Hybrid Rice in Bangladesh: Current Status and Future Prospects

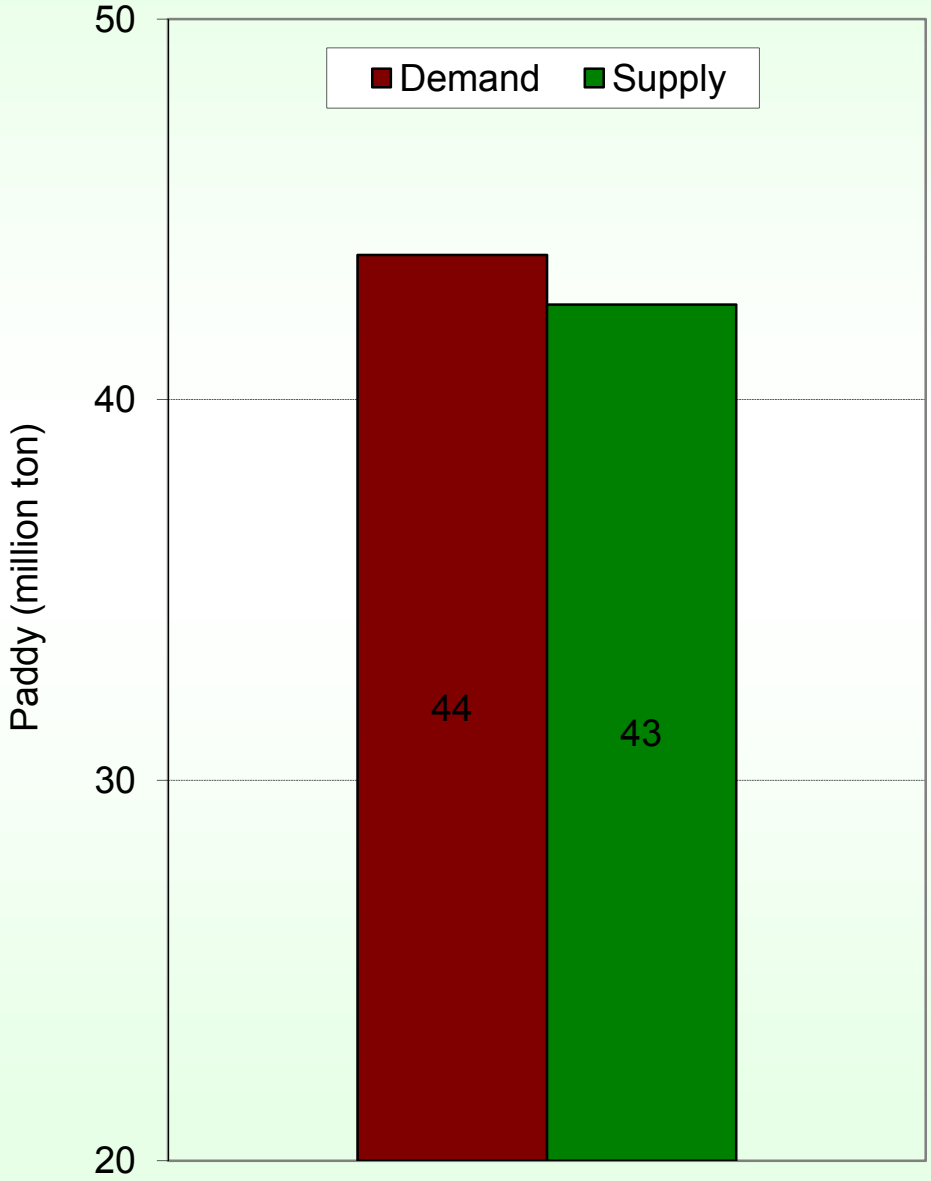
Humnath Bhandari
Samarendu Mohanty
Mahabub Hossain

