MECHANIZATION R&D – technology generation for sustainable agriculture in Malaysia

IBNI HAJAR RUKUNUDIN
Mechanization and Automation Research Center,
Malaysian Agricultural Research and Development Institute (MARDI)
SERDANG, SELANGOR,
MALAYSIA
INTRODUCTION

R&D - NATIONAL DEVELOPMENT

MECHANIZATION R&D - GOAL

R&D VALUE CHAIN

MECHANIZATION R&D SCOPE

CONCLUSION

CATEGORY OF R&D

- PRIVATE SECTOR

- PUBLIC SECTOR

- GOVERNMENT RESEARCH INSTITUTION (GRI'S) 20.3%

- INSTITUTE OF HIGHER LEARNING (IHL'S) (14.4%)
INTRODUCTION

- R&D - NATIONAL DEVELOPMENT
- MECHANIZATION R&D - GOAL
- R&D VALUE CHAIN
- MECHANIZATION R&D SCOPE
- CONCLUSION

MECHANIZATION PEER-REVIEWED R&D 2001 -2005 ~ RM20 million

CATEGORY OF R&D

- PRIVATE SECTOR
- PUBLIC SECTOR

- GOVERNMENT RESEARCH INSTITUTION (GRI'S) 20.3%
- INSTITUTE OF HIGHER LEARNING (IHL'S) (14.4%)
Activities comprise of creative work undertaken on a systematic basis in order to increase the stock of knowledge and the use of this stock of knowledge to device new technologies.

R&D - PULSE OF A NATION
WITHIN THE CONTEXTS OF AGRICULTURAL AND FOOD, MECHANIZATION R&D CAN:

- ECONOMICALLY SUSTAINED
- EFFICIENT AND COMPETITIVE
- HIGH-QUALITY FOOD/FEED/FIBRE PRODUCTION
- MAINTAIN A SUSTAINABLE RELATIONSHIP WITH NATURAL RESOURCES AND ENVIRONMENT
OF THE MANY GREAT INVENTION IN MECHANIZATION, COMBINE HARVESTER HAS BEEN THE BENCHMARK OF R&D SUCCESS IN MECHANIZATION

PRODUCTIVITY IMPROVEMENT - > 100 FOLDS

DESPITE THE ACHIEVEMENT, R&D IS STILL ON-GOING TILL THIS DAY
INTRODUCTION

R&D-NATIONAL DEVELOPMENT

MECHANIZATION R&D - GOAL

GOAL

CHALLENGES

R&D VALUE CHAIN

MECHANIZATION R&D SCOPE

CONCLUSION

MECHANIZATION R&D - GOALS

- TO REDUCE DRUDGERY
- TO INCREASE PRODUCTIVITY
- TO INCREASE TIMELINESS AND QUALITY
R&D CHALLENGES

- TECHNOLOGY ADOPTION IS LOW
- TECHNOLOGY MISS MATCHING
- R&D ROUTE - PROCESS
- COMMERCIALIZATION INFRA - IPR
R&D CHALLENGES

- FUNDING
- HUMAN CAPITAL - TALENTED RESEARCHERS TO PRODUCE QUALITY R&D; basic ingredient for a sustained R&D

“a man paints with his brain and not with his hands” – Michelangelo
R&D VALUE CHAIN

INTRODUCTION

R&D-NATIONAL DEVELOPMENT

MECHANIZATION R&D - GOAL

R&D VALUE CHAIN

R&D PROCESS FLOW

END-USER CHARACTERISTICS

EFFECTIVENESS OF R&D

CONCLUSION

R&D VALUE CHAIN

INPUTS

• People
• Ideas
• Equipment
• Funds

R&D LAB

• Exploration
• Testing
• K-building
R&D VALUE CHAIN

R&D LAB

INPUTS

OUTPUTS

R&D PROCESS FLOW

INTRODUCTION
R&D-NATIONAL DEVELOPMENT
MECHANIZATION R&D - GOAL

END-USER CHARACTERISTICS
EFFECTIVENESS OF R&D
CONCLUSION

People
Ideas
Equipment
Funds

Exploration
Testing
K-building

Patents
Knowledge for design of products, processes, operations & services

Design for products, processes, operations & services
R&D VALUE CHAIN

**INPUTS**
- People
- Ideas
- Equipment
- Funds
- Exploration
- Testing
- K-building

**R&D LAB**
- Patents
- Knowledge
- Design for products, processes, operations & services
- Business units
- Manufacturing functions
- Engineering functions
- Production functions

**OUTPUTS**
- Cost reduction
- New business
- New & improved products, processes, operations & services

**RECEIVING SYSTEM**

**OUTCOME**

---commercialization---
MEET THE END-USER'S NEEDS

*COST EFFECTIVE
*EASY TO OPERATE
*LOW COST
NEW SPECIALTY AREAS - OUTPUTS

INTRODUCTION
R&D-NATIONAL DEVELOPMENT
MECHANIZATION R&D - GOAL
R&D VALUE CHAIN
R&D VALUE CHAIN
END-USER CHARACTERISTICS
MECHANIZATION R&D SCOPE
CONCLUSION

PRECISION AGRICULTURE
NEW SPECIALTY AREAS

- HOW TO BALANCE A MIXTURE OF R&D PORTFOLIO ESPECIALLY THOSE UNDERPINNING THE FUTURE AGRICULTURAL AND FOOD MECHANIZATION NEEDS

  LONG TERM, CROSS CUTTING AND INTEGRATED SET OF DISCIPLINES AND PRIORITIES
R&D has a significant role in generating sustainable technology.

Mechanization R&D must embrace new disciplines into its R&D agenda to meet new demands.

R&D has a significant role in generating sustainable technology.

Mechanization R&D must embrace new disciplines into its R&D agenda to meet new demands.
THANK YOU