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"MANAGING CHANGE IN THE AGRICULTURE SECTOR: The Need for Innovative Educational Initiatives"

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He joined Universiti Pertanian Malaysia in August 1974. In 1979 he continued his studies and successfully obtained his Ph.D (Agric. Econ.) at University of Hawaii in 1981. While in service, he received several academic grants and attended several training programmes such as the Agribusiness Short Course in Singapore and Sustainable Agricultural Development Course at Newcastle, UK.

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MANAGING CHANGE IN THE AGRICULTURE SECTOR: The Need for Innovative Educational Initiatives

ABSTRACT

The agricultural sector was the engine of growth before the 1970s and continued to be so until the late 1970s, when prices of the major agricultural commodities declined substantially. Since then the government shifted its attention to the fast growing industrial, construction and services sectors. The "booming sector syndrome" caused the agricultural sector to decline further until 1984, when the government felt there was a need to revitalize the sector by introducing the National Agricultural Policy.

The agriculture's share of the Gross Domestic Products (GDP) continued its long-term decline from 22.9% in 1980 to 18.7% in 1990, 13.6% in 1995 and 8.4% in 2000. In contrast, the share of manufacturing sector has increased from 8.7% in 1980 to 30.2% in 1990, and 39.9% in 1995. In 2000, however, it dropped to 33.4% due the slowdown of the United States economy.

At the turn of the century, the agriculture sector appears to undergo significant changes as a result of the changing trends in the world and domestic markets. This paper lists down some of the new perceptions towards the agriculture sector. To enhance the development of the agricultural sector, the agricultural sector should be looked from a wider perspective. It would include the entire agribusiness system, i.e. input, primary production and processing, and manufacturing sub sectors. Relevant strategies will have to be developed so that adjustments can be made to cater for the changing economic environment.

The product-based approach adopted by NAP3 replacing the commodity-based approach is consistent with the new perceptions of agriculture. To ensure the success of the product-based approach, innovative educational initiatives need to be developed and implemented.

INTRODUCTION

The Malaysian economy has undergone a significant structural change in the last two decades. The economy is today identified with the production and exports of industrial goods, a drastic change from an agricultural based economy in the 1970s. The development process, which emphasizes the industrial sector, reduces the contribution from agriculture towards the national economy. But the agricultural sector, especially the food sector still has important roles. Its growth has to be enhanced so as to fulfil the needs of the increasing population and the changes in taste and preference, which have resulted from increased incomes and changing life style.

Economic growth in rural areas is still essential, both to provide employment opportunities for the expanding labour force and to increase demand for the products of the manufacturing sector. It is to be expected that the total population involved in agricultural activities will decline and this trend has already been happening in the last few decades. To enable the agricultural sector to supply the necessary products adequately, current production and marketing organizations and system have to be improved. There is a need to co-ordinate production and marketing activities in the commodity chain. Pre-production, production and post harvest activities like grading, packaging and processing have to be coordinated and upgraded.

Against this backdrop, this paper attempts to, firstly, examine the broad structural changes in the Malaysian economy focussing on the performance of the agricultural sector. Secondly, it will compare some old and new perceptions of the agriculture and agribusiness sector following the structural economic transformation. Lastly, the paper will discuss several strategic issues that are considered to be important in managing change in agriculture and agribusiness that ought to be given special attention since agriculture's contribution will still be fundamental to the economic well being of the country.

ECONOMIC GROWTH AND DEVELOPMENT

Development Concepts of the 1950s and 1960s

In the 1950s, development was often equated with structural transformation of the economy. The role of development economics then was seen as facilitating that transformation by discovering ways to transfer resources, especially labor from traditional agriculture to industry, the presumed engine of growth. The development efforts, however led to the neglect of the agricultural sector (Johnston, 1970). Realizing this, the neo-classical agricultural economists during the 1960s stressed not only on the interdependence of agriculture and industry and the role that agriculture could play in economic development (i.e. provide labor, capital, food to the growing industrial sector and serve as market for industrial goods) but also on the importance of understanding the process of agricultural growth if that growth potential was to be exploited.

Agricultural development efforts of the 1960s placed heavy emphasis on the direct transfer of agricultural technology from high-income countries to the Third World countries and the promotion of the American models of agricultural extension and community development, i.e. the diffusion model (Ruttan, 1975). The diffusion model assumed that Third World farmers could substantially increase their productivity by allocating existing resources more efficiently and by adopting agricultural technologies and practices from the developed countries.

