10th Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific

Gender Mainstreaming in Sustainable Agricultural Mechanization

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Women-friendly agricultural mechanization in South Korea

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Korean Agriculture

- **Intensification of rural labor shortages due to declining & aging populations**
  - In 10 years, it is predicted that timely farming will be disrupted without the use of farming machinery ('18, KREI)
    * Farm population: ('18) 2,315 thousand → ('30p) 180
    * Aging rate (65+): ('18) 44.8% → ('30p) 51.3
    * Women farmers: ('18) 51% → ('25) 53
    * Women labor share: ('18) 53.9% → ('25) 62

*Increased need for mechanization* due to the shortage of rural labor force
Agricultural mechanization in South Korea

- Rice paddy farming is at the stage of completion ('22, 99.3%)
- Farming mechanization of sowing, planting, and harvesting operations is insufficient
  - Mechanization rate of field agriculture: ('10) 50.1% → ('22) 63.3 → ('26) 77.5
  - Increased by about 13 percentage points in the last 12 years

<table>
<thead>
<tr>
<th>Crops</th>
<th>Plowing and harrowing</th>
<th>Seeding transplantation</th>
<th>Vinyl Coating</th>
<th>Pest control</th>
<th>Harvesting</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Farming</td>
<td>99.8</td>
<td>12.6</td>
<td>76.9</td>
<td>94.8</td>
<td>32.4</td>
<td>63.3</td>
</tr>
</tbody>
</table>

Source: Agricultural Machinery Utilization Survey (2022, RDA)
### Barriers to mechanization in field agriculture

#### Variety of cultivation styles

- **Variety of cultivation styles by region**
  - *ex. Garlic clove width: 300 cm (Uiseong), 150 (Namhae-South Sea), 210 (Muan)*

#### Variety of cultivation area

- **Sloping, varied soil composition**
  - *2/3 of the total field area has a slope of 7% or higher*
  - *Soil composition: Silty clay loam 30.8%, loam 35.3*

#### Weak purchasing power

- **Small-scale cultivation and farming households**
  - *Less than 0.3 ha per farmer (‘22): Garlic 87.3%, onion 77.4%, potatoes 94.5*

#### Low-volume and multiple items

- **Poor profitability of small businesses**
  - *Difficulty investing in R&D*
  - *Out of a total of 858 farm equipment companies (1 large, 3 medium, 854 small)*
Policy history for women farmers

Ministry of Agriculture, Food and Rural Affairs (MAFRA)

- ('98.03) Establish of the Women’s policy office under the planning and management office
- ('11.06) Reorganized into the Dept. of Rural Community and Social Affairs
- ('19.06) Establishment of Rural Women’s Policy Team under the Dept. of Rural Policy

('00) 1st 5-year plan to foster women farmers ('01~'05)
- Farming technology training to improve management skills of women farmers

('06) 2nd 5-year plan to foster women farmers ('06~'10)
- Improving the occupational status of women farmers

('11) 3rd 5-year plan to foster women farmers ('11~'15)
- Cultivating professional manpower, improving quality of life

('15) 4th 5-year plan to foster women farmers ('16~'20)
- Strengthening vocational capabilities and realizing gender equality in agriculture and rural areas

('20) 5th 5-year plan to foster women farmers ('21~'25)
- Strengthening professional and social capabilities and realizing gender-equal agriculture
Agricultural machinery for women workers

Women-friendly agricultural machinery
Women-friendly agricultural machinery (by MAFRA)

Agricultural machinery and convenient equipment that were manufactured to be convenient for use by women farmers, taking women's physical conditions into account, or that are frequently used by women farmers
(ex. Ride-on management machines, powered rice planter, small tractors)
Empowering women farmers

R&D

Education

Policy
Women-friendly agricultural machinery

- **Direction of R&D**
  - Mechanization of agricultural work
    - Small, lightweight: self-propelled small equipment for walking or riding
    - **Easy to operate**: simple shifting or operation
    - Easy to apply to field farming use of various work tools that are easy to attach and detach
  - Advanced development of convenience equipment
    - ergonomic convenience device
Women-friendly agricultural machinery

▷ 27 types of women-friendly agricultural machinery, 6,878 units distributed over the past five years (2018~2022)
- automated agricultural machinery, easy for women to handle

<table>
<thead>
<tr>
<th>Year</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>합계</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of ag. machine</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>No. of supplies</td>
<td>1,454</td>
<td>340</td>
<td>3,775</td>
<td>869</td>
<td>440</td>
<td>6,878</td>
</tr>
<tr>
<td>R&amp;D budget (unit: million $)</td>
<td>1.36</td>
<td>1.55</td>
<td>1.34</td>
<td>1.03</td>
<td>0.81</td>
<td>6.09</td>
</tr>
</tbody>
</table>
Women-friendly agricultural machinery

- Riding self-propelled garlic collector
- Ginseng seeding machine
- Ride-on type onion meal maker
- Strawberry cart
- Green corn harvester
- Radish planter
- Perilla seed threshing
### Development of convenience equipment

- **11 types of comfort and protective equipment for women’s health and safety**

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<th>2021</th>
<th>2022</th>
<th>합계</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of ag. machine</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>
Development of convenience equipment

- Walking support cart
- Personal protective equipment
- Handle rotating scissors
- Agricultural work shoes
- Rail mobile work chair
- Pesticide control clothing
Training program for women workers

Theoretical education and practical training on agricultural machinery for women farmers
- 26,754 people (central 54, regional 26,700) * up to Aug. 2023

Training for women farmers on driving and operating agricultural machinery and its safety rules
- (central) training on agricultural machinery use for women farmer (9 sessions, 90 people)
- (regional) provincial agricultural research and extension services-centered training course for women farmers (8 sessions 200 people)
Support policy for women farmers

**PROJECT** purchasing and using of women-friendly agricultural machinery

- To improve labor efficiency and work environment of women farmers
- Support women farmers to use agricultural machinery more easily
- Since 2015 continued, National vs. local government budget 50:50
- Rental and distribution of women-friendly equipment through agricultural machinery rental offices

**PROJECT** farming convenience equipment support

- To reduce the burden of agricultural work on women farmers and improve work efficiency by distributing ergonomic convenience equipment
<table>
<thead>
<tr>
<th>Item</th>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm branch</td>
<td></td>
<td>Height adjustable, movable, easy use for women farmers</td>
</tr>
<tr>
<td>Pepper harvest cart</td>
<td></td>
<td>Wheels for easy movement, sun-shade</td>
</tr>
<tr>
<td>Rechargeable sprayer</td>
<td></td>
<td>Rechargeable and easy to transport product</td>
</tr>
<tr>
<td>Rechargeable cart</td>
<td></td>
<td>Rechargeable and easy to load and carry items</td>
</tr>
<tr>
<td>Rechargeable weeder</td>
<td></td>
<td>Rechargeable, light-weight and easy to use</td>
</tr>
<tr>
<td>Multi-purpose (automatic) seeder</td>
<td></td>
<td>Easy to use and sow various types of seeds</td>
</tr>
<tr>
<td>Rechargeable automatic pruning shears</td>
<td></td>
<td>Rechargeable, light-weight, easy to use</td>
</tr>
</tbody>
</table>
Conclusion

Strengthen the development of agricultural machinery
    can easily and comfortably operate by incorporating ergonomic design
    and cutting-edge automation technology

Expand training on the use and safety of agricultural
    machinery for women farmers

Increase R&D budget to expand field crop mechanization
    upgrading customized field agricultural machinery
(2023) 9,796 thousand dollars → (2024) 16,967
Thank you