtedly a major interest and potential for improving ruminant livestock production in the region. Much of the beef production comes from the small holder sector. Currently there are few specialised beef producers, although beef ranching is increasing in the Philippines, and cattle and buffalo production are important in local areas of some countries (e.g. Timor and Sumatra in Indonesia). Dairy production, although of minor importance, is based on a few large projects plus a limited number of small holders, as in Thailand and the Philippines.

In the ASEAN Region there are two major resources available for expanding livestock production, apart from increasing production in association with the traditional arable cropping sector. These are, (i) through improvement of the naturalised grasslands, mainly *Imperata cylindrica* grasslands and (ii) through pasture development in association with plantation agriculture, particularly coconuts, but examining the potential in other plantation crops also. Categories of major land

use are compared in Table 3, and approximate estimates are made of potential areas for future pasture development. Although population densities are extremely high in many areas of S.E. Asia, there are very large areas of grasslands particularly in Indonesia, which could be readily improved for large scale ranching.

TABLE 3

Major categories of land use and estimated potential areas for pasture development ('000 *ha*).

	Total Arable[1]	Forest and Woodland[1]	Permanent Pasture[1]	Potential Pasture Development Grassland	Plantation
Thailand	16,580	20,500	308	119[5]	160[2]
Malaysia	5,983	22,383	53	387[3]	170[3]
Singapore	8	3	0	0	0
Indonesia	186,000	121,400	9,875	23,514[4]	1,200[4]
Philippines	7,899	12,300	656	3,500[6]	2,000[2]
Total	216,470	176,586	10,892	27,520	3,530

[1]F.A.O. Production Year Book (1976).
[1]Malaysian Ministry of Agric. & Coops. (1968-70).
[2]Childs (1972).
[4]Nell, A. J. and Rollinson D. H. (1974),.
[5]Thailand-Australia Highland Agronomy Project Seminar (1976); Manidool, C. (1974, pers. comm.)
[6]Sena, M. (1978). Philippines Dept. Anim. Husb. (pers. comm.)

The data in Table 3 are intended to give a comparison of the major categories of land use in the ASEAN countries. A preferred option for pasture development must be to first improve the natural grasslands, and to develop pastures under coconut plantations rather than to clear and develop rainforest which is a major resource in these countries. The natural grassland area for Thailand is low compared with other countries in the region and the estimate is very approximate, made up as follows: north west Highlands 80,000 ha mainly *Imperata*; 109,000 ha of *Arundinaria* dominant grasslands in the North East region; 30,000 ha of *Imperata* and low land *Ischaemum* grasslands in Peninsular Thailand. While improvement of these grasslands will be important on a regional basis, major increases in the national cattle and buffalo population must come from increased animal production associated with the arable farming sector and the plantation sector.

In Malaysia the grassland resource is mapped in the category "scrub grasslands" which have developed from previous clearing or are on the poor "bris" soils. The potential for improving many of these areas is probably limited. The area given for coconuts is for pure stands greater than 0.8 ha (2 ac). While many of these areas may be undersown to other crops at various times, there is a reasonable area available for pastures and grazing. Indonesia has very large areas of *Imperata* grasslands in Sumatra, Kalimantan and Sulawesi, with other grassland types (*Sorghum, Heteropogon*) in the eastern islands of Sumba, Sumbawa, Flores and Timor. These areas represent a major undeveloped resource in Indonesia. In addition, the potential for increased animal production through pasture improvement in the plantation sector has been demonstrated by the University of Queensland cooperative projects in Bali and North Sulawesi. In the Philippines, of the 3.5 million ha of "cogon" (*Imperata*) grassland, some 486,000 ha is classed as being under some form of management, and in the 2 million ha of coconuts 441,000 ha is under grazing. By 1978 about 3,640 private ranches had been developed.

Based on previous surveys in Indonesia (Whiteman 1973), if we estimate that 50% of the total grassland area in the ASEAN Region can be improved, and deduct 10% already improved, this leaves *c.* 12.38 million ha. In the plantation sector although most of the area should be improvable, we should allow for 40% which is

already under grazing or other forms of undercropping, leaving 2.12 million ha. Allowing stocking rates of 1.0 animal units ha^{-1} for oversown *Imperata* grassland (Mendoza 1978), and 2.5 animal units ha^{-1} for sown pastures under coconuts (Nitis *et al.* 1976, Watson 1978) an increase in animal units of *c.* 17.7 million head could be achieved with modest inputs. While this figure is very approximate it does give a conservative idea of the potential for livestock development in the relatively short term.

LIMITATIONS TO DEVELOPMENT OF LIVESTOCK INDUSTRIES

Obviously to achieve this rate of growth of the livestock industries, large inputs will be required, while a number of major constraints must be overcome. The constraints which may have major effects are:

Finance While lack of funds may limit smallholder development, I do not believe that finance is a major constraint for large scale projects given the rate of growth of the economies (Table 1), the rate of lending to the region by the World Bank (IBRD) and the Asian Development Bank (ADB), (Table 4), and the input of aid funds of which Australia is a substantial, but still relatively minor contributor (Table 4) compared with U.S.A., Japan and some E.E.C. countries.

