HUMAN RESOURCE DEVELOPMENT IN AGRICULTURE EXTENSION AND TECHNOLOGY DISSEMINATION FOR FOOD SECURITY BY MADA

ERNNIE SYAFIKA OMAR
MUDA AGRICULTURAL DEVELOPMENT AUTHORITY (MADA)
INTRODUCTION

SCENARIO OF EXTENSION

HUMAN RESOURCE DEVELOPMENT

IMPACT

WAY FORWARD
Established on 30th June 1970

MADA was formed by integrating the functions of 3 main Departments

i. Dept. of Agriculture (DOA)

ii. Farmers’ Organization Authority (FOA)

iii. Dept. of Irrigation and Drainage (DID)
GRANARY AREAS IN MALAYSIA
## MUDA AGRICULTURAL DEVELOPMENT AUTHORITY

<table>
<thead>
<tr>
<th>Reservoir</th>
<th>Storage MCM / (Ac Ft)</th>
<th>Surface Area Sq. Km</th>
<th>Catchment Area Sq Km</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUDA</td>
<td>154 (125,000 )</td>
<td>26</td>
<td>984</td>
</tr>
<tr>
<td>PEDU</td>
<td>1,080 (875,000 )</td>
<td>65</td>
<td>171</td>
</tr>
<tr>
<td>AHNING</td>
<td>274 (222,300 )</td>
<td>10</td>
<td>122</td>
</tr>
<tr>
<td>Total</td>
<td>1,508 (1,222,300 )</td>
<td>101</td>
<td>1,277</td>
</tr>
</tbody>
</table>
MUDA IRRIGATION SCHEME

<table>
<thead>
<tr>
<th>STATE</th>
<th>COVERAGE (km²)</th>
<th>PADDY PARCEL MADA (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERLIS</td>
<td>810</td>
<td>201 (25%)</td>
</tr>
<tr>
<td>KEDAH</td>
<td>9,426</td>
<td>806 (9%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>10,236</td>
<td>1,007 (10%)</td>
</tr>
</tbody>
</table>
MUDA AGRICULTURAL DEVELOPMENT AUTHORITY

**PHYSICAL AREA (HA)**

- 130,282

**PADDY PARCEL AREA (HA)**

- 100,685

**TOTAL FARMERS**

- 57,635

**FARM SIZE AVERAGE**

- 2.12 HECTARES

**FARMERS’ AGE AVERAGE**

- 60.2 YEAR OLD

**TOTAL DISTRICTS**

- 4 DISTRICTS

**TOTAL FARMER ASSOCIATIONS**

- 27 FO(s)
CONTRIBUTION OF MUDA AREA TO THE NATIONAL PADDY PRODUCTION (%)

Million metric tons

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Malaysia</th>
<th>MADA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>39 %</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>37 %</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>37 %</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>36 %</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>36 %</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>38 %</td>
<td></td>
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</tbody>
</table>
SCENARIO OF EXTENSION PROGRAM IN THE MUDA AREA
In 1967 further step has been taken - by setting-up the Coordination Office (Pejabat Penyama).

Purpose of this office was to coordinate functions of departments and to enhance the extension programmes.

1968 – Pilot project of double cropping was conducted to educate farmers on water and management.
1978 - Integrated extension (combination of both agriculture extension and irrigation extension) was introduced by MADA.

The approach was suggested by the World Bank as a further improvement at the MUDA Area.

The proper extension and training section was established to strengthen the whole project operations.
Training and visit (T&V) approach was well accepted among farmers.

Dessimination of informations such as new technologies on crop management which include water management at farm level, agronomic practices, crop protection and post-harvest loses are the responsibility of MADA agriculture and irrigation extension agents.
MADA managed to change the whole scenario of rice cultivation from single to double cropping by providing:

- Proper Irrigation Schedule
- New Technology Of Rice Cultivation.
MAINTAINING THE:
- Agricultural Extensions Program through Agriculture Zones
- Technical Extension Program through Irrigation Block

1988 - Strategic Extension Campaign (SEC) using Multi Media Approach was launched.