Like the diffusion model, the community development efforts assumed that small farmers were often poor decision markers who require outside assistance in planning local development projects (Stevens, 1977). Community development advocates assumed that villagers, meeting with community development specialists, would express their felt needs and unite to design and implement self-help programs aimed at promoting rural development.

The failure of many agricultural extension programs and community development projects to achieve rapid increase in agricultural output and to solve the basic food problem led to re-evaluation of the diffusion model. Structural barrier to rural development like high concentrated political power and asset ownership were believed to be the reasons for such failure.

Schultz (1964) argued that major increases in per capita agricultural output in the Third World would come about only if farmers were provided new, more productive factors of production and better skills. The cause of rural poverty, in other words, is because of the lack of profitable technical packages for Third World farmers and the lack of investment in human capital needed to cope with rapidly changing agricultural technologies.

The Growth With Equity Era of 1970s and 1980s

Reacting to some of the disappointments of the green revolution and the agricultural growth-oriented programs of the 1960s, development specialists turned their attention to integrated rural development and basic needs projects in the 1970s and 1980s. Integrated rural development (IRD) attempts to combine in one project, elements to increase agricultural production and improve health, education, sanitation and a variety of other social services.

The change in orientation of development economics in the early 1970s implied a much greater role for agriculture in development programs. Because the majority of the poor live in rural areas and because food prices are a major determinant of the real income, the low productivity of agriculture was seen as a major cause of poverty.

Although investments in health, nutrition, education and housing can contribute importantly to the welfare of the poor, the experience with the basic needs approach suggests that low income countries also need to emphasise building the economic base to finance these investments. By the early 1980s many economists were once again giving greater emphasis to economic growth. The shift in emphasis did not imply a

rejection of the growth-with-equity philosophy of the 1970s. Rather it reflected an increasing recognition of the impossibility of achieving a decent living standard for the bulk of the rapidly growing population in poor countries by simply redistributing existing assets.

Agricultural Sector in the Back Seat, 1980s – 1990s

In the 1980s, the agricultural sector started to face problems in the production of its export crops like rubber, cocoa and oil palm particularly due to the decline in prices of the various commodities. The production growth index in 1980 was 202.9. In 1984 it only increased a paltry 206.2. This trend caused unnecessary discomfort and uncertainties with respect to the agricultural development in the country. Other than low commodity prices, several factors was recognized as the main contributors to the malaise in the agricultural development.

First, there was a slower overall world economic growth, especially in the developed countries during the recession at the beginning of the 1980s. Consequently, the demand for imports by these countries slowed down. Although the principal trading partners of Malaysia – Japan and the United States – grew more rapidly than other developed countries, their growth was not as rapidly as they had been in the previous two decades.

The prices of export commodities such as palm oil and rubber also declined and remained weak. At the same time there was an increase in import prices of farm inputs. This caused a depressing effect on the economy. For example, during the good times of 1979 and 1980 when export prices were high, Malaysia's trading account recorded a surplus of RM6.6 billion and RM4.9 billion respectively. When the export prices fell in the 1982, Malaysia's trading account was at a huge deficit of RM1.76 billion (Ministry of Finance, 1988). Commodity prices normally vary with business cycles, but the world market prices of most commodities did not recover when the world recession ended in 1983. They remained low for several more years.

The manufacturing, construction and services sector, which had growth potential, attracted the attention of the government and private sector. Consequently, this siphoned out the capital resources, labor and other managerial expertise out of agriculture. The traditional agricultural sector with low returns was nearly abandoned because of the booming sector syndrome.

The declining trends and the poor performance of the traditional agricultural sector like rubber and paddy, created a paradigm shift in policies. In 1984, the government introduced a general policy towards the agricultural sector, which was known as the National Agricultural Policy (NAP). The main objective of the NAP was to maximize income and increase the agricultural contribution to national development through efficient use of resources. The thrust of NAP was to increase productivity, efficiency and competitiveness through the modernization and commercialization of the agriculture activities. In order to achieve the targets, new land developments were carried out, in-

situ developments were continued and the supporting services like input supply, marketing, research and extension were improved.

