

Asia Pacific Network for Testing Agricultural Machinery
(ANTAM)

Country Report: MALAYSIA

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Beijing, China



AYOB ABD HAMID

WAN MOHD AZNAN WAN AHAMAD

Mechanization & Automation Research Centre

Malaysian Agricultural Research and Development Institute (MARDI)

MALAYSIA



Map of Malaysia





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Overview of the Agricultural Sector in Malaysia



Rice



Rubber



Palm Oil



Fishery



Livestock



Vegetable



KEMENTERIAN PERTANIAN & INDUSTRI ASAS TANI MALAYSIA
Ministry of Agriculture & Agro-based Industry, Malaysia



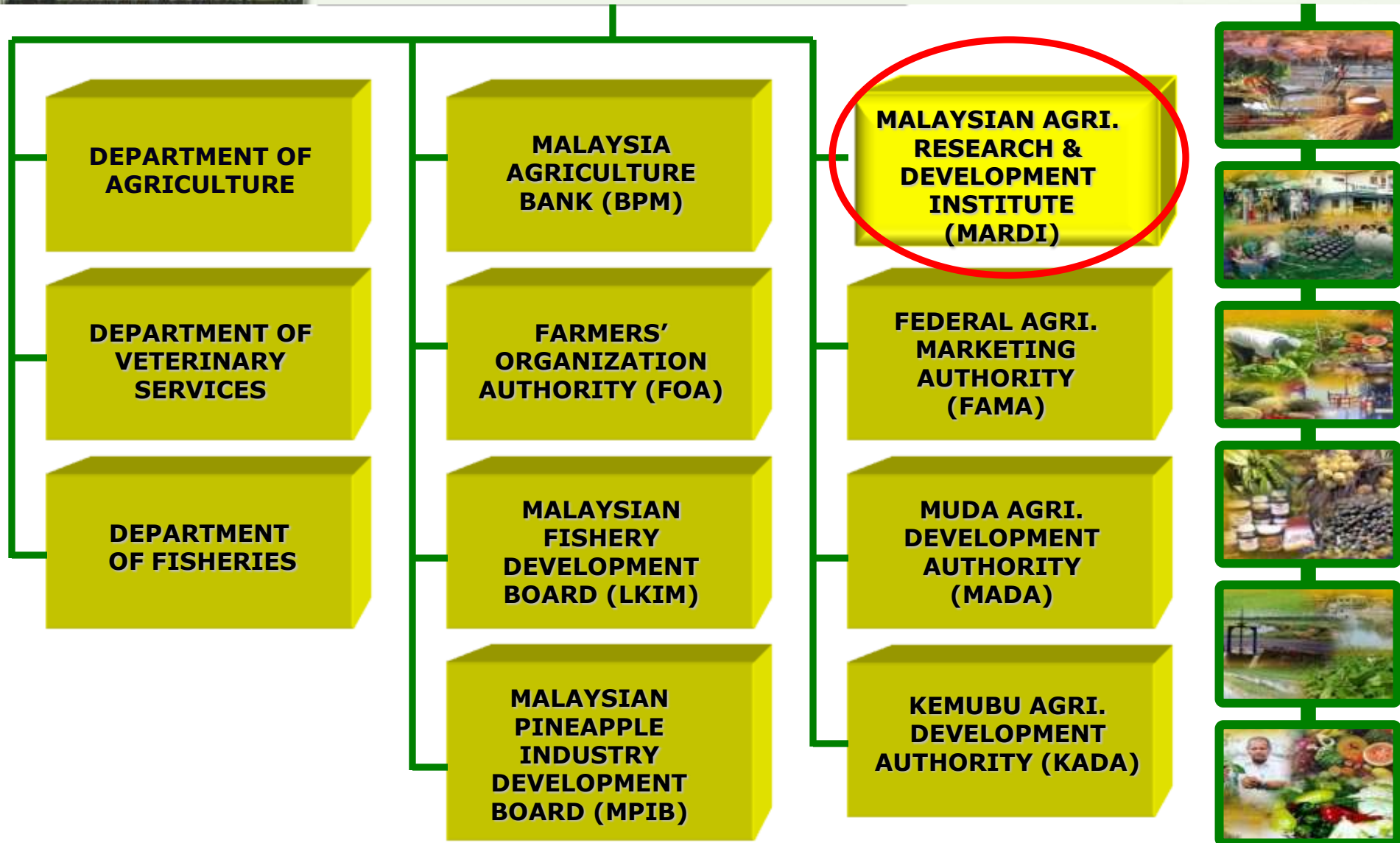
MINISTRY OF AGRICULTURE & AGRO-BASED INDUSTRY

MINISTRY OF PRIMARY INDUSTRY & COMMODITIES



Agriculture Sector in MALAYSIA







Scenario of the National Agricultural Sector

Total land area - 33 million ha.