The approach is still relevant and being practiced to solve problems related to rice cultivation in the scheme.
MADA ALSO USES PARTICIPATORY APPROACH IN THE EXTENSION WORK WHICH ALSO INVOLVE AGRICULTURE AND IRRIGATION AGENTS, PRIVATE COMPANIES OR RESEARCH AGENCIES WITH FARMERS.

OUTCOME: DURING THIS PERIOD THE SUCCESS IS MEASURED BY THE EXTENT TO WHICH FARMERS ADOPT THE TECHNOLOGIES DEVELOPED BY THE PROGRAM AND CONTINUE USING THEM OVER TIME.
AGRICULTURAL EXTENSION ACTIVITIES ARE BASED ON THE SMALL AGRICULTURE UNITS

IRRIGATION MONITORING AND IRRIGATION EXTENSION ACTIVITIES ARE BASED ON THE IRRIGATION BLOCK

SMALL AGRICULTURE UNITS = 496 UNITS

IRRIGATION BLOCKS = 172 BLOCKS

PROBLEM ARISE IN TERMS OF REPORTING.
ORGANISATIONAL STRUCTURE OF THE EXTENSION SERVICE
AT THE FO/PPK LEVEL

PERKHDMATAN
PENGAIRAN & SALIRAN

| J22 | SHUHAIZI B. AHMAD @ SAAD (J29-KUP) | R1 | ABD. RAHIM B. ABD. RAHMAN (R4-KUP) (H11-KUP) |
| J17 | KOSONG | R1 | AHMAD ANUAR B. CHE ALI (H11-KUP) |
| J17 | MOHD FITRI B. OTHMAN (J29-KUP) | R1 | AZAHARI B. ABDULLAH (R4-KUP) (H11-KUP) |
| J17 | SHAIFUL AZMAN B. SALEH (J29-KUP) | R1 | REDZUAN B. HAMID (H11-KUP) |
| R1 | PONG A/L IM (R4-KUP) (H11-KUP) | R1 | ABDUL MAHATHIR B. ABDUL HAMID (H11-KUP) |
| R1 | NOOR HISHAM B. YUSOFF (R4-KUP) (H11-KUP) | R1 | ROSLI B. MD. ZAIN (H11-KUP) |
| R1 | MOHAMMAD HAFIZ B. MAT ZAIN (H11-KUP) | R1 | BERHAN B. BAKAR (R4-KUP) (H11-KUP) |

TECHNICAL : BY IRRIGATION BLOCK

PERLADANGAN

| G17 | SYED ABDULLAH B. SYED ISMAIL (G22-KUP) (G27-KUP) |
| G17 | MOHD ROSSI B. OSMAN (G22-KUP) (G27-KUP) |

KAWALAN TANAMAN

| G17 | MOHD SAGIR B. SULAIMAN (G22-KUP) (G27-KUP) |

INDUSTRI ASAS TANI

| G17 | NORAFIZAH BT. SANUSI (G27-KUP) |

BUKAN PADI

| G17 | MOHD FAKRORIZAL B. MOHAMAD ROZALI (G27-KUP) |

PENOLONG PEGAWAI PERTANIAN
LOKALITI C-I

G27 | KHAIRIL AZMER B. ISMAIL

PENGURUSAN
INSTITUSI PELADANG

AKAUN

| G17 | AZAMMIL B. ABIDIN (G27-KUP) |

KREDIT / PROJEK KHAS

| G17 | MOHD FAKRORIZAL B. MOHAMAD ROZALI (G27-KUP) |

PERNIAGAANTANI

| G17 | MUHAMAD ZAMRI B. ISMAIL (G27-KUP) |

AGRICULTURE: BY ZONES/ PPK UNITS

TECHNICAL : BY IRRIGATION BLOCK

* Tukar post (J22-MT) dengan J22 (A) – D-1
As to further strengthen the extension services, MADA restructured and established the extension agricultural program through irrigation block.
ESTABLISHMENT OF EXTENSIONS AGRICULTURAL PROGRAMS THROUGH IRRIGATIONAL BLOCKS

01: THROUGH IRRIGATIONAL BLOCKS

02: TECHNICAL AND AGRICULTURAL EXTENSION AGENTS ARE COMBINED

03: CREATING THE ‘TOGETHERNESS’ IN BOTH AGRICULTURAL AND TECHNICAL EXTENSIONS.