Since the launching of NAP in 1984 until 1990, there was not much change to the agricultural sector. The internal and external forces were still exerting the same influences as before. With respect to the external forces, low prices were still the main constraint. Internally, the government policy, which chose the industrial sector as the engine of growth was still siphoning the resources out of the agricultural sector. As a result, the government reviewed the NAP and came up with the NAP2 (1992 - 2010).

The NAP2 placed greater emphasis to productivity, efficiency and competitiveness in the context of sustainable development and enhancing linkages with other sectors of the economy. The policy outlined strategies for expanding food production, greater role of the private sector, market reform and agro-based development.

The 1990s, however, had not been very kind to the agricultural (especially food) sector in general, but it may be a blessing in disguise. The establishment of the World Trade Organisation (WTO) and the rapid liberalisation of agricultural trade have opened the agriculture sector to increasing competition but at the same time opened up new market opportunities. The growing concerns for environment have led to the need to conserve and utilise resources on a sustainable basis. The 1997 financial crisis has negatively affected the stability and security of the country's food supply. However, since the other sectors like manufacturing and tourism were more badly affected, the government has turn back to agriculture to spearhead the economic growth. The results, as shown in Tables 1, 2 and 3, were quite encouraging.

Before we look at any new initiatives proposed by the government, let us deliberate on how agriculture was perceived in the last few years. You may opt to agree or disagree with the list of statements to be listed in the next section.

OLD AND NEW PERCEPTIONS OF AGRICULTURE

As we moved into the new century and the millennium, the agriculture sector is seen to be moving towards an industrial model of production. According to Michael Boehlje (1996), the trends reflecting the industrialization of agriculture have already occurred. "Farmers are no longer looking to produce a generic product, such as corn, but are interested in biologically producing unique products with a specific end-use in mind, such as white corn for corn chips." In Malaysia, some of these trends are already happening and others are at the horizon. In this context, new perceptions of agriculture have emerged. Below is a non-exhaustive list of "old versus new" perceptions of agriculture.

Production Activities

Old : Agriculture is an art form (or a way of life).
New : Agriculture is primarily science or R&D-based.

Old	Agriculture is synonymous with farming and the production of commodities.
New	Agriculture is responsible for manufacturing food products, and it represents the entire food production and distribution system.
Old	Agriculture is made up of family farms and small businesses.
New	Agriculture is made up of large-scale or industrialized interests.
Old	Operating farmers own most of the farm land.
New	Much of the farmland is owned by non-operators.

Farm Management

Old	:	Farmers produce staples such vegetables and beef.
New	:	Farmers produce niche products such as chemical-free produce or lean meat.
Old		Assets determine what the farm will produce.
New		Customer demands determine what the farm will produce.
Old		Hard assets - land, machinery, and building - are an agribusiness's prime source of strategic competitive advantage.
New		Soft assets - people, organization, plans - are an agribusiness's prime source of strategic advantage.
Old		Agribusiness strives to own assets.
New		Agribusiness strives to control assets.
Old		Money and assets are the source of an agribusiness's power and control.
New		Information is the prime source of an agribusiness's power and control.
Old		Labour is an expense, and equipment is an investment.
New		Labour is an investment, and equipment is an expense.

Markets and Commodities

Old	:	Impersonal markets are open to all.
New	:	Markets are personal, negotiated, and exclusive.
Old		Farmers have an adversarial relationship with suppliers and purchasers.
New		Farmers form partnerships with suppliers and purchasers.
Old		Market prices are risk.
New		Relationships are risky but offer price security.
Old		Farmers are independent.
New		Farmers are inter-dependent within the systems.

Old		New technologies are prized.
New		New ways of doing business are prized.

Consumer Attitudes towards Agriculture

Old	:	Globally, consumers fear food shortage.
New	:	Worldwide sources reduce the prospects of shortage.
Old		Consumers believe their food is safe.
New		Consumers question the safety of food.
Old		Domestic markets are a farmer's prime market.
New		Foreign and industrial markets are critical markets for farmers.

Government Involvement in Agriculture

Old	:	The government has adequate funds to support agriculture.
New	:	The government has less funding for agriculture.
Old		Farmers have significant political influence.
New		Farmers have limited political influence.
Old		Farmers are economically disadvantaged.
New		Farmers' income is comparable to others.