TABLE 4

Funds currently on loan from ADB and IBRD to the ASEAN countries for agricultural development and Australian aid for agricultural projects

	Amount US$ million
ADB Loan Approvals for Agriculture (1977)	254.0
IBRD Effective loans for agricultural development (held in March 1978)	1,381.0
Australian Aid (Agriculture and Rural Development 1975)	16.0
Australian Aid (Colombo Plan Training, 1975)	8.0

Although there is a commitment of loan, aid, and Government funds to agricultural projects, private capital in Asia tends to look to higher rates of return over shorter time periods than is usual in livestock development projects. Thus private investment in animal production is rather limited.

Trained personnel Another important constraint to medium and large scale livestock developments is a lack of trained herd managers, pasture development managers, field technicians, and associated service industries. While there may or may not be sufficient university trained veterinarians, agricultural scientists and economists, I believe that the major deficiency is in middle level practical management.

Technical inputs In south east Asia there has been little tradition in large scale animal husbandry. Consequently the associated service industries have not been developed. There is no stud breeding sector, and the supply of fencing materials, veterinary equipment, drugs and chemicals, pasture planting machinery, and so on, is often difficult in many countries.

SCOPE FOR AUSTRALIAN INVOLVEMENT

It is in the supply of the inputs and the removal of the constraints to livestock development that I believe Australia can derive major commercial success in the region. Too much of our involvement in agricultural development in the region has been on an aid basis. Perhaps we have developed an "aid outlook" as much as the recipients. This is not to deny the importance of aid to the region to promote development, but many livestock development projects could proceed on a purely, or perhaps

assisted, commercial basis. Many industries in Australia are trading with ASEAN countries, as shown by the export income figures in Table 5.

TABLE 5

Total value of exports from Australia to the ASEAN countries in 1976-77 (*A*$'000)

Thailand	Malaysia	Singapore	Indonesia	Philippines	Total
65,044	224,266	183,506	180,508	118,460	771,784

Outside the meat export trade, what are the opportunities of the Australian livestock industry for commercial interaction in the ASEAN region? There are five main areas in which I believe the Australian pastoral industries can become commercially involved:

Export of live cattle, either for breeding or local fattening and slaughter.
Development inputs—pasture seed, fertilizer, specialised pasture development machinery, pastoral supplies.
Management expertise—consultant services, property management, commercial services, processing.
Education and training for all levels of the industry.
Joint venture—development of studs, ranches, marketing and processing.

Live cattle exports Exports of slaughter and breeding cattle to the region are increasing and in 1977–78 the total value was approximately $7.748 million (Table 6).

TABLE 6

Numbers and value of live cattle exports to the ASEAN countries and Hong Kong in 1976-77 *and* 1977-78

	1976-77				1977-78			
	Breeding		Slaughter		Breeding		Slaughter	
Country	No.	A$	No.	A$	No.	A$	No.	A$
Thailand	—	—	—	—	—	—	—	—
Malaysia	2,025	320,649	1,369	230,254	2,790	316,960	3,751	596,471
Singapore	54	12,600	3,528	655,600	506	125,722	3,559	903,135
Indonesia	4,395	589,630	511	90,000	3,770	607,524	—	—
Philippines	1,630	305,450	—	—	1,303	265,119	765	165,414
Hong Kong	164	46,009	19,979	2,035,533	2,334	297,585	31,342	4,470,295
Total	8,268	1,274,398	25,205	3,011,387	10,703	1,612,910	39,427	6,135,31
Total No. and Value	33,473		$4,285,785		50,130		$7,748,225	

With any expansion of the ASEAN cattle industry the export of breeding stock is obviously a primary opportunity for Australia. There are competitors in this market and to maintain or increase our share we must provide high quality animals adapted to the humid tropics. I do not believe that export of Friesians from Victoria to small holder dairy schemes in the wet lowland tropics, even if that is what the client thinks he wants, will do the Australian cattle export industry any good at all.

Singapore and Hong Kong are major markets for slaughter cattle but other markets can be developed and expanded. Until 1978 the Philippines prohibited the import of cattle purely for slaughter. Now slaughter cattle may be imported provided that the importer is a genuine cattle breeder and that the cattle will be fattened locally to slaughter weight.

Development inputs Australia is well positioned to export specialised inputs for property development, provided these can be sold at competitive prices. Items such as planting and fertilizing machinery, weighing scales and windmills come to mind. With increased pasture development there will be opportunity for increased seed sales, although this may be limited. Many of the grasses will be vegetatively planted, and for the most widely sown legumes, centro and puero, seed is produced locally. I suggest that seed of *Stylosanthes* species, some Siratro and some *Desmodium* for upland country will be the main legumes, and *Brachiaria decumbens* and Hamil, with some *Setaria*, the main grass seed. While any large scale development of the *Imperata* grasslands will require large total amounts of phosphate fertilizer it does not appear that this is a trade in which Australia will be involved. Total exports of fertilizer products from Australia to the ASEAN countries in 1976–77 was only $9,000.