04: BROADER EXTENSION TEAM
LATEST ORGANISATIONAL STRUCTURE OF THE EXTENSION SERVICE AT THE FO/PPK LEVEL

PPK MANAGER

PPK VICE MANAGER
G27 KUP

ZONE 1
- ALBD 1 (788 Ha)
- ALBD 2 (432 Ha)
- NCD 3,4,5 (670 Ha)
TOTAL AREA : 1,890 Ha

3 X G27 KUP
2 X JA29 KUP
OP H11 &
OG H11
(Amount by Block)

PPK VICE MANAGER
JA29 KUP

ZONE 2
- ARBD 1 (338 Ha)
- ARBD 2 (465 Ha)
- ALBD 3 (820 Ha)
TOTAL AREA : 1,623 Ha

3 X G27 KUP
2 X JA29 KUP
OP H11 &
OG H11
(Amount by Block)

ACCOUNT

- G27 KUP
  * Will be included in block

*Block Area: 3513ha
*No. of Unit: 14
*No. of Farmers:
ADVANTAGES OF EXTENSIONS AGRICULTURAL PROGRAMS THROUGH IRRIGATIONAL BLOCKS

- Reduce workload
- Concentration of work/tasks
- Reward systems
- Information and report coordinated
- Systematic of work management
- Enrichment of works & knowledge
HUMAN RESOURCE DEVELOPMENT
HUMAN RESOURCE DEVELOPMENT – MADA’S STRENGTH

3 TOP MANAGEMENT

93 MANAGEMENT AND PROFESSIONALS

634 EXTENSION AGENTS
COLLABORATIONS WITH RESEARCH INSTITUTES, AGENCIES AND PRIVATES
A series of Extension introductory courses were held in 2015 followed by a series of Retraining Program for all MADA extension agents.

Main objective: To empower the programs and MADA’s extension agents, Human Resource and Extension Units collaborated to increase the competency, knowledge and capability of the extension agents so that they are able to carry out the activities successfully.
To cater the main problem: The water distribution in the irrigation block via the collaboration between WUG and MADA (FO). Coordination on the paddy activity at the level of irrigation block.

Empowering the capability of farmers by giving them responsibility in controlling their units. Farmers will not depend at the FO in terms of clearing, repairing small infrastructure, and helping FO in monitoring the water management.

Increase the paddy productivity by acquiring the good water management thus increase the paddy production efficiency.
**WATER USAGE GROUP (WUG/KPA)**

<table>
<thead>
<tr>
<th>NUMBER OF GROUPS</th>
<th>TOTAL HECTARAGE (HA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>9324</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ESTABLISHED IN 2015</th>
<th>4</th>
<th>1618</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTABLISHED IN 2016</td>
<td>4</td>
<td>7706</td>
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</table>
MADA Rice Training Centre (MRTC) was established on the 2013 by MADA with the collaboration of National Agriculture Training Council (NATC).

MRTC is an accredited and certified Centre registered under the Department of Skilled Development (JPK) to train the youth focusing on the Paddy Cultivation and activities. At the same time, this centre will then create the next generation of the farmers with a better knowledge in paddy cultivation.