7th ASAE Conference
Hanoi, Vietnam
13-15 October 2011

Outline

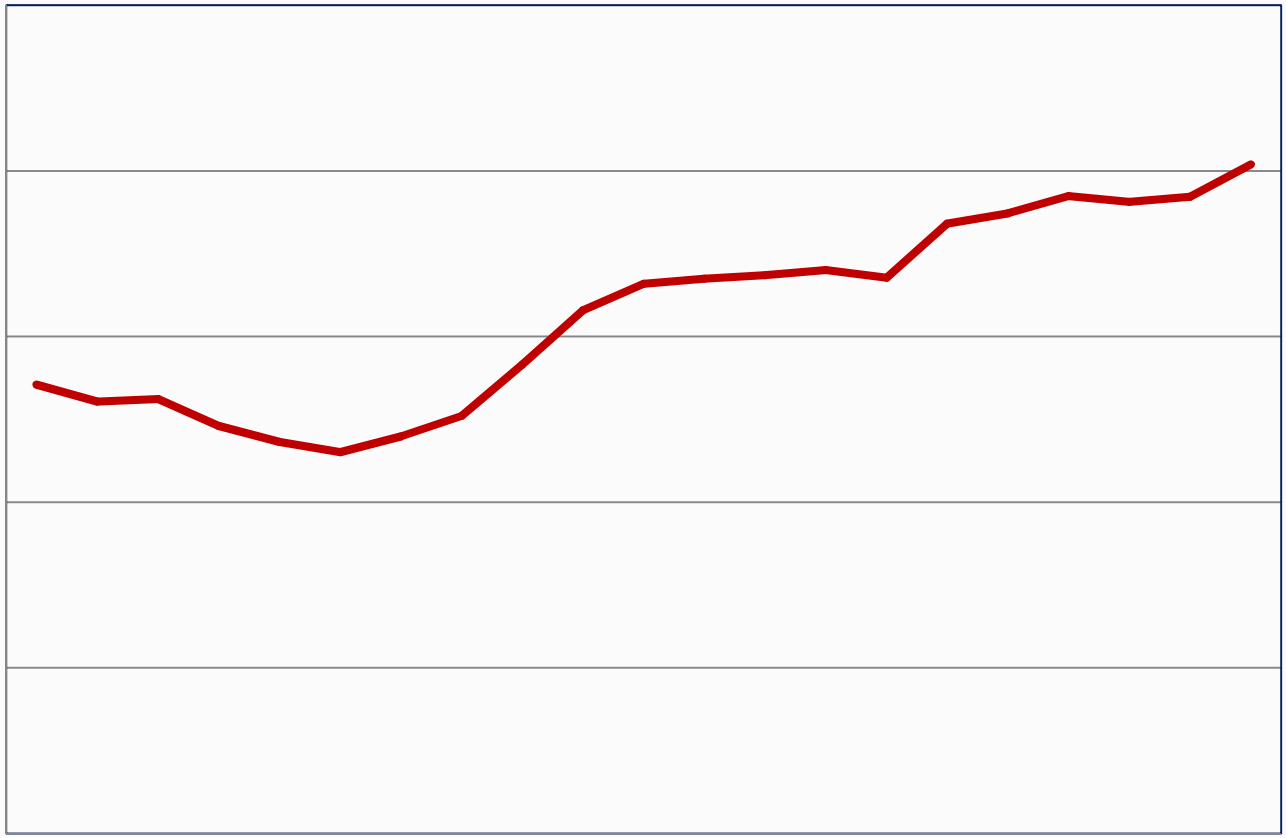
- Rice in Bangladesh
- Current Status of Hybrid rice
- Future Prospects
- Conclusions

