WELCOME

To

Delegates and Participants

Of

International Symposium

On

Climate Change and Food Security

in South Asia
The Largest Multi-crop Research Institute

Conducts Research on More Than 100 Crops

More than 700 scientists of different disciplines work at BARI
Ministry of Agriculture (MoA)

- Input Supply (BADC)
- Research (NARS)
- Extension (DAE)
Agricultural Research System in Bangladesh

Research Conduction
Crop Research Institutes

Multi-crop Research Institute
- Bangladesh Agricultural Research Institute
  - (291 Varieties + 310 Tech.)
- Bangladesh Institute of Nuclear Agricultural Research
  - (39 Varieties)

Research Coordination
Bangladesh Agricultural Research Council

Mono-crop Research Institute
- Bangladesh Rice Research Institute
  - (47 Varieties)
- Bangladesh Jute Research Institute
  - (27 Varieties)
- Bangladesh Sugarcane Research Institute
  - (37 Varieties)
- Bangladesh Tea Research Institute
  - (21 Varieties)
Category of Labour at BARI

Total no. of Lab. 2865

Regular 1116, 39%

Irregular 1017, 35%

Seasonal 732, 26%
Mandate

- Germplasm collection, evaluation, conservation and documentation
- Development of improved crop varieties
- Soil, fertilizers and water management research
- Disease and pest management research and pesticidal residue analysis
- Development of production package of crops
- Development of new cropping patterns to increase cropping intensity
- Development of appropriate farm machineries
- Transfer of technologies through training, demonstration and publications.
Oilseeds
Spices
Condiments
Flowers
Vegetables
Pulses
Tubers
Roots
Fruits
Commodity Research
(103 crops)
<table>
<thead>
<tr>
<th>Crop groups</th>
<th>Name of the crops</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals</td>
<td>Wheat, Maize, Barley and Millets, etc.</td>
<td>8</td>
</tr>
<tr>
<td>Oilseed Crops</td>
<td>Mustard, Groundnut, Sesame, Linseed, Sunflower, Soybean, Niger, etc.</td>
<td>8</td>
</tr>
<tr>
<td>Pulse Crops</td>
<td>Lentil, Chickpea, Mungbean, Blackgram, Grasspea, etc.</td>
<td>8</td>
</tr>
<tr>
<td>Tuber &amp; Root Crops</td>
<td>Potato, Sweet potato, Aroids and Yam, etc.</td>
<td>4</td>
</tr>
<tr>
<td>Horticultural Crops</td>
<td>Fruits, Vegetables, Flowers, etc.</td>
<td>60</td>
</tr>
<tr>
<td>Spices and Condiments</td>
<td>Onions, Garlic, Turmeric, Coriander and other spices</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>103</td>
</tr>
</tbody>
</table>
Non-Commodity Research

- Basic and Frontier
  - Farm Machinery
  - Irrigation & Water Management
  - Post-harvest Technology
  - Plant Pathology
  - Entomology
  - Soil Fertility and Fertilizer
  - Biotechnology
- Farming System
- Socio-economics
- Hill Agriculture
- Coastal Agriculture
## Crop Varieties Developed by BARI

<table>
<thead>
<tr>
<th>Name of crops</th>
<th>Total Varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal Crops</td>
<td>51</td>
</tr>
<tr>
<td>Oilseed Crops</td>
<td>36</td>
</tr>
<tr>
<td>Pulses Crops</td>
<td>27</td>
</tr>
<tr>
<td>Tuber Crops</td>
<td>51</td>
</tr>
<tr>
<td>Vegetable Crops</td>
<td>66</td>
</tr>
<tr>
<td>Fruit Crops</td>
<td>40</td>
</tr>
<tr>
<td>Flower Crops</td>
<td>3</td>
</tr>
<tr>
<td>Spices Crops</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>291</strong></td>
</tr>
</tbody>
</table>
## Other Technologies Developed by BARI

<table>
<thead>
<tr>
<th>Research Fields</th>
<th>Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop, Soil, Water &amp; Pest Management</td>
<td>125</td>
</tr>
<tr>
<td>Farm Machinery</td>
<td>19</td>
</tr>
<tr>
<td>Irrigation and Water Management</td>
<td>33</td>
</tr>
<tr>
<td>Post-harvest Technology</td>
<td>24</td>
</tr>
<tr>
<td>Farming Systems Research</td>
<td>97</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>12</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>310</strong></td>
</tr>
</tbody>
</table>

Variety (291) + Other Technology (310) = 601
Land areas of different Res. Station of BARI
(Total land areas: 1200ha)
Glimpses of Selected Technologies
Wheat: Complement food security

Area: 0.37 Mha
Production: 0.96 Mt

HYV Coverage: 100%
Yield: 3 - 3.5 t/ha (maximum in field)
BARI Hybrid Maize 9; yield 11-12 t/ha