Farmers and the Environment

Old	:	Farmers use and exploit resources to maintain or increase productivity.
New		Farmers protect resources and practice environmentally sound use of resources to reduce pollution.
Old		Efficiency is paramount.
New		Preserving the environment is paramount.

Personal and Professional Skills

Old	:	Technical skills and core competencies are critical to success in agriculture.
New		Communication, personal skills and new or unique skills are critical to success in agriculture.
Old		Tradition and remembering are important in agriculture.
New		New ideas are important in agriculture - forget how it was done.

Rural Life

Old	:	Economic well-being of rural communities depends on farming.
New		Economic well-being of rural communities also depends on non-farm activities.

Reinstalling the Agricultural Sector, 2000 and Beyond

The establishment of WTO, the financial crisis and the new perceptions of agriculture pose new issues and challenges to the agricultural sector. The formulation of NAP2 did not anticipate such rapid and sudden changes in the domestic and international economy and therefore did not adequately address the new issues and challenges. This leads to the formulation of new policies and strategies to ensure the continuous development of Malaysian agriculture.

One of the two strategic approaches adopted by the NAP3 (1998 – 2010) is the product-based approach, which replaces the previous commodity-based approach. This is consistent with the new perceptions of agriculture, as spelt out in the previous section. Its objective is to reinforce and complement the cluster-based agro-industrial development as identified in the Second Industrial Master Plan 1996-2005 by strengthening inter and intra-sectoral linkages. The intermediate and supporting industries are further developed and expanded. This approach emphasizes in satisfying the specific needs of niche markets, which are increasingly demanding products that are more specific to their needs and preferences. In this approach key products and markets are identified based on market demand, preferences and potential. This market demand and preferences are translated into strategies for upstream primary agricultural production to enhance production and marketing of the agricultural produce.

Recognizing the Agribusiness System

With the adoption of the product-based approach, it is timely that the government recognized fully the existence of an agribusiness system and the importance of enhancing its development.

It is widely accepted that the concept of Agribusiness describes it as a system, which includes all of the industries based on and in relation with the renewable resources coming from Forestry, Agriculture, Fisheries and now Biotechnology. A market-oriented approach (or the product-based approached as it is called in the NAP3) to the Agribusiness System considers that downstream markets connected with domestic and international demand affect development of the agricultural sector. This approach suggests a development induced by a pull, or marketing attraction, running from downstream to upstream.

In Malaysia, the Agribusiness System, which includes an Agriculture-Food Subsystem and a Non-Food Agricultural-based Industrial Sub-system, may be broken down into the followings:

- The upstream agribusiness suppliers, which are the seed industry with genetic implications, the agricultural-chemical industries (fertilizer and pesticide industries), agricultural-mechanical industries (tractor, cultivation and harvest equipment);
- The primary agricultural producers, which include the small farmers, the agricultural co- operatives and large-scale producers;

- The agricultural-based manufacturers, which include small, medium and large scale manufacturers of products based on and in relation with the renewable resources as well as suppliers of the technology for processing and packaging; and
- The service industry such as the food delivery system which can use different channels, combining wholesalers, retailers, supermarkets, and the food service industries.

Managing Change in Agriculture/Agribusiness

Agriculture is in the midst of a major paradigm shift that is bringing profound changes to how food is produced, processed, distributed, and marketed in many countries including Malaysia. People in the agricultural sector are challenged by the increased risk of business failure as well as increased opportunity for success that could result from these changes. To meet the challenge, they need to develop a broad set of management capabilities.

The shift in Malaysian agriculture is having a significant impact on farm families, agribusinesses, and rural communities, requiring them to make major adjustments to be successful in the evolving agricultural industry. Significant changes affecting people in the agricultural sector include:

- Dramatic change in government programs, giving producers greater flexibility in management decisions, and greater responsibility for marketing and risk management.
- Changing consumer preferences, as people demand greater variety, quality, safety and convenience in an affordable food supply.
- Increased globalization of markets, providing more opportunities as well as more competition in domestic and foreign markets.
- Accelerated industrialization of agriculture, demanding greater coordination of successive stages in the production and distribution of food products.
- New technologies, often more complex and difficult to use effectively and profitably than earlier technologies and sometimes restricted to a limited number of users.
- Heightened expectations for environmental protection and natural resource conservation, with implications for and natural resource conservation, with implications for management decisions of producers and processors.
- Increasingly powerful information systems, providing greater access to information for decision making for some – but not all – people.