Rice (paddy) demand & supply of Bangladesh, 2010



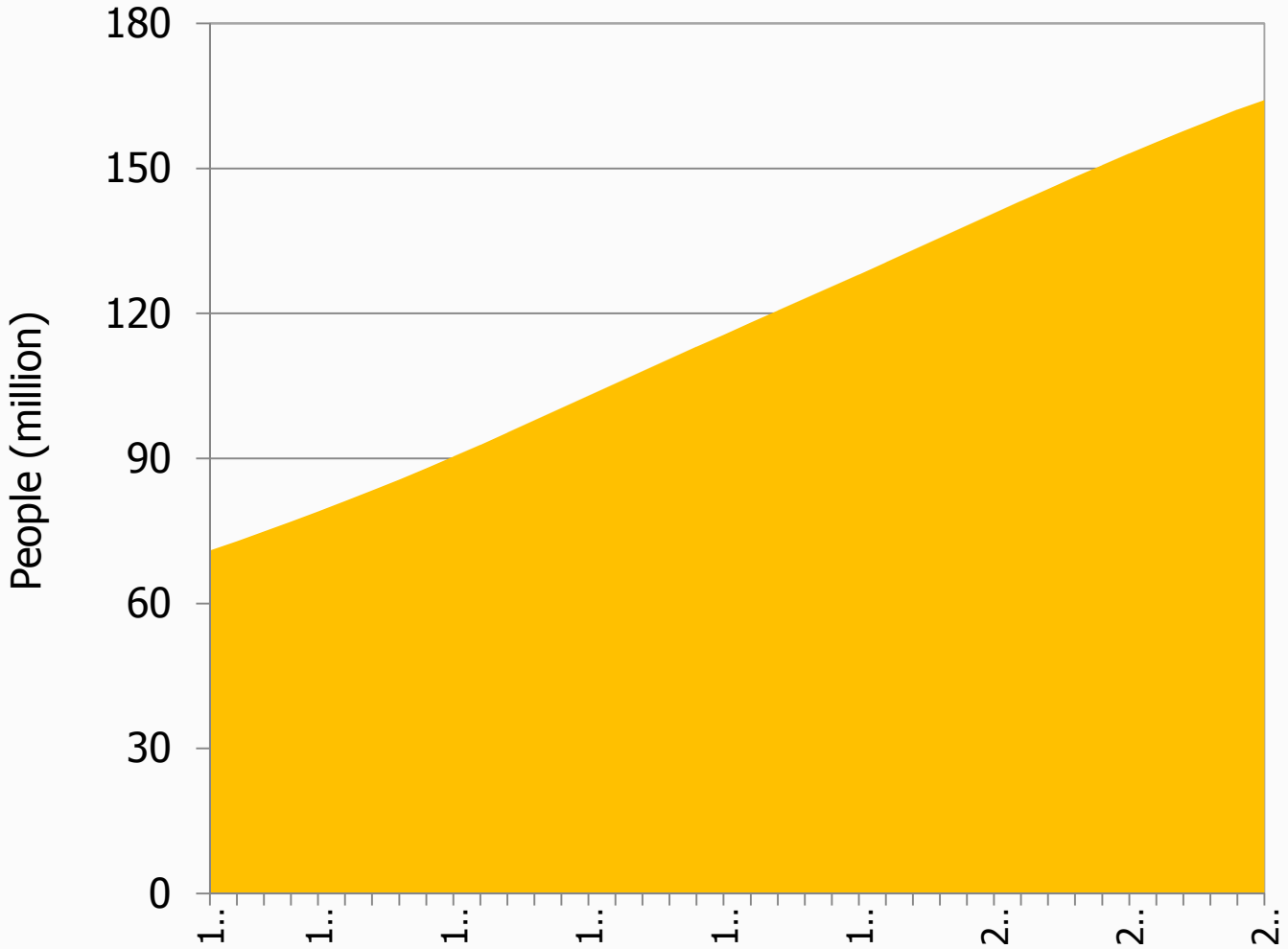
Source: USDA (2011)

Per capita rice consumption in Bangladesh



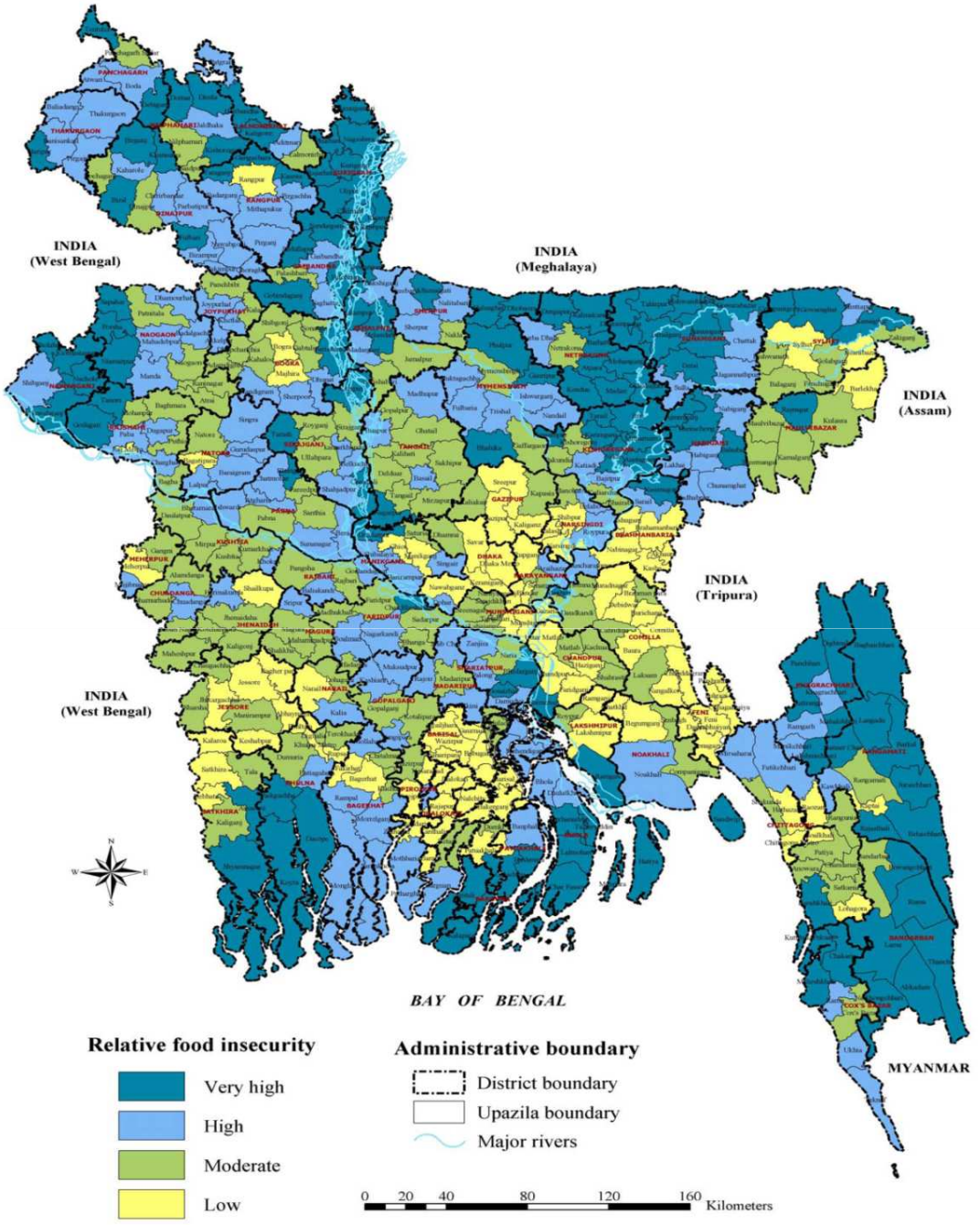
Source: USDA (2011)