Agricultural area - 7.9 million ha (24% of total area)

Industrial crops - oil palm, rubber, cocoa, tobacco and pepper – cover about 77% of total agricultural land

Other crops - paddy, fruits, vegetables & coconut – cover 16% of total agricultural land

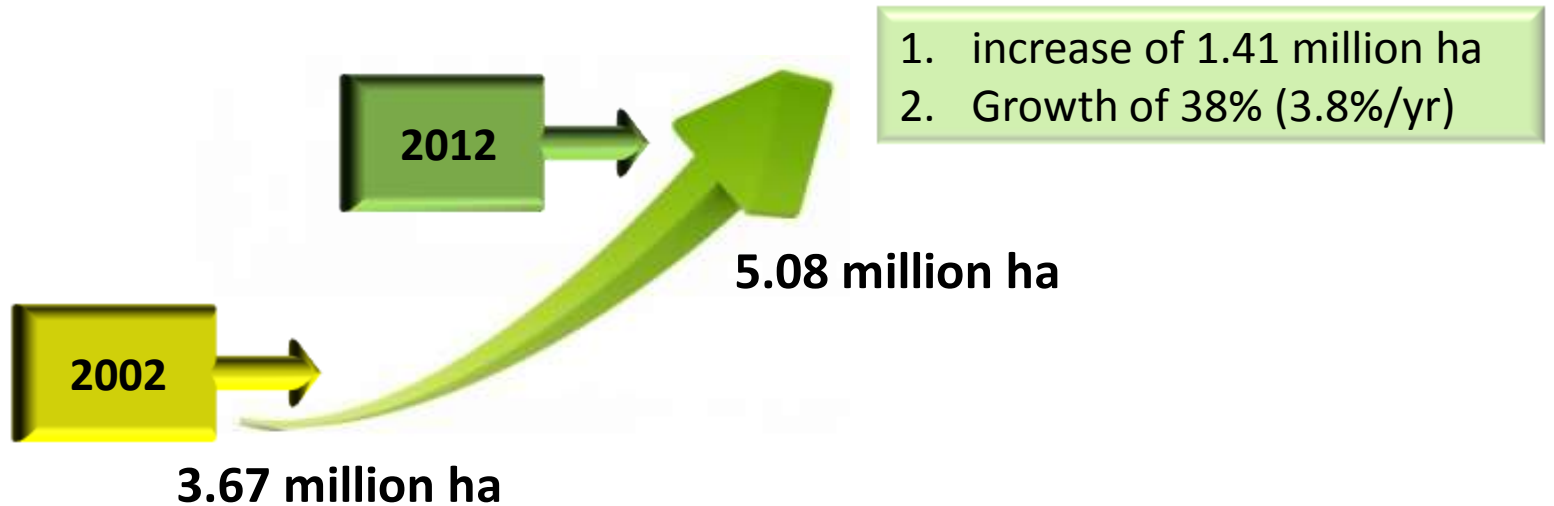
Contribution to GDP

- Manufacturing sector accounts for 28%
- Service sector contributes 57%
- Agricultural sector at 7%





Oil Palm in Malaysia



Mechinery usage :