Area & Production

Area (Mha) | Production (Mt) | Yield (t/ha)
Potato: A silent revolution

Production  Area Mha
2007: 5.3 Mt  0.38
2008: 9.04   0.52

Reasons: Enhanced area & yield
HYV Coverage: 90%
Yield: 25-30 t/ha (maximum in field)

BARI Alu 23; For Export
BARI Alu 21; Table Purpose
BARI Alu 26; For Processing
Potato TPS

- BARI TPS-1 & 2 are high yielder with attractive cream and yellow colour

- Virus free tuberlets seed production through formal and informal system reduced the dependency on imported seeds
Microtuber Propagation of Potato

Shoot Multiplication
Breeder seed production of potato

Tuberlet

Breaking dormancy

Breeder’s seed production

Seed production
Sweet Potato (0.058ha, 0.87 Mt)

BARI Misty Alu contain high amount of vitamin ‘A’
Pulses: A protein source

Area : 0.6 Mha
Production : 0.54 Mt

**Mungbean**

- HYV Coverage : 56%
- Yield : 1.0-1.5 t/ha (maximum in field)

BARI Mung 6; yield 1.5-1.8 t/ha

BARI Chhola 7; yield 1.8-2.2 t/ha

BARI Masur 6; yield 1.6-2.5 t/ha
BARI masur-5 at Bheramara Kushtia during rabi 07-08

Happy farmer with BARImasur-5

Honourable Advisor (Agriculture) Dr. C. S. Karim along with the farmer in BARImasur-5 field under rain

Happy farmer’s BARImasur-5 in ripening stage
Oilseeds: For import reduction

Area: 0.75 Mha
Production: 0.92 Mt (Oil)

HYV Coverage: 30% (Mustard)

BARI Chinabadam 7; yield 2.2-2.5 t/ha
BARI Sarisa 14; yield 1.4-1.6 t/ha
BARI Soybean 5; yield 2.0 - 2.25 t/ha
BARI Til 3; yield 1.2-1.5 t/ha
Vegetables: High nutrition & food value

Area: 0.3 Mha
Production: 2 Mt

BARI Hybrid Tomato 4 (Summer); yield 40-45 t/ha

BARI Jhar Seem 1; yield 13-14 t/ha
Summer Tomato in Farmers Field
Capsicum (Advanced lines)

BARI Begun 8 (Summer); yield 40-45 t/ha

Dr. C. S. Karim, Hon’ble Adviser Visits Hydroponic (Capsicum)

Hydroponic (Lettuce & Capsicum)
BARI Seem 1; yield 20-22 t/ha

Dwarf Seem

BARI Lau 1; yield 40-45 t/ha

BARI Seem 1; yield 20-22 t/ha

BARI Lau 2; yield 55-60 t/ha
Spices: Breaking seasonal boundary

Area : 0.12 Mha
Production : 1.3 Mt

Dr. C. S. Karim, Hon’ble Adviser Visits BARI Summer Onion Field

Summer Onion; yield 15-20 t/ha
BARI Garlic-2; Yield 8-9 t/ha
Fruits: Nutrition and food value

Area : 0.22 Mha
Production : 2.0 Mt

BARI Lichu 4

BARI Aam 3

BARI Aam 4 (Hybrid)
BARI Strawberry 1

BARI Amra 1 (year round)

BARI Peyara 2

BARI Amloki 2
Baby Pineapple

BARI Malta 1

BARI Naspati 1

BARI Zamrul-1

Shahi Papaya

BARI Kul-2
Flower

BARI Gladiolus 1

BARI Gladiolus 2

BARI Orchid 1
Saline Areas

Free grazing Without mulching
Salt tolerant mug
Mulching bitter gourd

Without mulching (Melon)
Hill Agriculture

- Multi-strata fruit orchard saves soil erosion
- Fruit orchard within 8-10 years
- Improve Farmers’ livelihood

Traditional Jhum cultivation

Improved method of cultivation
RESEARCH ACTIVITIES IN HILLY AREAS

Mungbean at farmers field
Lime (Dolomite) 1.5 ton and Boron 2 kg/ha with N 120 P35 K65 S20 Zn3 kg/ha was optimum for hybrid maize seed production (2810 kg/ha)

Acid Soil Management
Achievements

Non-Commodity
Postharvest Processing

Hot Water Treatment for Mango

At 55 °C for 5 minutes

Capacity: 1.0 ton/hr

Price: Tk. 70,000/-
Technique for residue analysis from crop samples

Chopping of sample

Homogenization

Filtration

Rotary vacuum evaporator

Gas Chromatogram

Liquid Chromatogram

Out of 18 crop samples 4 had residue above MRL
Technique for multi-residue analysis