Total population of Bangladesh



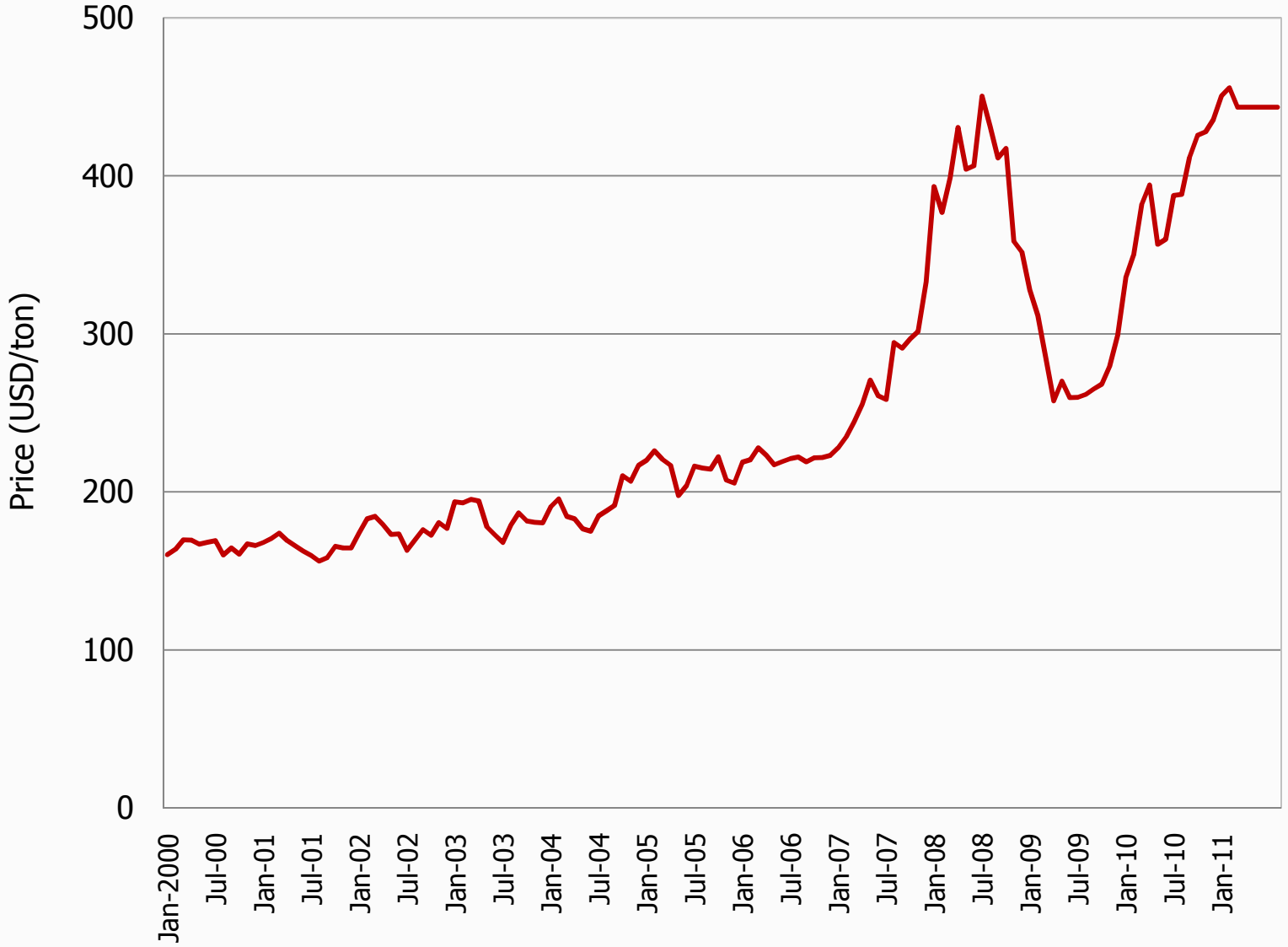
Source: WB (2011)