Land preparation → Transportation



Oil Palm in Malaysia



Motorised cutter



Mechanical harvester



Fruit collector



Transporter



Crop care

Status of machinery usage
– still low



Rubber in Malaysia

1990

1.84 million ha

1. Rubber decline since 1990
2. Due to favorable price in 2010 and 2011, rubber increasing until 2012

2012

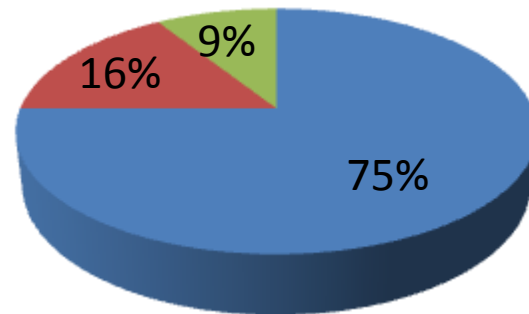
1.042 million ha

2010

2011



Area of rubber plantation in Malaysia



- peninsular Malaysia
- Sarawak
- Sabah

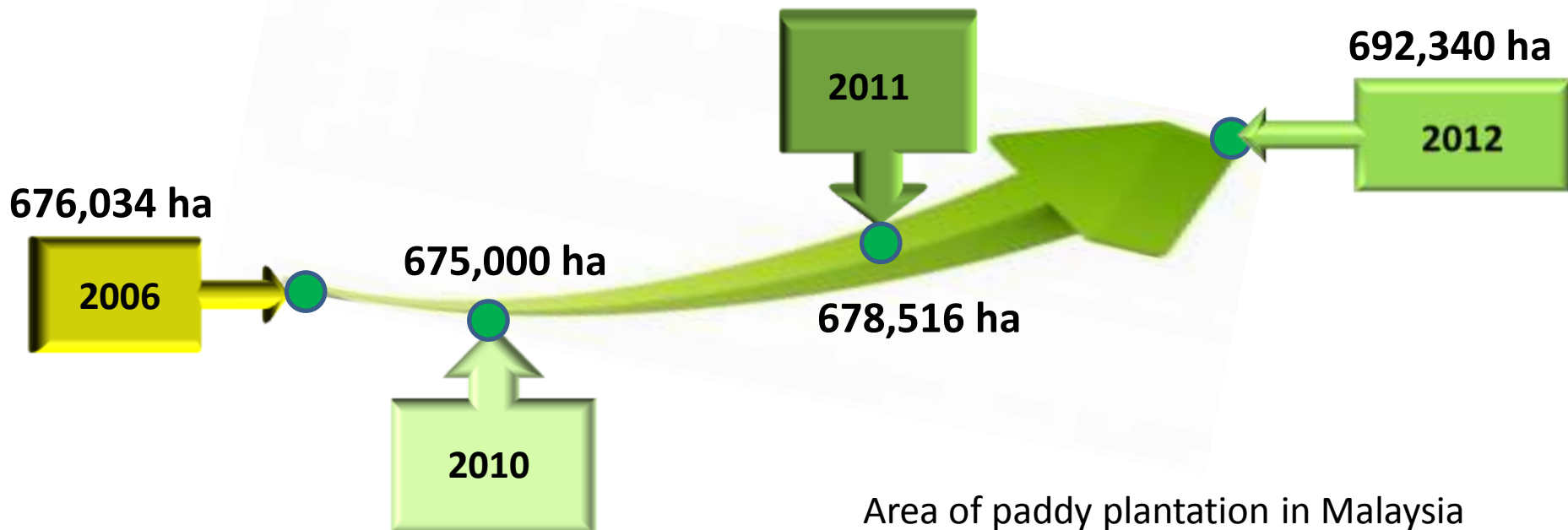
Mechinery usage :

Land preparation & on-farm
Transportation – lowest
mechanization usage

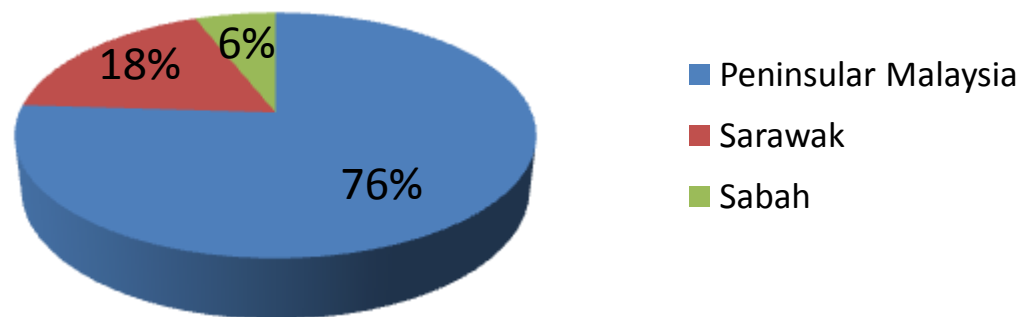




Paddy in Malaysia



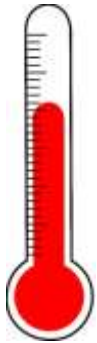
Area of paddy plantation in Malaysia





Climate In Malaysia

- Equatorial zone → warm & humid
- Climate statistics in Malaysia (2012)



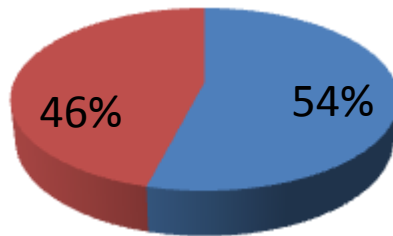
Highest temp: 36.6°C
(Subang Station)

