

# My Research Interest and Overview of Protected Agriculture in Bangladesh

# Welcome

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# Bangladesh



# Bangladesh



**Location:**

**South Asia**

**(20°34' - 26°38' N  
and 88°01' - 92°41' E)**

# Bangladesh

- **Location: South Asia**      **Climate: Tropical**  
**Temperature: Summer: 20-37 °C, Winter: 3-25 °C**  
**Annual Rainfall: 1429-4338 mm**
- **Land area: 0.144570 million sq. km**
- **Food grain production: 30.86 million ton**
- **During 1971- 2004 (33 yrs) population has doubled**
- **Food grains production increased 2.5 times**

# Demography:

- Population: 160 million
- Male-Female ratio: 103:100
- Pop. Density: 910 per Sq. km
- Pop. Growth rate: 1.54%
- Population: Rural =76%, Urban =24%
- Life expectancy: 71 yrs
- Per capita income: US\$ 1500

# Education:

- **Total Literacy: 62%**
- **Adult (>15 yrs) literacy: 46%**
- **Net primary school enrolment: 86%**
- **Secondary school enrolment: 49%**
- **University education: 10%**

# Natural Calamities

✓ **Flood**

✓ **Draught**

✓ **Storm**

✓ **Land erosion**

✓ **Salinity**





**Draught**



**Land erosion**



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**Flood**



**Storm**



**Salinity in  
Agricultural  
land**



**Normal  
crop land**

# Land use pattern

Land Type	Area (Sq km)	%
Cultivated land	81740	55.1
Forest	18992	12.8
Water area	6928	4.8
Fallow	9628	6.5
Urban	32205	21.7
Waste	5836	3.9
<b>Total</b>	<b>144570</b>	<b>100</b>

**Cropping Intensity: 190%**

**Major Cereals: Rice, wheat, maize**

# Bangladesh Agricultural Research Institute (BARI)

- ❑ **BARI is the largest multicrop research institute of Bangladesh established in 1976.**
- ❑ **Crops: Wheat, maize, coarse grains, tuber crops, pulses oilseeds, fruits, vegetables, flowers, spices and condiments etc.**
- ❑ **Areas of research: Varietal development, cropping and farming systems, plant protection, soil fertility, water management, postharvest handling and processing, farm machinery, socio-economics and marketing research**





# Crop Variety Developed by BARI

Name of crops	Total Varieties	Variety Released during		
		2014-15	2015-16	2016-17
Cereal Crops	73	4	2	4
Oilseed Crops	45	-	1	0
Pulses Crops	39	3	1	3
Tuber Crops	108	8	10	7
Vegetable Crops	104	12	2	7
Fruit Crops	79	4	2	5
Flower Crops	19	-	3	0
Spices Crops	35	-	5	2
Others	7	-	-	0
<b>Total</b>	<b>509</b>	<b>31</b>	<b>24</b>	<b>28</b>

# Other Technology Developed by BARI

Research Fields	Technologies Developed	
	Till 2015-16	During 2016-17
Crop, Soil, Water & Pest Management	194	19
Farm Machinery	33	2
Irrigation and Water Management	35	1
Post-harvest Technology	28	0
Farming Systems Research	134	8
Biotechnology	18	0
<b>Sub-Total</b>	<b>452</b>	<b>30 (20)</b>

**Variety (509) + Other Technology (482) = 991**



# ACHIEVEMENTS OF FMPE DIVISION

## 34 Machinery Developed



**Mobile maize sheller**



**Manual winnower**



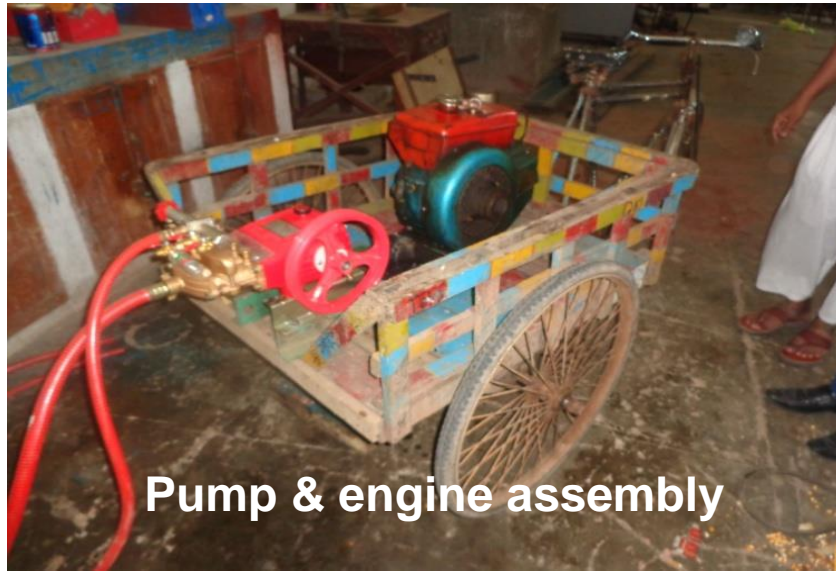
**Small power operated maize-sheller**



**Small power operated thresher**



# Fabrication of boom sprayer



Pump & engine assembly



- **Boom height adjustable**
- **Spray pattern can be changed**

# Foot sprayer and garden boom sprayer



**Foot sprayer**

- Time consuming
- Laborious



**Garden boom sprayer**

- Uniform and quality spraying
- Faster spraying



# Areas of My Research (Own Interest)

Since 1997, I've been working in Postharvest machinery and packaging of vegetables and fruits. We need improved technology for protected agriculture.