Food security situation in Bangladesh, 2004



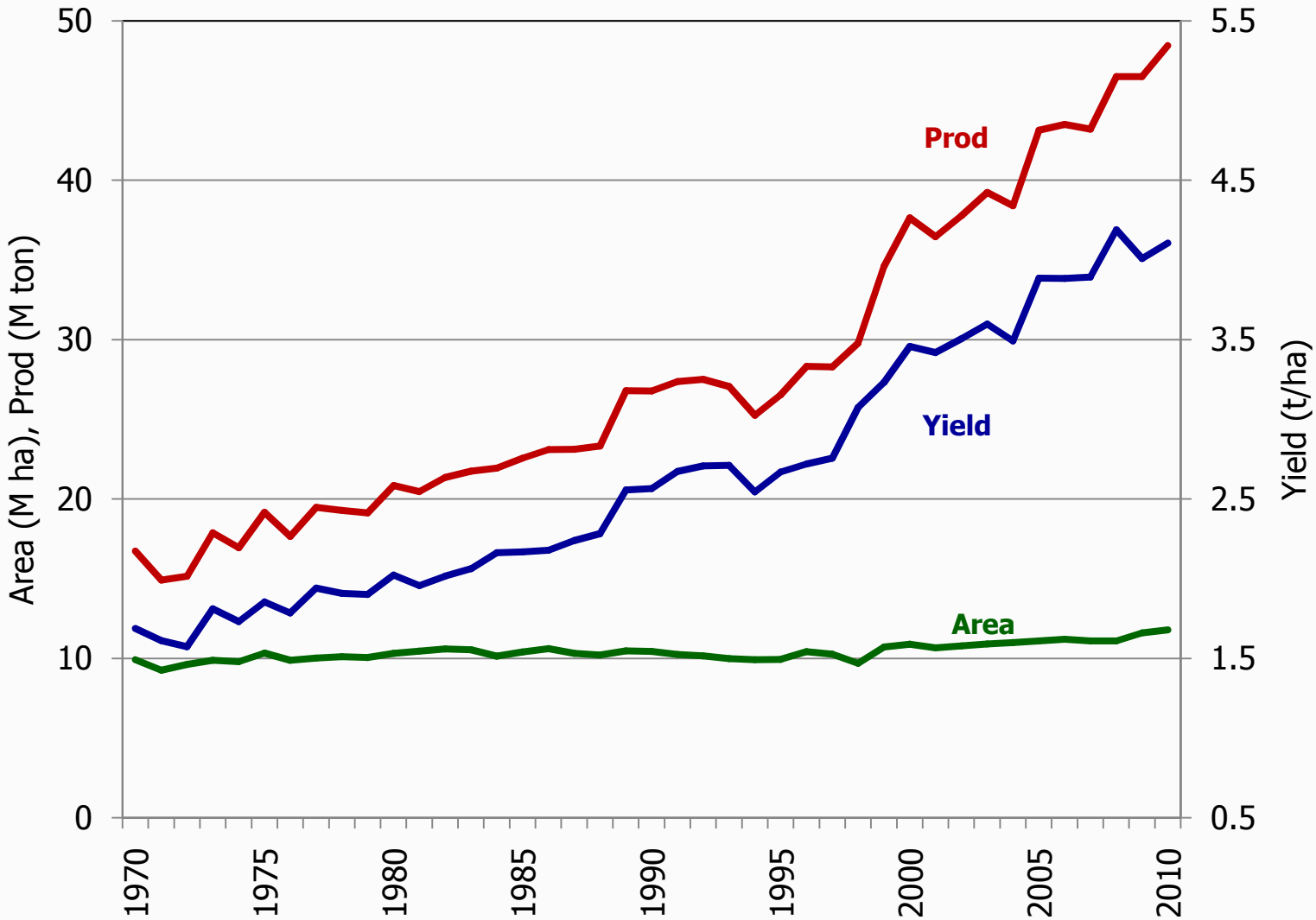
Source: WFP (2008)