Until 2016, a total of 132 students have graduated from MRTC and 90% of them have been employed by the FO, government agencies and private companies.
MADA RICE TRAINING CENTRE (MRTC)
ESTABLISHMENT OF IATBIZ

AGROBAZAR RAKYAT 1 MALAYSIA

YOUNG AGROPRENEUR

AZAM TANI PROGRAM

MYAGROSIS PROGRAM

EXTENSION PROG/ACTIVITIES NON PADDY INDUSTRY
EXTENSION ACTIVITIES AT THE FARMERS LEVEL

EXTENSION ACTIVITIES ON THE GROUND
<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL MALAYSIA PRODUCTION (Metric tons)</th>
<th>TOTAL MADA PRODUCTION ( Metric tons)</th>
<th>% MADA CONTRIBUTION TO MALAYSIA RICE AND PADDY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PADDY</td>
<td>RICE</td>
<td>PADDY</td>
</tr>
<tr>
<td>2009</td>
<td>2,511,043</td>
<td>1,632,178</td>
<td>976,192</td>
</tr>
<tr>
<td>2010</td>
<td>2,464,831</td>
<td>1,602,140</td>
<td>912,321</td>
</tr>
<tr>
<td>2011</td>
<td>2,578,519</td>
<td>1,676,037</td>
<td>956,417</td>
</tr>
<tr>
<td>2012</td>
<td>2,599,382</td>
<td>1,689,598</td>
<td>929,070</td>
</tr>
<tr>
<td>2013</td>
<td>2,615,845</td>
<td>1,700,299</td>
<td>941,889</td>
</tr>
<tr>
<td>2014</td>
<td>2,739,395</td>
<td>1,780,606</td>
<td>1,053,116</td>
</tr>
</tbody>
</table>
AVERAGE YIELD TREND IN MUDA AREA

Hasil Purata (Tan/Ha)

Tahun

1966 - 1970
1971 - 1975
1976 - 1980
1981 - 1985
1986 - 1990
1991 - 1995
1996 - 2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00

6.49
6.27
4.959
Banjir = 18,246 Ha

Sumber: Bahagian Perancang MADA

* Hasil Purata Tahun 2016 tertakluk kepada perubahan.
AGROBASED PROGRAMS

<table>
<thead>
<tr>
<th>TANAMAN</th>
<th>TERNAKAN</th>
<th>AKUAKULTUR</th>
<th>PRODUK INDUSTRI ASAS TANI</th>
</tr>
</thead>
</table>

(CUMULATIVE 2011-2015) ACHIEVED

| TOTAL ENTREPRENEUR | 2,590 |
| TOTAL PROFIT (Million RM) | 484.5 |
ESTATIZATION INITIATIVE AS MODEL TO INCREASE RICE PRODUCTIVITY IN MUDA AREA
PROJECT BACKGROUND

NKEA AGRICULTURE (EPP10):
Upscaling And Strengthening Of
Rice Productivity In Muda Area

12 NKEAs
EPP 10 RICE ESTATE PROJECT was started to solve THREE (3) MAJOR ISSUES of paddy development sector in Muda Area:

- **INFRASTRUCTURE**: DENSITY LOW
  - 18 Meter/Hectare
- **FARM SIZE**: AVERAGE FARM SIZE UNECONOMIC
  - 2.12 Hectares
- **FARMER’S AGE**: AVERAGE FARMER’S AGE LESS PRODUCTIVE
  - 60.2 Years Old

NKEA EPP 10 RICE ESTATE PROJECT WAS STARTED IN 2011 (SEASON 2/2011)
PROJECT TARGETS TOWARD 2020

- Average Yield Target (Nett): 8.00 tons/ha
- Per Capita Income Target: RM 48,000

INFRASTRUCTURE DEVELOPMENT

- Development of tertiary infrastructure for 128 irrigational blocks from 18 meter/ha to 30 meter/ha.

ESTABLISHMENT OF RICE ESTET

- Land amalgamation for 50,000 ha of paddy field under estate management approach.

INCREASE FARMER’S INCOME

- Involvement in the entire value chain of the rice industry.

• Average Yield Target (Nett): 8.00 tons/ha
• Per Capita Income Target: RM 48,000
Value Chain Of Estate Project In Rice Industry

Seed Production
Seedling Production
Farm Mechanization
Rice Production
Distribution of Agriculture Inputs
Rice Collection Centre
Rice Cultivation
Extension activities to explain and convince farmers to participate in the EPP 10 Project.