Lowest temp: 13.0 °C
(Cameron Highland)



Rainfall: 1800mm to 3950mm

Source of water for paddy area



- irrigation & drainage
- Rain-fed area



Irrigation infrastructural density for the granary areas in Malaysia

Comparison of canal density between various rice granary area in Malaysia

Granary	Canal density (m/ha)
MADA	18
KADA	24
KERIAN	31
KEMASIN SEMARAK	33
TRANS PERAK	36
PULAU PINANG	39
SUNGAI MANIK	40
BARAT LAUT SELANGOR	43
BESUT	48





Prime Mover



Horse power

Country of origin

Applications

owned

non-pedestrian (4WT)

Less than 30 HP
31 – 40 HP
41 -50 HP
51 – 60 HP
60 – 80 HP
81 – 100 HP
Over 100 HP

Japan
Brazil
China
Italy
South Korea
Turkey

Land preparation
Crop care
Harvesting
transportation

Owned
Custom hire

Pedestrian (2WT)

Less than 10
10 – 20
More than 20

China
Japan
USA
Others

Crop care
Land preparation
Harvesting

Owned
Small scale farmers





Major brands and suppliers of agricultural tractor and related machinery

BRANDS

SUPPLIER

BADANG Mechanical Buffalo	Edaran Badang Sdn Bhd
CAT backhoe loaders	Sime Darby Industrial Sdn Bhd (Tractors Malaysia)
CAT excavators	Sime Darby Industrial Sdn Bhd (Tractors Malaysia)
CAT soil compactor	Sime Darby Industrial Sdn Bhd (Tractors Malaysia)
CASE backhoe loaders	UMW Equipment Sdn Bhd
CASE skid steer loaders	UMW Equipment Sdn Bhd
CHENG GONG backhoe loader & wheel loader	Farmtrac Malaysia Sdn Bhd
FARMMASTER agricultural tractors	Farmtrac Malaysia Sdn Bhd
FARMMASTER Wolverine skid steel loader	Farmtrac Malaysia Sdn Bhd
FARMTRAC agricultural tractors	Gulfrich Corporation Sdn Bhd
HUSQVARNA garden tractors	Chua Trading Company Sdn Bhd
ISEKI agricultural tractors and rice transplanter	Farmtrac Malaysia Sdn Bhd
JOHN DEERE agricultural tractors	TCIM Sdn Bhd
KOMATSU hydraulic excavators	UMW Equipment Sdn Bhd
KOMATSU wheel loaders	UMW Equipment Sdn Bhd
KUBOTA rice combine harvester and transplanter	Sime Kubota Sdn Bhd
KUBOTA mini excavator	Sime Kubota Sdn Bhd
KUBOTA tractors	Sime Kubota Sdn Bhd
LANDINI tractors	Palm Mach Sdn Bhd
LS tractors	UMW Equipment Sdn Bhd
MANITOU telescopic loader	UMW Equipment Sdn Bhd
MASSEY FERGUSON tractors	UMW Equipment Sdn Bhd
MINI JENTANAM rice seedlings transplanter	Sitt Heng Sdn Bhd
NEW HOLLAND agricultural tractors	Sime Darby Industrial Sdn Bhd
NEW HOLLAND (Case New Holland) agricultural tractors	NAFAS Jentera Sdn Bhd
YANMAR tractors	Palm Mach Sdn Bhd

Major brands and suppliers of power tillers



BRANDS

CMT tillage equipment
CHANGFA tillers
HONDA power tillers
HUSQVARNA power tillers
KUBOTA power tillers
OGAWA power tillers
OTMA cultivators
ROBIN power tillers
SINCOS AGRI power tillers
TASOON cultivators and tillers

SUPPLIER

Emdek Sdn Bhd
Sin Yuan Machinery Sdn Bhd
UMW Industrial Power Sdn Bhd
Chua Trading Company Sdn Bhd
Sime Kubota Sdn Bhd
Sin Yuan Machinery Sdn Bhd
Palm Mach Sdn Bhd
CLLSE Sdn Bhd
Farmtrac Malaysia Sdn Bhd
Sin Yuan Machinery Sdn Bhd

Source: Malaysia Agribusiness Directory 2013-2014



Accidents involving farm mechanization



- Reported by Department of Occupational Safety and Health (DOSH) (2010 to 2013)