Managing change in agriculture must be built on innovative educational programs to reflect a system-wide commitment that help people in the agricultural sector - producers, families, agribusiness, and rural communities - understand change and develop creative, strategic responses to it. Both the NAP3 and The Eight Malaysia Plan mentioned the need to strengthen human resource development to generate skilled workers as well as to enhance the skill and knowledge of agricultural front liners. However, no details were provided with regards to the education component, which is critical to develop the skills and to provide knowledge to the workers.

The new initiative in innovative educational programs may adopt the following vision and mission statements:

- **Vision**

  People in the agricultural sector make significant decisions that enable them to take advantage of change, thereby improving the performance of their businesses and the well being of their families and communities, while satisfying the demands of society.

- **Mission**

  Implement innovative educational programs, which reflect a system-wide commitment that help people in agriculture – producers, families, agribusinesses, and rural communities – understand change and develop creative, strategic responses to it.

Strategy

Managing Change in Agriculture should provide unique educational programs that focus on strategic thinking and decision-making processes. The initiative could utilize a holistic systems approach that recognizes the interdependence of producers, agribusinesses, rural families, communities and society. It should equip people with the management perspective and capabilities necessary to understand and respond positively to the challenges of major socio-economic change.

Within the context of the initiative, agriculture may be broadly defined to include the production, processing, and distribution of crop and livestock, aquaculture, and forest products. Agricultural producers and their families are the primary audience for the initiative. Other audiences include small- to moderate-size agribusinesses, non-agricultural rural businesses, agricultural associations and organizations, and agricultural institutions.

Objectives

The primary objective of Managing Change in Agriculture is for people in the agricultural sector to have successful, profitable businesses contributing to the well being of their families and communities. To be successful, these business owners must be sensitive to the desires and expectations of consumers and society.

Hence, the secondary objectives of the initiative are for (1) society to enjoy the benefits of a productive agriculture that is competitive in the global economy and friendly to the environment; and (2) consumers to have access to an abundant supply of safe, nutritious, convenient, and affordable food and other natural resource products.

Educational programs should be developed through which people in the agricultural sector develop the knowledge, attitudes, skills, aspirations and behaviours to:

- Choose effective survival and growth strategies for adjusting to change.
- Respond more rapidly to global (regional, national and international) market signals.
- Use appropriate risk management techniques.
- Protect the environment and natural resource base.
- Evaluate and adopt appropriate technologies.
- Contribute to the strength and vitality of communities.
- Participate in the process of resolving public issues that involve trade-offs among economic returns and environment, community and other concerns.

Management Areas

Managing change in agriculture should concentrate on strategic thinking and decision-making processes that enable people to understand change and its implications, develop and evaluate alternative responses, and make and implement decisions. The educational programs of this initiative then could apply these processes in important management areas of agricultural development. Important management areas could include: (1) Managing the Agricultural and Natural Resource Business, (2) Managing the Environmental Interface, (3) Managing Technology, and (4) Managing the Community Interface. These management areas require people to adopt integrated, systems approaches to problem solving; and they require the relevant authority to employ an interdisciplinary, team approach to the planning and delivery of its educational programs.

1. Managing the agricultural and Natural Resource Business.
   Managers need to learn effective business management skills that integrate a large number of technical, economic, and human resource factors.
2. Managing the Environmental Natural Resources Interface.
   Managers need to integrate production-marketing factors with environmental protection and natural resource conservation considerations. Major issues include society's concern about pollution (caused by erosion, manure, fertilizers, and pesticides), conservation of natural resources, and access to quality recreation.
3. Managing Technology.
   Managers must be able to assess the appropriateness of new technologies that could be used to accomplish their firms' objectives. They are faced with a continuous stream of new products and practices, such as bio-engineered seeds and precision farming equipment, that have many potential benefits, but the actual short- and long-term benefits and costs for individual farms or firms are not well known. They also need to understand and evaluate electronic technologies, which are revolutionizing the way firms access and respond to information.
4. Managing the Community Interface.
   Managers need to integrate production-marketing decisions with their need to support a local community. Issues include the viability of rural communities and their ability to satisfy the business and social needs of producers and their families. Educational programs include understanding the interdependence of

business and community and the impact of business decisions on the longer-term availability of community services. Leadership development and other educational programs increase effective involvement in community activities.

