

## Malaysia

# Agricultural Machinery and Mechanization Development in Malaysia

### Dr. Chan Chee Sheng

Principal Research Officer

Malaysia Agricultural Research and Development Institute



Dr. Chan Chee Sheng is a Principal Research Officer at Malaysian Agricultural Research and Development Institute (MARDI) at its branch in Seberang Perai, Pulau Pinang Malaysia. He graduated with a Bachelor in Agricultural Engineering from University Pertanian Malaysia in the year 1985. He obtained his Master degree on Irrigation and Drainage from Colorado State University, USA in 1991 and received his doctorate from Universiti Putra Malaysia in 2006. Presently, he leads several research projects in the field of agricultural engineering in MARDI. Basically the work encompasses on mechanization and water management for wetland and aerobic paddy production. His work also revolves around planning, design and development of internal paddy farm infrastructure for farm mechanization as well as on irrigation and drainage facilities. Since the year 1985, Dr. Chan Chee Sheng has had several accomplishments nationally. In line of his work, he has represented MARDI as an executive committee member in Malaysian Commission of Irrigation and Drainage (MANCID) since 2006. He was also appointed as an independent checker to the rice production project in Kota Belud, Sabah in the year 2010 and also as consultant of several others paddy production project all over the country. He was also made a member in the technical IRPA panel committee that evaluates and approves horticulture projects nationally. In the year 2008, MARDI awarded him the excellent public servant.



Malaysia is located in East Asia with a total population is 28 million. Rural population constitutes 30%, while urban population accounting for 70% of the total. Population involved in agriculture in Malaysia is 16% of the total, while 28% in industrial sector. Main exported goods of Malaysia are electronic equipment, petroleum and liquefied natural gas, wood and wood-based products, palm oil, rubber, textiles and chemicals. And the major agriculture commodities are palm oil, natural rubber, timber and rice. In terms of the contribution of different sectors to GDP, manufacturing sector accounts for 28% of GDP, service sector contributes to 57%, and agricultural

sector for 7%. GDP-per capital (purchasing power parity) in Malaysia is US\$16,900.

The diagram below shows the breakdown of agricultural land usage in Malaysia:

#### Breakdown of Agricultural Land Usage, ('000ha)

Crops	1995	2000	2005	2010	Average Annual Growth Rate (%)			
					1995-2000	2000-2005	2005-2010	1995-2010
<b>Rubber</b>	1,679.0	1,560.0	1,395.0	1,185.0	-1.5	-2.2	-3.2	-2.3
<b>Oil Palm</b>	2,539.9	3,131.0	3,461.0	3,637.0	4.3	2.0	1.0	2.4
<b>Paddy</b>	672.8	521.2	475.0	450.0	-5.0	-1.8	-1.1	-2.6
<b>Cocoa</b>	190.7	163.8	160.0	160.0	-3.0	-0.5	0.0	-1.2
<b>Coconut</b>	248.9	213.8	193.2	175.5	-3.0	-2.0	-1.9	-2.3
<b>Pepper</b>	10.2	9.2	8.5	8.1	-2.0	-1.6	-1.0	-1.5
<b>Vegetables</b>	42.2	48.3	63.7	86.2	2.7	5.7	6.2	4.9
<b>Fruits</b>	257.7	291.5	329.8	373.2	2.5	2.5	2.5	2.5
<b>Tobacco</b>	10.5	9.3	7.8	6.2	-2.4	-3.5	-4.5	-3.5
<b>Other</b>	99.1	106.4	111.4	30.0	1.4	0.9	3.1	1.8

There are four categories of paddy farmers in Malaysia, which are tenant farmers who rent the land for farming, farmers as well as land owners who farm on their own land, combination of tenant farmers and farmers owning lands whereby these farmers not only farm on their own land but also rent other people's land, and land owners who lease their land to others for farming.

The age composition of farmers in Paddy sector is showed below:

#### Farmers' age pattern in Paddy Sector

Age categories (years old)	%
< 35	1.9
35.1 – 45	7.3
45.1 – 55	24.8
55.1 – 65	38.2
> 65	27.8
Total	100

Soft soil problem is the major issue faced in Malaysia on agricultural mechanization. The causes of soft soil conditions include indiscriminate use of heavy machinery, insufficient field drainage, planting not as scheduled as water in the field has not yet completely drained, and effect of climate change where rainfall pattern changes. Improvement in irrigation and drainage system will be the solution to address soft soil problem.

In terms of strategies and policies applied in Malaysia, the National Agro-food Policy was approved in Sept 2011 with the purposes of addressing issues of food supply and food safety for consumption, modernizing and commercializing the food production sector, and ensuring continuous adoption and utilization of mechanization and automation technologies in agricultural production.

Malaysia also adopted several measures by the government to encourage personal ownership of small and medium machinery. Such measures include matching grant that is supposed to support farmers to acquire small and medium farm machinery like power tiller and pump set, tax exemptions to imported agricultural machinery, and government grants to farmer organizations for acquiring heavy machinery such as tractors and combine harvesters.

Several issues and challenges faced in Malaysia on the transition of agricultural mechanization sector to modernization including no comprehensive database available on the number of farm machineries owned by the private sector, government agencies and individual farmers, no standard regulations imposed on importers in importing farm machineries, no standard procedures regulated on farm machinery movement results in spreading of paddy plant diseases and rice weeds, and not sufficient training programs available and insufficient funding by the authorities results in failure to produce sufficient modern farmers.

To address these issues and improve mechanization development in Malaysia, several strategies need to be outlined and implemented, for example, 1) implement the mechanization programmes efficiently at all levels; 2) good field infrastructure for easy machine access; 3) develop and sustain hardpan to support machine mobility; 4) further encourage small and medium machine ownership through favorable financial assistance; 5) introduce subsidies and incentives at operational level; and 6) apply compulsory standard tests to imported machineries for assuring quality compliance.