Shrimp

Gas chromatogram mass spectrometry

Out of 149 samples, 71 (48%) contained insecticides residue
Farm Machinery: Save time and cost

Multi-crop Power Thresher

Bed Former

Pedal/power Winnower

Potato Grader
Power Tiller Operated Seeder (PTOS)

Advantages

- Tillage, seeding & laddering - 3 operations simultaneously
- Saves 20% seed and overcome delay planting
- Seeding cost 35-40% less
- Wheat, maize, mungbean, rice can be sown
Reaper for Wheat and Rice

Wheat Harvesting @ 0.27 ha/hr

Paddy Harvesting @ 0.18 ha/hr
Power Maize Sheller

Capacity : 2.5-3.0 ton/hr
Thresh cost : Tk. 25/ton
Price : Tk. 19,250 (WO/E)
Annual benefit : Tk. 27,000

Multicrop Power Thresher

Capacity : wheat- 340 kg/hr  paddy- 930 kg/hr
Thresh cost : a) wheat-Tk 210/ton (Tk 500/ton tradi)
             b) paddy - Tk 77/ton (Tk 250/ton tradi)
Annual benefit: Tk 30,000
Maize + Potato  
**Multiple Cropping**  
Maize + Sweet potato

Maize-bushbean

Maize + Bushbean  
Maize + Pea
Maize + Carrot

Maize + Soybean

Maize + Spinach

Maize + Lalshak

Multiple Cropping
IPM OF VEGETABLE CROPS

Steps

= Effective + Economic + Environmental friendly control measure for insect pests of brinjal & cucurbits crops
IPM: For safe food and environment

Amar Desh: 16-09-06

Inkilab: 04-08-07

Prothom-Alo: 17-6-06

Daily Star: 16-06-06

IPM Bittergourd field in Jessore

Pheromone Trap
BARI RECEIVED PRESTIGIOUS INTERNATIONAL AWARD

THE RYUTARO HASHIMOTO APFED AWARDS 2008 FOR GOOD PRACTICE

Promoting Sustainable and Safer Vegetable Production: Bangladesh
Biotechnology
New science, new opportunity

Micropropagation protocol of Pineapple
$F_1$ line of bottle gourd

Lines of bottle gourd

BGN2-3-8  BGN32-7  BGN33-5
Micropropagation protocol of Banana
Shoot and Fruit Borer Resistant
Trangenic Brinjal
\((Bt\text{ gene})\)

Late Blight Resistant
Trangenic Potato
\((RB\text{ gene})\)
Transgenic vegetable

Bt. Brinjal

Control
Water Management

Drip irrigation layout

Drip irrigation in saline soil

Fertigation to brinjal

Fertigation in action
Fertigation to Brinjal

- **Yield increase 27-29%**
- **Saves 35-37% Urea and also 48-49% MP**
- **Saves 49-50% of irrigation water**
- **Benefit cost ratio 2.4 to 2.6**
Value Addition: Women participation as entrepreneurs
Coconut candy

Osmotic dehydrated mango

Jackfruit candy

Mango candy

Postharvest Processing
Homestead Agriculture
Plant Genetic Resource Centre (PGRC)

- **Germplasm Preserved:** 12,000 accessions

- **On-going:**
  - Long-term preservation: 1,00,000 accessions
    - (20-40 years; at -20 °C)
  - Medium-term preservation: 1,00,000 accessions
    - (5-10 years; at +4 to +6 °C)
Modern Laboratory Facility

- Arsenic laboratory
- Toxicology laboratory
- Molecular Biology laboratory
- Biotechnology laboratory
- Plant Pathology laboratory
- Tuber Crop Research laboratory
- Plant Breeding laboratory
- Horticultural laboratory
- Central laboratory
NATIONAL

- BRAC
- PROVA
- Proshika
- GKF
- BSF
- Hortex
- Foundn
- WDB
- BAU
- RDRS
- BSMRAU
- RDA
- BARD
- CARE
- UBINIG
- SAIP
- SAU
- CBRMP
- TMSS
- PKSF
Technology Transfer

- BARI Technology village [21 villages]
- Collaboration with DAE, BADC, NGOs
- Workshop
- Training
- Field Days
- Visitors
- Radio, TV and Newspaper
- Electronic media (www.bari.gov.bd)
Future Thrust

- Genetic Resource Management
- Development of HYV/Hybrids
- Postharvest Handling and Processing
- Biotechnological Intervention for Crop Improvement
- Soil Health Management
- Quality Seed Production
- Integrated Disease Management (IDM)
- IPM and Pesticide Residue Analysis
- Market Oriented Research
- Organic Farming for Exportable Items
- Hill Farming and Coastal Agriculture
- Char land culture
- Restore Friendly Environment