Expected Outcomes

Participants are expected to be able to improve performance of their businesses and the well being of their families and communities by successfully making and implementing major strategic and tactical decisions dealing with change. To determine the success of the initiative, some specific measures could be used, such as

- Participants' perception of being helped by the program, including their ability to identify change and to develop and implement new goals and plans.
- Participants' assessment of progress toward their goals.
- Number of people who develop new businesses; make strategic, business, marketing, or financial plans to accomplish their goals and make major business changes based on their plans.
- Number of new technologies, management practices, marketing practices, and risk management techniques adopted by participants, as well as the number of these practices thoughtfully rejected.
- The actual or expected net value of implemented plans.

CONCLUSION

The agriculture sector will continue to play its role in contributing towards national development. Besides contributing to GDP, employment and export earnings, the sector will provide raw materials to the domestic agriculture-based industry as well as food for the population. At the same time, the sector will also contribute towards conserving the ecology and environment as well as ensuring sustainable development.

Historically, the commodity-oriented agriculture sector has been driven by economic forces to produce at maximum efficiency while maintaining low costs. Price signals were the primary form of information communicated throughout the market channel. The result has been quite effective at converting undifferentiated commodities into relatively low cost products. Despite the cost-effectiveness, the commodity-oriented agriculture sector is undergoing change, inspired in part by the evolution of a more demanding consumer for differentiated agriculture products. Now it is the end consumer, not the producer, who is driving the agriculture product chain. In effect, there is no more supply chain; instead, a demand chain is being created. "Agri-Culture has now become Agri-Business."

To meet future challenges, relevant policies, strategies and programs will have to be reviewed so that adjustment can be made to cater for the changing economic environment. Growth of the sector can be realized through the product-based approach by enhancing productivity, efficiency and modernization. However, the capacity to perform the various functions needs to be put in place. Managing change in agriculture requires new initiatives in innovative, educational programs.

TABLE 1

AGRICULTURAL VALUE ADDED, 1990-2000

(RM million in 1978 prices)

				Average Annual Growth Rate (%)	
	1990	**1995**	**2000**	**6MP**	**7MP**
Agricultural Industrial Commodities	**13,109**	**11,728**	**11,931**	-2.1	0.3
Rubber	2,520	2,129	1,178	-3.1	-8.9
Palm Oil	3,375	4,235	6,199	5.1	9.3
Sawlogs	5,206	4,139	3,395	-4.1	-3.6
Cocoa	2,008	1,225	1,159	-7.8	-1.1
Food Commodities	**2,725**	**3,433**	**4,016**	5.2	3.4
Padi	467	516	532	2.1	0.6
Livestock	711	953	1,109	6.8	3.3
Fisheries	1,546	1,964	2,375	5.4	4.2
Miscellaneous	**595**	**1,224**	**2,207**	21.2	16.1
Total	**16,428**	**17,085**	**18,154**	0.8	1.3

Source: Seventh Malaysia Plan 1996 - 2000
Eighth Malaysia Plan 2001 - 2005

TABLE 2

SELF-SUFFICIENCY LEVEL OF FOOD COMMODITIES, 1990 - 2000

(%)

Item	1990	1995	2000
Rice	80.0	76.3	71.0
Fruits	94.0	88.9	91.3
Vegetables	93.0	71.6	88.5
Fisheries Products	91.0	92.0	89.0
Beef	30.0	19.2	22.7
Mutton	10.0	6.0	6.4
Poultry	115.0	110.7	127.8
Pork	117.0	104.0	90.0
Eggs	109.0	110.3	138.8
Milk	4.0	3.5	4.0

Source : Seventh Malaysia Plan 1996 - 2000
Eighth Malaysia Plan 2001-2005

TABLE 3

EXPORTS AND IMPORTS OF FOOD, 1990 - 95

(RM Million)