Monthly average wholesale price of coarse rice in Bangladesh



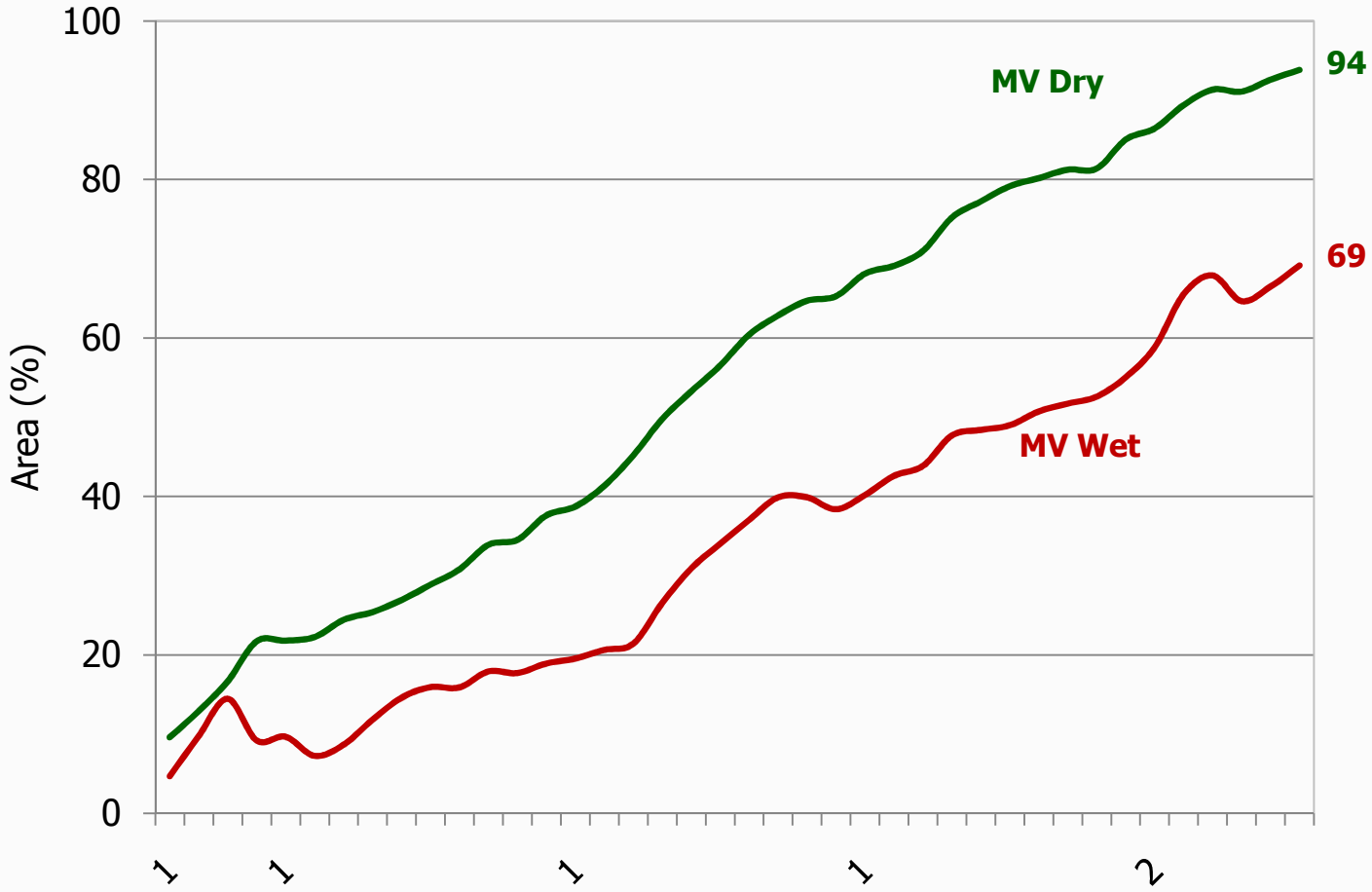
Source: DAM (2011)

Rice area, yield, and production in Bangladesh



Source: IRRI (2010)

