MECHANIZATION TRENDS
AND
FUTURE SCENARIOS

Issues; Challenges and Wayforward

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WHAT DO WE KNOW ABOUT AGRICULTURE?

- Absolutely certain: Agriculture is backbone in SSA countries
  - Uncertainties: food shortages, drought, famine

- Absolutely Certain: We need 4% sustainable agricultural growth
  - Uncertainties: last 30 years achieved 2%
Projection for cereal supply demand and net trade in SSA (Source: Badiane and Delgado, 1995).
WHAT WE KNOW ABOUT AFRICA

- Absolutely certain: Extreme weather events: Extreme Poverty levels - drought, flood, famine

- Absolutely Certain: Weak and Underdeveloped infrastructure

- Absolutely Certain: Wars and Rumours of wars
Mechanical Power

Human Power

Draft Animal Power
Human power
WEEDING WITH DONKEYS
Sources of Power of Primary Land Preparation in some countries in SSA and Asia (% of cultivated land)

<table>
<thead>
<tr>
<th>Power</th>
<th>Human</th>
<th>Draft Animal</th>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sub Saharan Africa</strong> 80</td>
<td>16</td>
<td>4</td>
<td></td>
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<tr>
<td>Botswana</td>
<td>20</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Kenya</td>
<td>84</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Tanzania</td>
<td>80</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>15</td>
<td>30</td>
<td>55</td>
</tr>
<tr>
<td>South Africa*</td>
<td>10 (20)*</td>
<td>20 (60)*</td>
<td>70 (20)*</td>
</tr>
<tr>
<td><strong>India</strong> 61</td>
<td>18</td>
<td>21</td>
<td></td>
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<tr>
<td><strong>China</strong></td>
<td>22</td>
<td>26</td>
<td>52</td>
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Farmers using animal power, especially those using donkeys instead of cattle (the majority of smallholders), are not offered information about and support for their working animals.
The Main Issue!!!

“Low Utilization of Agricultural Mechanization Technologies in Agricultural operations at all levels”
ISSUES AND BENEFITS

MECHANIZATION

INPUTS

Improve
Labour
Productivity

Less
Drudgery

Labour
saving
Technologies

Value-
adding
and
Rural
Industrialization

Skills (eg
artisan)
training

Increased
Income

Less Urban
Migration

Schematic diagram showing issues and benefits of Mechanization
WHAT ARE THE MECHANIZATION SCENARIOS TELLING US?

Case Studies of 4 countries

Zimbabwe; Swaziland, Namibia and South Africa
Zimbabwe Today

- Communal Farming: 1.8 mill households
  90% use DAP

- A1 farmers (1980): 0.3 mill use Hiring services. DDF & ARDA 1500 tractors

- Large scale commercial farmers: 4500 farmers

- Estimated 10 000 tractors in use, demand 40 000
Swaziland Today

- 75% of population depends on agriculture with low mechanization inputs

- Communal farmers (SNL): 4000 tractors in use

- Govt. Tractor Hire Services: 21 centres, 179 tractors

- Estimated: 50% tractors; 30% DAP; 20% Human Power
Namibia Today

- 70% of population depends on agriculture with low mechanization inputs
- Govt. Tractor Hire Services privatised 1990
- Estimated: 21% tractors; 70% DAP; 9% Human Power
South Africa Today

- 50% of South Africa population in rural
- 50 000 commercial farmers
- 4.3mill communal farmers
- 1.2mill of rural communities use DAP
- Estimated 325 000 tractors with annual sales of 4 000 units.
WHERE TO NOW?

ADAPTING TO CHANGE AS A BEST MANAGEMENT PRACTICE
FOR BEST MANAGEMENT PRACTICE, MECHANIZATION CHANGE HAS TO FIT INTO THE “BIGGER PICTURE” OF RESOURCE AND RISK MANAGEMENT

[Practical knock-on of issues]
Inventing the FUTURE!
KEY ISSUES

ENTREPRENUERSHIP

MARKET INFO

CHALLENGES AND WAYFORWARD

POLICIES

DONOR FATIQUE
Managing the FUTURE!
POSSIBLE AREAS FOR FUTURE

E-FARMING

PRECISION AGRICULTURE

CONSERVATION AGRICULTURE

BIO-ENERGY AND BIO-FUEL

KNOWLEDGE BASED ECONOMY

POTENTIAL AREAS FOR FUTURE
POSSIBLE AREAS FOR INTERVENTION

STRATEGIC AREA #1:

E-FARMING AND PRECISION AGRICULTURE CONCEPTS
How can we solve this???
STRATEGIC AREA # 2:

ENHANCING THE ACCESS TO MECHANIZATION INPUTS AND SERVICES FOR DIFFERENT FARMER GROUPS/END USERS
STRATEGIC AREA # 3:
TOWARDS KNOWLEDGE BASED ECONOMY: CAPACITY BUILDING
STRATEGIC AREA # 4:

BIO-ENERGY AND BIO-FUELS
Conservation agriculture offers sustainable solutions for farmers
STRATEGIC AREA # 5:

STRENGTHENING OF INFRASTRUCTURE AND SERVICES NECESSARY FOR THE SUCCESSFUL MECHANIZATION EFFORTS
CONCLUDING REMARKS

Re-orientation of donor assisted programs and focus
Towards mechanized micro-enterprises
CONCLUDING REMARKS

• More Government and donor support towards supporting entrepreneurs

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• Change emphasis and focus from pro-poor to emerging farmers
CONCLUDING REMARKS

• Provide appropriate Enabling environment and professionalism in agricultural mechanization programmes
Thank you