113 cases of death

13 cases tractor's accidents



- factors that lead to death are :
 - Poor road condition and does not meet specification
 - Incompetent driver / operator
 - No safe work procedure
 - No inspections and maintenances were done on the tractor
 - Fail to perform risk assessments on the trailer
 - No roll over protection



Status Of Agricultural Machinery From Government Agencies

IMPLEMENT

NO	TYPE OF IMPLEMENTS	QTY (Units)
1	Disc Plough	22
2	Rotovator	78
3	Box Leveller	4
4	Mechanical Transplanter	2
5	Straw Cutter	20
6	Straw Baler	12
7	Rotoslasher	27

MACHINERY

NO	TYPE OF MACHINERY	QTY (Units)
1	Tractor (4- wheels)	1,183
2	Tractor (2- wheels) – Power Tiller	131
3	High Clearance Tractor	85
4	Combine Harvester	274
5	Paddy Transplanter	260
6	Knapsack Power Sprayer	110

WATER PUMP

NO	TYPE OF WATER PUMP	QTY (Units)
1	Diesel	879
2	Electric	1092





Status Of Agricultural Machinery Imports



Pedestrian Tractors (Quantity in Units and Value in RM million)

Country	2008		2009		2010		2011		2012		2013*	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
China	511	3.8	2,738	17.0	2,024	18.4	2,370	24.1	1,236	23.2	249	4.2
Japan	1,614	16.1	1,756	16.1	983	7.0	827	6.0	766	6.8	541	3.8
United States	70	2.3	47	1.5	93	2.7	57	1.5	57	1.9	7	2.0
United Kingdom	173	1.6	39	1.0	145	1.6	81	2.2	56	1.6	8	0.2
India	3	0.2	41	1.7	109	5.3	15	0.7	53	1.5	26	2.6
Korea, South	48	0.8	29	0.8	89	2.2	123	4.1	21	0.8	24	0.9
Thailand			164	1.5	127	1.1	29	0.4	35	0.7	41	0.6
Italy	48	1.0	59	3.2	10	0.1	25	0.7	27	0.4	7	0.2
Ireland	9	0.2	52	1.3	75	1.6	25	0.6	6	0.2	4	0.1
Brazil			55	2.9	256	23.5	150	14.1	1	0.1		
Denmark			12	0.3	5	0.1	6	0.2	5	0.1	8	0.3
Others	348	2.0	101	0.9	159	2.0	221	4.2	185	4.8	24	0.6
Total Imports	2,834	28.0	5,093	48.2	4,075	65.6	3,929	58.8	2,368	42.0	939	15.5

Source: Malaysia Agribusiness Directory 2013-2014

*2013: January - June





Status Of Agricultural Machinery Imports



Tractors (Quantity in Units and Value in RM million)

Country	2008		2009		2010		2011		2012		2013*	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Japan	2,716	108.1	2,444	72.0	2,343	61.4	1,829	56.8	2,805	71.8	931	26.4
Brazil	538	45.2	276	25.4	171	13.9	174	14.5	489	53.3	197	36.9
China	2,669	50.2	1,232	21.0	2,014	40.7	934	29.6	1,062	35.9	411	14.2
Italy	347	24.4	294	22.3	344	20.6	406	27.0	578	34.5	164	9.1
Korea, South	80	2.7	119	4.8	289	9.2	209	8.1	462	13.9	97	4.2
Turkey	204	15.3	197	12.8	382	22.1	73	5.0	220	13.6	129	8.9
India	59	3.0	147	7.7	102	1.4	112	5.6	208	11.7	41	2.1
Mexico	117	7.6	66	5.2	61	4.5	162	11.1	97	7.0	48	5.4
United Kingdom	50	3.0	45	1.3	132	7.2	94	5.0	138	3.8	65	1.4
United States	19	1.1	10	1.4	21	1.1	33	1.2	18	0.7	74	0.5
Others	72	1.4	255	3.4	262	10.0	173	5.0	139	9.1	83	6.0
Total Imports	6,871	262.0	5,085	177.3	6,121	192.1	4,199	168.9	6,216	255.3	2,240	115.1

Source: Malaysia Agribusiness Directory 2013-2014
*2013: January - June





Status Of Agricultural Machinery Imports



Seeders, Planters, Harrows, Plow (Quantity in Units and Value in RM million)