Adoption of modern varieties in Bangladesh



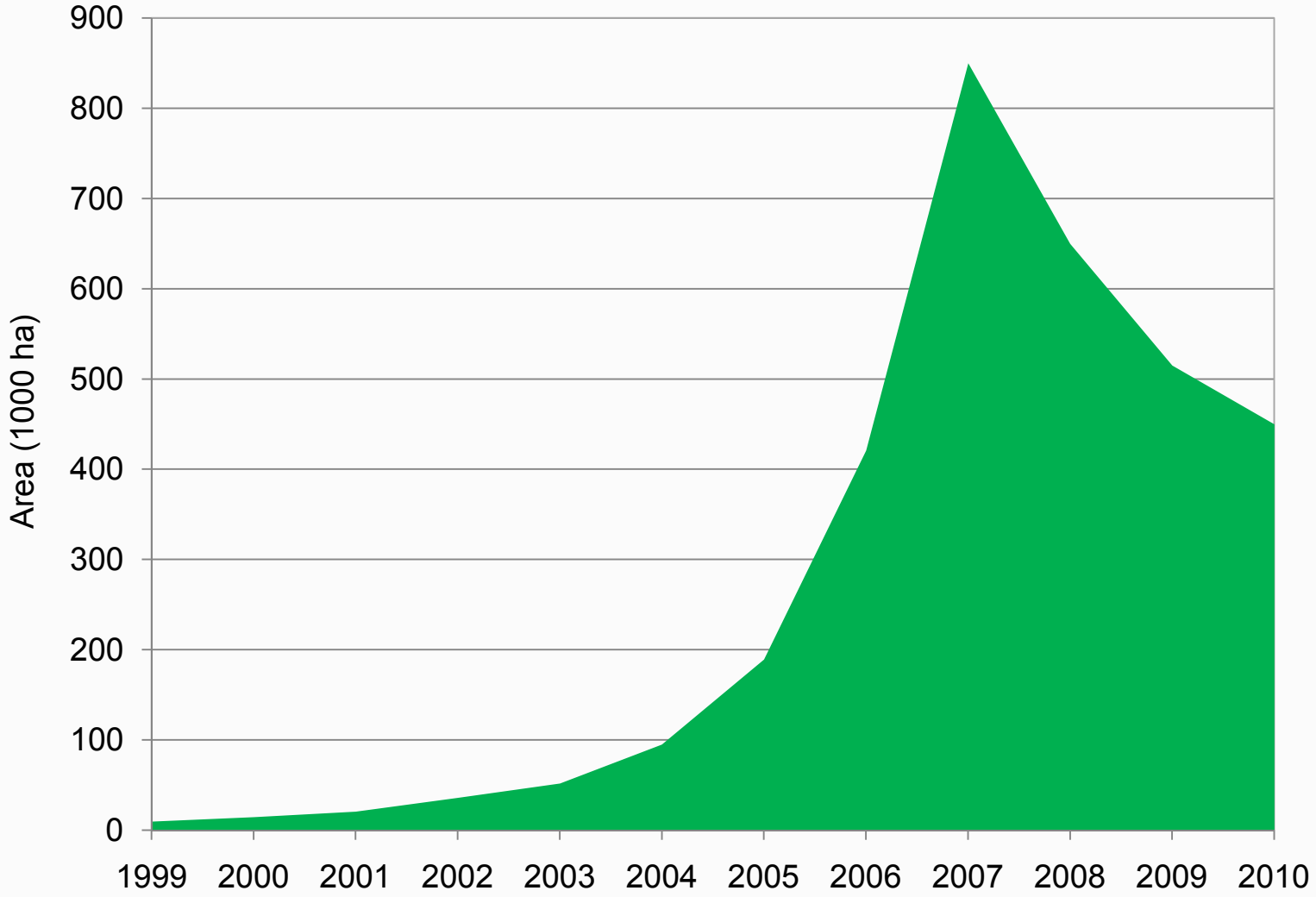
- Hybrid rice is one technological solution to increase rice production.

Source: BBS and DA (2010)