Item	1990	1995	2000	Average Annual Growth Rate (%) 6MP	7MP
Exports	**3988**	**4466**	**6599**	**2.4**	**9.6**
Live Animal	406	553	737	7.2	6.7
Meat & Meat Preparations	15	21	27	7.6	5.0
Dairy Products	171	246	403	8.7	12.8
Fruits & Vegetables	367	496	701	7.0	8.3
Rice	1	2	2	51.2	-4.2
Fish, Crustaceans, Molluscs & Preparations thereof	613	825	1236	6.9	10.0
Feeding Stuffs for Animals	286	326	598	2.8	16.7
Others	2220	1998	2896	-2.0	9.0
Imports	**5560**	**7784**	**12966**	**8.0**	**13.3**
Live Animals	99	142	206	8.6	9.0
Meat & Meat Preparations	211	279	466	6.5	13.4
Dairy Products	727	952	1420	6.2	9.8
Fruits & Vegetables	749	1128	1914	10.1	13.9
Rice	327	356	501	1.8	8.1
Fish, Crustaceans, Molluscs & Preparations thereof	430	773	1343	16.0	14.7
Feeding Stuffs for Animal	358	582	1220	12.5	21.9
Others	2716	3572	5896	6.3	13.0

Source : Seventh Malaysia Plan 1996 - 2000
Eighth Malaysia Plan 2001 - 2005

REFERENCES

Boehlje, Michael. 1996. Perception of Agriculture Don't Reflect New Reality. Agribiz.

Duncan, Ronald C. 1991. Global Outlook for Agricultural Primary Commodities. OPTIONS, Vol. 6, No. 2.

Johnston, Bruce F. 1970. Agriculture and structural transformation in developing countries: A survey of research. Journal of Economic Literature, Vol. 8, No. 2.

Malaysia. 1970. Second Malaysia Plan 1970-1975. Kuala Lumpur.

Malaysia. 1976. Third Malaysia Plan 1976-1980. Kuala Lumpur.

Malaysia. 1981. Fourth Malaysia Plan 1981-1985. Kuala Lumpur.

Malaysia. 1986. Fifth Malaysia Plan 1986 -1990. Kuala Lumpur.

Malaysia. 1986. The Industrial Master Plan. Kuala Lumpur.

Malaysia. 1991. Sixth Malaysia Plan 1991-1995. Kuala Lumpur.

Malaysia. 1991. The Second Outline Perspective Plan 1991-2000. Kuala Lumpur.

Malaysia. 1996. Seventh Malaysia Plan 1996-2000. Kuala Lumpur.

Malaysia. 2001. Eight Malaysia Plan, 2001 - 2005.

Ministry of Agriculture. 1984. The National Agricultural Policy. Kuala Lumpur

Ministry of Agriculture. 1992. The National Agricultural Policy 1992-2010. Kuala Lumpur.

Ministry of Agriculture. 1998. The National Agricultural Policy, 1998 - 2010. Kuala Lumpur.

Ministry of Finance, Malaysia. Economic Report, (various issues).

Mohd Ghazali Mohayidin and Abdul Aziz Abdul Rahman (1989). "Malaysian Agriculture in the Year 2000: Towards a Structural Adjustment." In Fatimah Mohd Arshad et. al. (eds.). **Malaysian Agricultural Policy: Issues and Directions**, Proceedings of an International Seminar, Serdang: UPM. (13 p).

Mohd Ghazali Mohayidin and Abu Hassan Md Isa (1993). "Masa Depan Sektor Pertanian dalam Ekonomi Perindustrian" **OPTIONS**, vol. 8, no. 2. (14 p).

Mohd Ghazali Mohayidin (1996) "Agriculture and Agribusiness in the Malaysian Economy," in **Development of Agribusiness and Its Impact on Agricultural Production in South East Asia**, Tokyo University of Agriculture, Japan. (p.19-35)

Mohd Ghazali Mohayidin (1998) "Food and Agriculture in Malaysia: Policies, Programs," in First Regional Experts' Workshop on Food and Agriculture Policy, SEAMO-SEARCA, Philippines. (p.45-64)

Ruttan, Vernon W. 1975. Integrated rural development: A skeptical perspective. International Development Review, Vol. 17, No. 4.

Schultz, T.W. 1964. Transforming Traditional Agriculture. New Haven: Yale University Press.

Stevens, R.D. (ed.). 1977. Tradition and Dynamics in Small Farm Agriculture. Ames, Iowa State University Press.

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