Description	2008		2009		2010		2011		2012		2013*	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Seeders and planters	178	6.1	242	4.6	315	7.8	108	1.8	2,826	1.3	35	0.5
Harrows (disc & non-disc)	6,279	5.2	1,849	6.8	1,270	8.5	2,587	7.3	2,577	4.2	1,207	1.8
Fertilizer distributors	187	2.4	1,045	5.5	181	2.5	439	1.5	378	1.2	35	0.5
Plow, soil preparation/cultivators	775	2.0	1,289	2.8	1,463	2.3	1,970	2.8	1,612	3.1	1,221	1.4
Other soil prep/cultivation machines	n.a.	16.2	n.a.	35.5	n.a.	17.6	7,816	17.6	42,569	41.3	3,118	7.7
Parts and spares		12.8		22.3		40.0		25.4		16.6		14.5
Total Imports		44.7		77.5		78.7		56.4		67.7		26.4

Harvesting and Cleaning Machinery (Quantity in Units and Value in RM million)

Description	2008		2009		2010		2011		2012		2013*	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Cleaning machines for agri products	20	0.4	98	15.0	116	8.6	44	12.5	2,784	6.6	41	0.8
Combine harvesters	67	1.6	177	8.9	217	8.4	148	5.2	123	4.6	32	1.8
Mowers	4,752	5.1	3,691	4.0	5,874	5.2	14,922	7.6	10,299	6.7	5,769	4.7
Threshing machines (not combines)	3	0.1	126	0.8	220	0.8	30	2.1	1,402	0.1	102	0.6
Straw/fodder balers	39	0.3	28	0.1	20	0.5	29	1.0	n.a.	1.1	n.a.	0.4
Other harvesting/cleaning machines	79	0.1	76	1.0	37	2.0	18	0.5	n.a.	0.7	22	0.2
Parts for harvesting/cleaning machines (Kg)		5.9		8.0		5.6		7.5		6.5		3.8
Total Imports		13.5		37.8		31.1		36.4		26.3		12.3

Source: Malaysia Agribusiness Directory 2013-2014; *2013: January - June





Adoption of mechanization in paddy production

- Used during land preparation, seeding, crop maintaining and harvesting
- Has transform the rice industry
- Better yield and socio-economic
- Most of farm mechanization activities are supplied by service provider
- further improvement of machineries and implements are in development progress to solve local issues



Issues on paddy production

1. Soft soil: **Total area of soft soil is 8,107 ha**

- factors contribute to soft soil:

- » unsuitable farm machinery utilization
- » low drainage density
- » climate change
- » in adherence to paddy planting schedule.



2. Grain losses during harvesting: **3.5% to 13.5%** as reported by MARDI, 2007

- Efficiency of threshing mechanism is the main factor that influencing the percentage of grain losses.