Extension activities to farmers and field supervisors.
PADDY ESTATE AREA PERFORMANCE

NKEA PROJECT (EPP 10) : UPSCALLING AND STRENGTHENING THE RICE PRODUCTIVITY IN MUDA AREA

CUMULATIVE ACHIEMENTS (2011 - 2016)

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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30,623.179 ha</td>
<td>5,016.39 ha</td>
<td>5,062.73 ha</td>
<td>5,080.01 ha</td>
<td>5,137.49 ha</td>
<td>5,029.90 ha</td>
<td>5,296.66 ha</td>
</tr>
</tbody>
</table>

2016 CURRENT ACHIEVEMENT (GROUP F)

TOTAL PROJECT AREA
30,623 Hectares

NO. OF FARMERS
16,595 Farmers

TOTAL PRODUCTION
319,874 Tons/HA
PADDY ESTATE AREA PERFORMANCE

Achievement of the Paddy Estate Project for NKEA EPP10 from 2012 to 2016 in different seasons

Musim 1
Musim 2

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<thead>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Average Yield (tan/ha)</td>
<td>4.77 t/ha</td>
<td>4.80 t/ha</td>
<td>5.96 t/ha</td>
<td>4.85 t/ha</td>
<td>6.32 t/ha</td>
</tr>
</tbody>
</table>

- **Musim 1**
  - 2012: 4.77 t/ha
  - 2013: 4.80 t/ha
  - 2014: 5.96 t/ha
  - 2015: 4.85 t/ha
  - 2016: 6.32 t/ha

- **Musim 2**
  - 2012: 6.12 t/ha
  - 2013: 6.51 t/ha
  - 2014: 5.99 t/ha
  - 2015: 6.52 t/ha
  - 2016: 6.30 t/ha
WAY
FORWARD
FUTURE EXTENSION SCENARIO
BIG CHALLENGES

EXTENSION AGENTS

- Technically competent
- Our tasks: Channeling their experience into the right direction

MINDSET OF THE FARMERS

FARMERS

- Already have the knowledge based on their experience
- Acquire human skills to reach the heart and minds of our farmers
PROVIDING MESSAGE

• COMMUNICATION THROUGH GROUP JELAPANG (YOUNG FARMERS), 10 TON CLUB
• INVOLVEMENT OF MRTC STUDENTS.

FEEDBACK AND ACTION
IMPLEMENTATION OF THE NEW TECHNOLOGY
(ICT BASED)

- Twitter
- Facebook
- Blog / Vlog
- My SMS
- Instagram
BendangWATCH is a comprehensive fast-reporting paddy monitoring system that is capable to conquer the field data with the usage of mobile phone and is able to generate informative report together with the photo and location map.

It’s being develop by the collaboration of private company, and local university (UPM). We hope that this new technology will help MADA in terms of providing the early warning system data related to plant protection (pest and diseases) at crucial time and eventually helping MADA to increase the production towards 100% SSL.
According to FAO, food security-guarantee is not just the ability to produce our own food, but also the capability of its people...

DS Shabery Cheek
Minister of Agriculture and Agro Based Industry.
“The SDGs will shape national development plans over the next 15 years. From ending poverty and hunger to responding to climate change and sustaining our natural resources, food and agriculture lies at the heart of the 2030 Agenda”.

FAO and the Sustainable Development Goals

1. No Poverty
2. Zero Hunger
3. Good Health and Well-Being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions
17. Partnerships for the Goals

www.fao.org
CONCLUSION

• Extension program related to the empowerment of the human resource development is essential in ensuring the continuation of rice cultivation which will drive the country towards self-sufficiency and sustainability in rice production.

• Extension programmes are dynamic by nature and they need to be continuously improve and strengthen by infusing them with technological advances and latest informations to make it relevant with time.
THANK YOU