Management expertise Australian agricultural consultants have a major involvement in south east Asia, but mainly in relation to aid projects. Very few have been involved in development and management of commercial livestock enterprises. There is a developing market for the skills of experienced Australian property and livestock managers in a number of areas in the ASEAN Region, and these opportunities need to be identified and explored.

Education and training At present, education and training of scientists and technicians from the ASEAN region has been a major item in aid expenditure. This is a sound investment from Australia's point of view. People trained in Australia tend to look to Australia for technical assistance and the inputs required for development.

There is also some scope for organising training courses outside the formal aid funded scholarship and fellowship system and the ADAB International Training Courses. Some Australian consultancy companies have arranged very successful specialised training courses for ranch management, animal husbandry technicians, and artificial insemination technicians. These courses were arranged on a commercial basis, and provided in-service training on properties as well as a series of lectures, practicals, demonstrations and visits. I think this type of activity could be expanded, and some courses could be run in the countries of the region.

Joint ventures Cooperative ventures between Australian and Asian enterprises in the animal production sector are fraught with difficulties because of problems of land ownership and local regulations. However in some countries, e.g. the Philippines, overseas participation in agricultural production is widely developed. There would appear to be major opportunities for Australian involvement in specialised areas throughout the region, particularly in the development of stud breeding, tropical pasture seed production, specialised dairy production in upland areas, manufacture of animal husbandry equipment and drugs, and in the slaughter, processing, distribution and marketing of imported livestock.

Entry into joint venture arrangements requires a great deal of research into, and knowledge of, local conditions. Potential investors should enter into arrangements with great caution, and only after thorough study of local conditions.

ACHIEVING CLOSER COOPERATION

Closer involvement with animal and pasture development in the ASEAN countries will be to Australia's commercial advantage and also lead to a more rapid rate of development in the region. We cannot depend entirely upon Government involvement, either through aid projects or official trade relations. These are only one aspect and are less efficient in developing new industries and opportunities than is commercial involvement.

The Australian Trade Commissioners provide a very useful service and are extremely helpful to organisations wishing to develop markets in the region. For

example, the Australian Trade Commission in Jakarta has reported that Indonesia plans to import 120,000 head of Brahman breeding cattle (Qld. Country Life 12/10/78). However, the Trade Commission service is not a very efficient way of developing markets. The Department of Trade and Resources employs a total of 1,121 people, of which there are a total of 160 Trade Commissioners and Assistant Trade Commissioners working overseas, but only 16 in the ASEAN countries.

The Australian Meat and Livestock Corporation has recently recognised the potential importance of the live export trade to the ASEAN region (Qld. Country Life 12/11/78). The A.M.L.C. will be encouraging this development for the livestock industries.

While these organisations operate at a national level, individual pastoral companies and livestock exporters are working very actively to increase their overseas markets. Producer organisations, such as the U.G.A., the Cattleman's Union, Seed Producers Association and so on could become much more actively involved by encouraging formation of similar producer organisations in the ASEAN countries, by arranging reciprocal visits between members, and bringing ASEAN industry leaders to the major livestock shows. Breed societies could encourage formation of breed societies in the region and again organise reciprocal visits. Other organisations such as Rural Youth, instead of the usual visits to U.S.A., N.Z. or U.K. could become more involved with S.E. Asia.

The Tropical Grassland Society has been actively seeking members in these countries, but we could do more by encouraging the formation of similar societies in their own countries. At a more personal level I would encourage Australian primary producers, cattlemen and pasture farmers to visit Asia and meet similar producers in their own country.

Our aim should be to create an awareness of Australia in the field of tropical animal production, so that whenever expertise, cattle, seed or other inputs are required for tropical cattle development, producers in the region automatically think of Australia.

REGIONAL COOPERATION IN PASTURE RESEARCH

Throughout the ASEAN Region the major potential areas for pasture development are found in the mainly *Imperata* grasslands and in the plantation cropping sector. Because of the similarity of problems in developing these resources, there would seem to be a real case for developing a regional approach to pasture research.

While South America is well served by CIAT and Africa by ILCA for International centres for pasture research, there is no equivalent centre for the wet tropics of South East Asia. Indeed research in a centre in South East Asia would have application far beyond the ASEAN Region when it is considered that *Imperata* grasslands stretch from Central Africa, through India and Sri Lanka to Japan and northern Australia. Similarly research into pastures in plantations is important in many areas of the world including the Pacific Islands.

I am not suggesting that the Australian Government should fund an ASEAN Pasture Research Centre. Australia has already made important contributions to livestock development in the region through the Centre for Animal Research and Development, Bogor, Indonesia; through the CSIRO co-operative programme with MARDI in Malaysia, and through the AAUCS program in Indonesia and other projects. Rather the Tropical Grassland Society should encourage the Australian Government to encourage the Consultative Group in International Agricultural Research to consider the establishment of an International Pasture Research Institute for the South Asian Tropics (IPRISAT—It does not really matter what it is called as long as the acronym is euphonious). Australian support and assistance for the development of a regional research centre would greatly stimulate pasture and livestock development in the region.

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