3. High capital investment and production cost faced by small-scale & aging farmers

Effects of Soft Soil





Status of Machinery Usage



Land Preparation



Transplanting



Land Levelling



Crop maintainance



harvesting



Status of Machinery Usage



Bulk handling

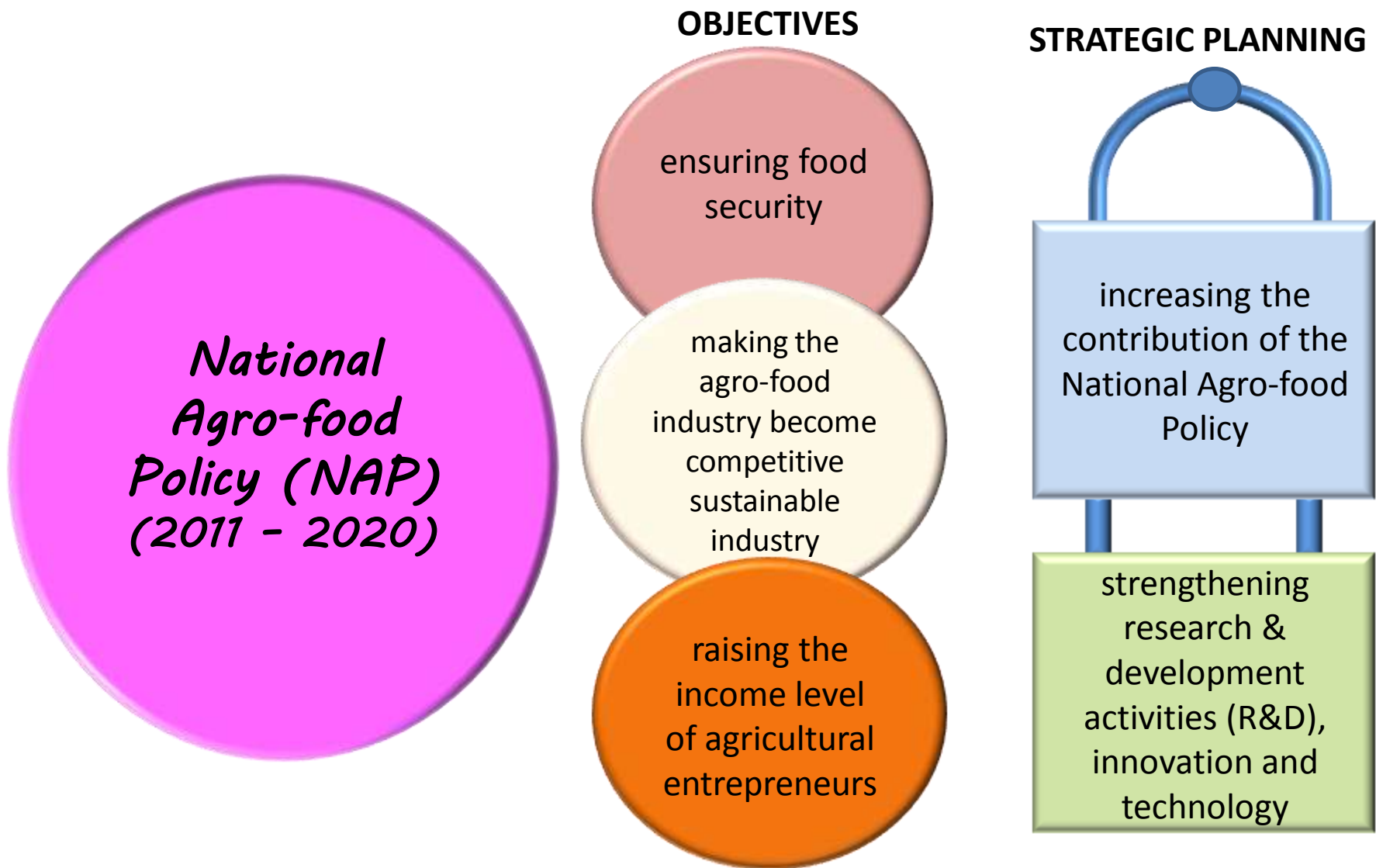


High Contact Pressure Prime Mover





Status Of Institutional Support





Status Of Institutional Support

NATIONAL FARM MECHANIZATION AND AUTOMATION PLAN

To determine the direction and setting the targets for the adoption of mechanization and automation technology in agriculture

OBJECTIVES

Highly Mechanized Agriculture

Professionally and Skillfully Managed

Economics of Scale

➤ Agriculture is business
➤ Service providers also play their roles

➤ Farmers will be trained
➤ Structured training program

➤ Larger scale to ensure profitability





Status Of Farm Infrastructure

issues & challenges

major infrastructural support

Result / achievement

1

Low density of farm road, irrigation & drainage of paddy field



Continuous improvement & maintenance



rice double cropping & PH - bulk handling

2

Soft soil in paddy field



Research on soft soil issues is on going



??

3

Peat soil



No mechanization activities





??





Status of machinery testing centre

1. NO agricultural machinery test center operates in Malaysia. 
2. Malaysia has no policy that requires all agricultural machinery tested before they are sold or used.
3. Lack of major agricultural machinery manufacturer located in the country.
4. Establishment of machinery testing centre is in progress. 



Status of machinery testing centre

Progress

Phase 1 (2011)

Collect & Establish of “**Test Code**” – Operational procedure and reference documentation.

Phase 2 (2012)

Establishment of “**Test Lab**” – Building infrastructure and lab equipment.

Phase 3 (2013-14)

Establishment of Malaysia’s Farm Machinery Testing Center at MARDI, Serdang





Testing & Certification



Puspakom is the first Malaysian computerized vehicle inspection centre:

- Role to check the condition of vehicles ; to ensure they are roadworthy and have complied with regulations set by the Road and Transport Department



Standards and Industrial Research Institute of Malaysia (SIRIM)- Services:

- Research and technology Innovation
- Standards and quality , Technical service
- Certification, Inspection and Testing
- Training and consultancy services





