Asian and Pacific Workshop on Whole-Process Mechanization of Potato Production

Country report presentation

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Gazipur, Bangladesh

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Between 20°34' and 26°38' north latitude and between 88°00' and 92°41' east longitude
Outline

1. Overview of potato supply chain in Bangladesh
2. Status of mechanization in potato production
3. Potato machinery developed in research institute
4. Need assessment of potato production mechanization in Bangladesh
5. Major constraints and challenges
6. Suggestions for regional cooperation for whole-process mechanization of potato
7. Conclusion
Overview of potato supply chain in Bangladesh

• Potato variety: Developed by Tuber crop research centre of BARI; about 70 nos
• Seed source: Quality seed 5%; 95% low quality by farmers produced
• Number of potato cold storage: 382; storage about: 25-30%
• Generally farmers sold potato in local market
• Potato exporting 8-10 countries through private sectors

- Potato growing period: Mid Oct-mid March
- Avg. temp: 15-25°C
- Cropping system: Rice-potato-maize

Graph showing area, yield, and production in Million ha, metric ton/ha, million metric ton from 2007-8 to 2014-15.
# Status of mechanization in potato production in Bangladesh

<table>
<thead>
<tr>
<th>Name of machinery</th>
<th>Numbers of machinery</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power tiller</td>
<td>700,000</td>
<td>Multipurpose use in addition to soil tilling</td>
</tr>
<tr>
<td>Four wheel tractor</td>
<td>35,000</td>
<td>Custom hire use</td>
</tr>
<tr>
<td>Shallow tubewell</td>
<td>1549711</td>
<td>Groundwater as well as surface water pumping</td>
</tr>
<tr>
<td>Deep tubewell</td>
<td>203741</td>
<td>Groundwater irrigation</td>
</tr>
<tr>
<td>Sprayer</td>
<td>13,00,000</td>
<td>Mostly knapsack type</td>
</tr>
<tr>
<td>Diesel engine</td>
<td>25,00,000</td>
<td>Agricultural activities</td>
</tr>
</tbody>
</table>
Potato machinery developed in research organization (BARI)

1. Power tiller driven potato planter
2. Power tiller driven potato harvester
3. Potato grader

Adoption rate very slow due to week extension, no mechanization policy
BARI Power tiller driven Potato Planter

Power tiller driven potato planter

Conventional planting

Planting uniformity, 93%
## Cost comparison

<table>
<thead>
<tr>
<th>Cost item</th>
<th>Potato planter</th>
<th>Manual planting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour requirement</td>
<td>4 man days/ha</td>
<td>67 man days/ha</td>
</tr>
<tr>
<td>Potato planting cost, Tk./ha</td>
<td>7,054</td>
<td>26,400</td>
</tr>
</tbody>
</table>

1 US $=Tk. 78.0

Cost saving: 73%, Labour saving: 94%; Capacity: 0.10 ha/hr
**BARI Potato Harvester**

Power tiller driven potato harvester

<table>
<thead>
<tr>
<th>Cost item</th>
<th>Potato harvester</th>
<th>Manual method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour requirement</td>
<td>21 man days/ha</td>
<td>60 man days/ha</td>
</tr>
<tr>
<td>Cost of potato harvesting, Tk./ha</td>
<td>8,357</td>
<td>17,100</td>
</tr>
</tbody>
</table>

Cost saving: 51%, Labour saving: 65%; Capacity: 1.2 ha/day
# Need assessment of potato production mechanization in Bangladesh

<table>
<thead>
<tr>
<th>SI No.</th>
<th>Name of potato machinery</th>
<th>Numbers needed</th>
<th>Suitable potato growing districts of Bangladesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Small Potato Planter</td>
<td>2000</td>
<td>Munsigonj, Rajshahi, Joypurhat, Bogra, Rangpur, Dinajpur</td>
</tr>
<tr>
<td>2</td>
<td>Small Potato Harvester</td>
<td>2000</td>
<td>Nilphamari, Lalmonirhat, Jessore, Panchagore, Thakurga, Comilla</td>
</tr>
<tr>
<td>3</td>
<td>Power duster cum sprayer</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Potato grader</td>
<td>5000</td>
<td></td>
</tr>
</tbody>
</table>
Major constraints faced for whole process mechanization of potato production in Bangladesh

- Lack of appropriate small potato planting and potato harvesting machinery suitable for small fragmented land with farmers affordable price.

- Potato produced price are not stable which discourage farmers on capital investment

- Inadequate number of skill machinery operator and mechanic in rural areas.

- Machinery manufacturers are not technically sound on potato machinery
Major constraints contin........

- Credit support on agricultural machinery are not much friendly
- Policy of mechanization needed (Such as- subsidy on agricultural machinery with farmers easy access on it)
- Inadequate fund allocation for machinery research and potato- mechanization to farmers
Major challenges for whole process mechanization of potato production in Bangladesh

• How to introduce small potato planter and potato harvester in the farmers’ field and how can make these machinery available to farmers with affordable price?

• How to link potato machinery with dealers, manufacturers, agri-business personnel?
Suggestions for regional cooperation for whole-process mechanization of potato production in Asia and the Pacific, and potential contribution

- Formulation of sustainable mechanization guideline as well as potato mechanization network and implementing the strategy to the farmer’s field.
- Introduction and interchanging suitable potato machinery among the region with fair price.
- Policy for easy way marketing the produced potatoes among the region.
- Capacity building of the farm machinery engineers, manufacturers, machinery operator, and progressive farmers in respect of potato machinery and mechanization.
Conclusion

• Introduction of small potato machinery can mitigate labour shortage and make steady progress of potato production

• Need policy guideline among the region of potato mechanization and implementing strategy easy way to the farmers field

• Capacity building of the stake holders related to potato mechanization to be undertaken
Speaker contact information

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Thank you