**Hot water treatment plant**



**Root crop washing machine**













# মূলজাতীয় সবজি ধৌতকরণ যন্ত্র Root Crop Washing Machine







বারি নারিকেলের ছোবড়া ছাড়ানো  
আকার : ৩ ফুট X ২ ফুট X ৩.৫ ফুট, কার্যক্ষমতা : প্রতি ঘণ্টায় ৪৫০-৫০০ টি  
ছোবড়া ছাড়ানো বরচ : প্রতিটি ২০ পয়সা, মূল্য : ৬০,০০০ টাকা  
ফার্ম মেশিনারী এন্ড পোস্টহারভেস্ট প্রসেস ইঞ্জিনিয়ারিং পি  
বাংলাদেশ কৃষি গবেষণা ইনস্টিটিউট, জারনেকপুর, পাবনা

# Protected Agriculture in Bangladesh

- **New emerging area of Crop production**
- **Getting importance due to climate change**
- **Only insignificant areas is under protected agriculture (<5 ha)**
- **BARI and some NGOs are working with the farmers to develop this technology**
- **Getting importance due to climate change and harmful effect of pesticide use**

# BANGLADESH CROP PROTECTION ASSOCIATION

## Pesticide Imported for the year 2012-2016

*Figures in  
MT/KL*

YEAR	Insecticide			Miticide	Fungicide		Herbicide	Rodenticide	TOTAL
	Granular	Liquid	Powder		General	Sulphur			
2012	18193.29	3801.006	705.507	60.72	3500.86	14624.73	3986.33	98.79	44971.23
2013	14787.78	3808.915	760.474	78.694	3869.76	14890.08	3243.97	119.49	41559.17
2014	12915.1	3949.275	829.114	87.252	3932.56	13819.65	3761.97	86.60	39381.52
2015	11145.73	3641.231	905.795	91.608	4345.83	12039.84	4456.46	82.27	36708.76
2016	10555.16	4315.564	1130.008	112.783	5280.39	11622	5554.32	79.70	38649.91

# BANGLADESH CROP PROTECTION ASSOCIATION

## Pesticide Consumption for the year 2012-2016

*Figures in  
MT/KL*

YEAR	Insecticide			Miticide	Fungicide		Herbicide	Rodenticide	TOTAL
	Granular	Liquid	Powder		General	Sulphur			
2012	16,539.35	3,455.46	641.37	55.20	3,182.60	13,295.21	3,623.94	89.81	40,882.94
2013	13,443.44	3,462.65	691.34	71.54	3,517.96	13,536.44	2,949.06	108.63	37,781.06
2014	11,741.00	3,590.25	753.74	79.32	3,575.05	12,563.32	3,419.97	78.73	35,801.38
2015	10,132.48	3,310.21	823.45	83.28	3,950.75	10,945.31	4,051.33	74.79	33,371.60
2016	9,595.60	3,923.24	1,027.28	102.53	4,800.35	10,565.45	5,049.38	72.45	35,136.28

# Pesticide use

- **Trend of pesticide use decreased gradually in Bangladesh due to**
  - **Use IPM: Pheromone trap, net and polythene covers**
  - **Use of biopesticides**
  - **Create awareness of farmers about pesticide**
  - **Trained up farmers to use of pesticide carefully and properly**
- **According to Department o Agricultural Extension, Bangladesh,**  
**Bangladesh saved USD 2.31 million during 2008-2016**



# Hydroponic Culture





# Green Houses





# Vegetables Cultivation through Hydroponic





# Protected Agriculture



Pheromone trap



Teaching to farmer about pest and diseases

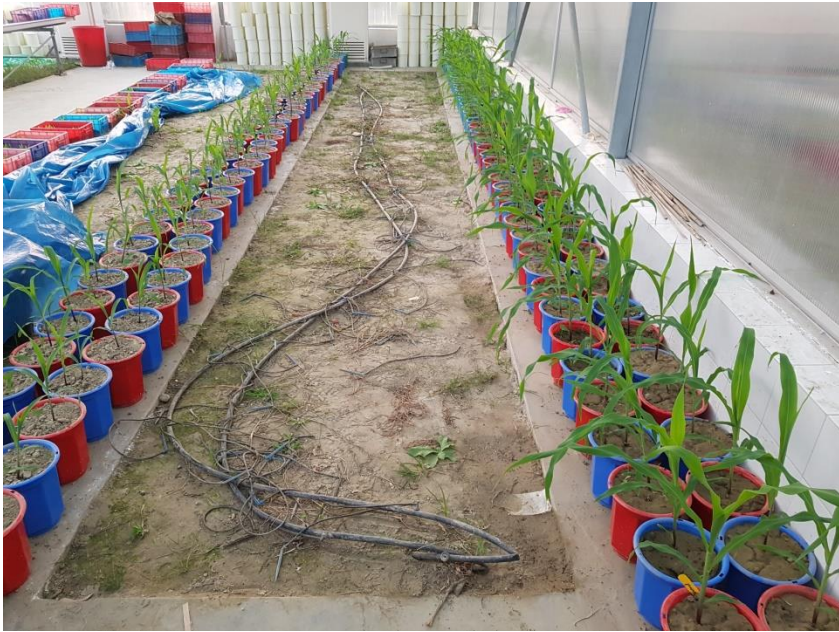


Spraying of biopesticides

# Protected Cultivation of strawberry by Drip-Fertigation









# Off-season Tomato Cultivation under polythene tunnel





**Thank You**