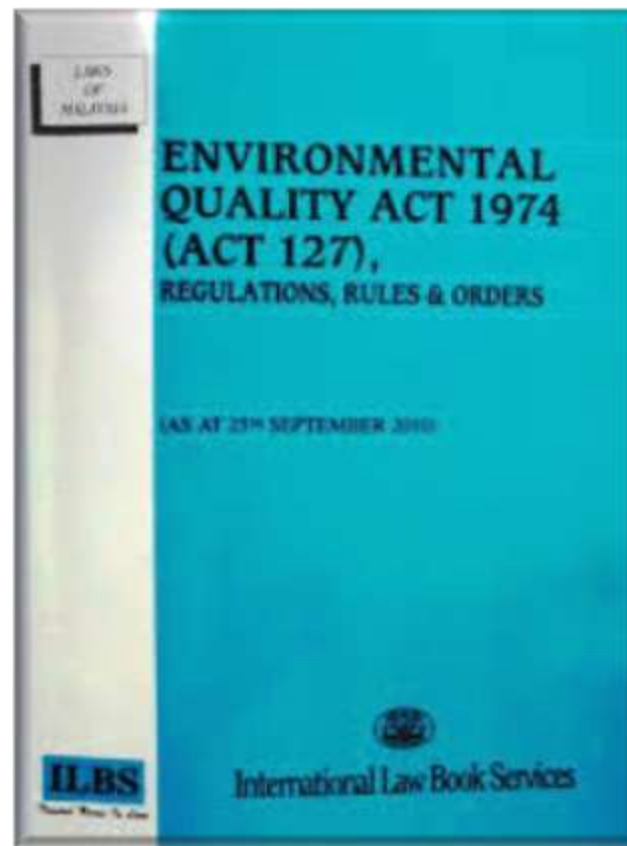
Issues and Challenges

1. No comprehensive database available on the number of farm machineries owned by the private sector, government agencies and individual farmers
2. No standard regulations imposed on importers in importing farm machineries
3. No standard procedures regulated on farm machinery movement results in spreading of paddy plant diseases and rice weeds
4. No comprehensive training programs available and insufficient funding by the authorities results in failure to produce sufficient modern farmers





Policy Matters





OSH Regulations Under OSHA 1994

1. OSH (EMPLOYERS SAFETY AND HEALTH GENERAL POLICY STATEMENTS) (EXCEPTION) REGULATIONS 1995
2. OSH (CONTROL OF INDUSTRIAL MAJOR ACCIDENT HAZARDS) REGULATIONS 1996
3. OSH (SAFETY AND HEALTH COMMITTEE) REGULATIONS 1996
4. OSH (CLASSIFICATION, PACKAGING AND LABELLING OF HAZARDOUS' CHEMICALS) REGULATIONS 1997
5. OSH (SAFETY AND HEALTH OFFICER) REGULATIONS 1997
6. OSH (USE AND STANDARDS OF EXPOSURE OF CHEMICALS HAZARDOUS TO HEALTH) REGULATIONS 2000
7. OSH (NOTIFICATION OF ACCIDENT, DANGEROUS OCCURRENCE, OCCUPATIONAL POISONING AND OCCUPATIONAL DISEASE) REGULATIONS 2004





Guidelines & Codes Of Practice

1. Codes of Practice on Safe Working in a Confined Space
2. Codes of Practice on Prevention and Management of HIV / AIDS at Work Place
3. Code of Practice on Indoor Air Quality
4. Guidelines on Occupational Safety and Health In Agriculture 2002
5. Guidelines on First-Aids Facilities In the Workplace
6. Guidelines on Occupational Safety and Health In the Office
7. Guidelines on Occupational Safety & Health in Tunnel Construction
8. Assessment of the Health Risk Arising From the Use of Hazardous Chemicals in the Workplace
9. Guidelines for Classification of Hazardous Chemicals
10. Guidelines for Labeling of Hazardous Chemicals
11. Guidelines for Formulation Chemical Safety Data Sheet
12. Guidelines for the Preparation of a Chemical Register
13. Guidelines for the Registration of Assessors, Hygiene Technicians and Occupational Health Doctors





Noise & Emissions

- The Department of Environment (DOE) primarily deals with matter involving air and water quality, industrial wastes, noise levels and environmental impact assessments.
- The pollution control and strategy or remedial approach is implemented through the enforcement of the **Environmental Quality Act, 1974**.
 - **Control of Motor Vehicle Emissions**
- Environment Quality (Control of lead concentration in Malaysia): Regulations 1985
- Environmental Quality (Motor vehicle Noise): Regulation 1987
- Environmental Quality (Control of emission for diesel engine): Regulations 1996
- Environmental Quality (Control of emission for petrol engine): Regulation 1996





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Ministry of Agriculture & Agro-based Industry, Malaysia



Thank you



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