Status of hybrid rice in Bangladesh

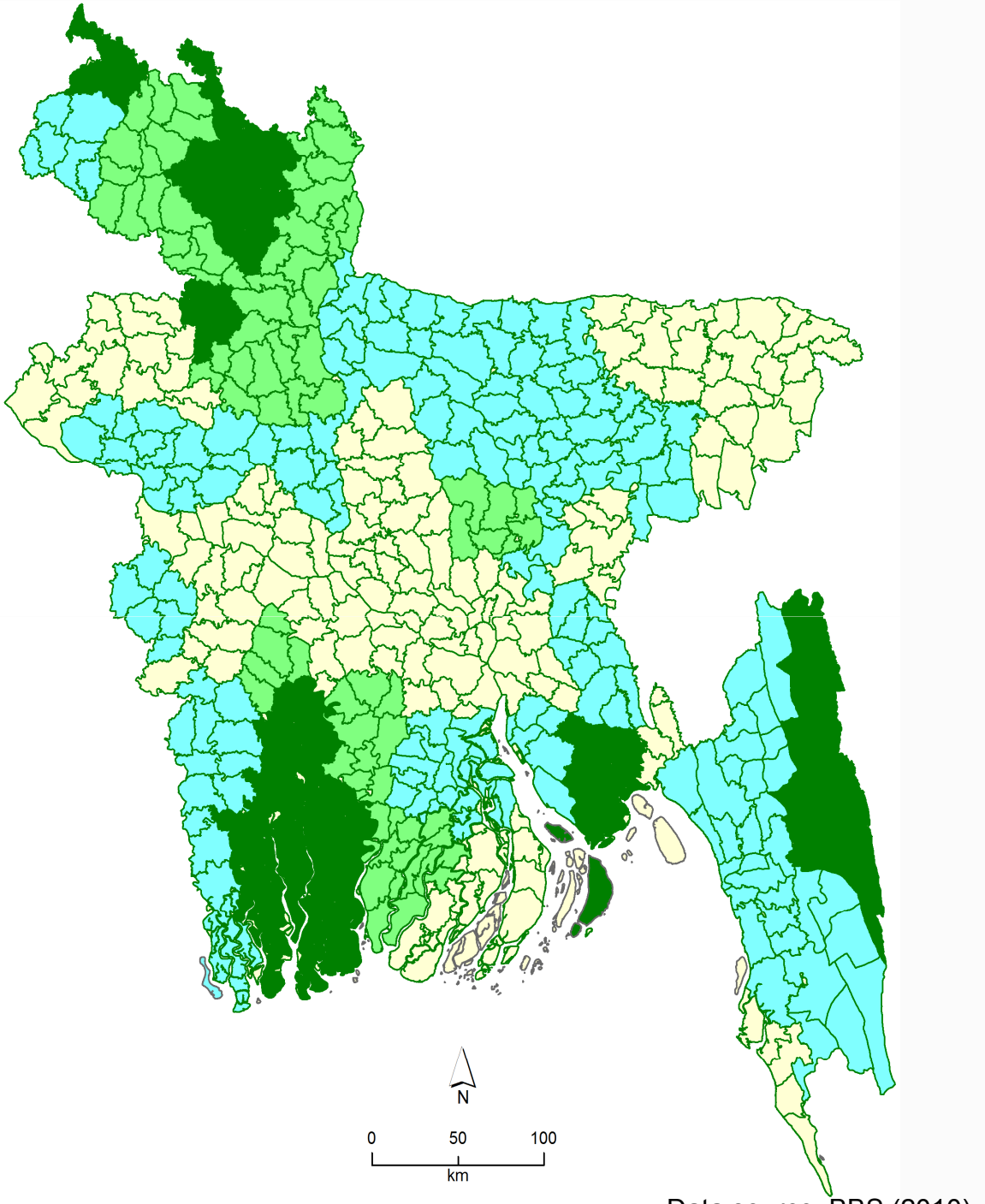
- Hybrid rice research program started in 1990s.
- More than 78 hybrid rice varieties are grown in Bangladesh.
- Annual consumption of hybrid rice seeds is 8,000 tons.
- About 75% of seed demand is meet from import.

Hybrid rice area in Bangladesh



Source: Private companies(2010)

District-level adoption of hybrid rice in Bangladesh, 2008



Data source: BBS (2010)

Economics of hybrid rice: Yield gain of hybrid over best inbred

Year	Yield (t/ha)			% gain over inbred
	Hybrid	Inbred	Gain	
2004	7.20	5.80	1.40	24
2005	7.60	5.89	1.71	29
2007	7.32	5.81	1.51	26

- Hybrid is grown mostly in the Boro season
- Farmers recently started growing in Aus and Aman season in small scale.

Source: Hossain (2008)

Profitability in hybrid rice farming

Item		Hybrid	Inbred (BR28)	% Diff. (HV-IV)
Grain yield	(t/ha)	7.3	5.8	26
Price	$/t)	159	165	-3
Gross return	($/ha)	1206	1011	29
Production cost	($/ha)	757	735	3
Net return	($/ha)	449	276	63

- Seed price: Hybrid (250 Tk/kg) and inbred (35 Tk/kg)

Source: Hossain (2008)

Economics of hybrid rice seed production by contract seed growers, Bangladesh, 2007

	Jagoran		Alloran	
Items	Value ($/ha)	% of tot cost	Value ($/ha)	% of tot cost
Patent fees	664	34	680	33
Chemicals	406	21	481	23
Irrigation	168	9	174	8
Labor	464	24	529	25
Land rent	224	12	224	11
Total cost	1925	100	2088	100
Yield (t/ha)	**1.5**		**2.9**	
Cost ($/kg)	**1.3**		**0.7**	
Profit ($/ha)	**1060**		**7210**	

Source: Hossain (2008)

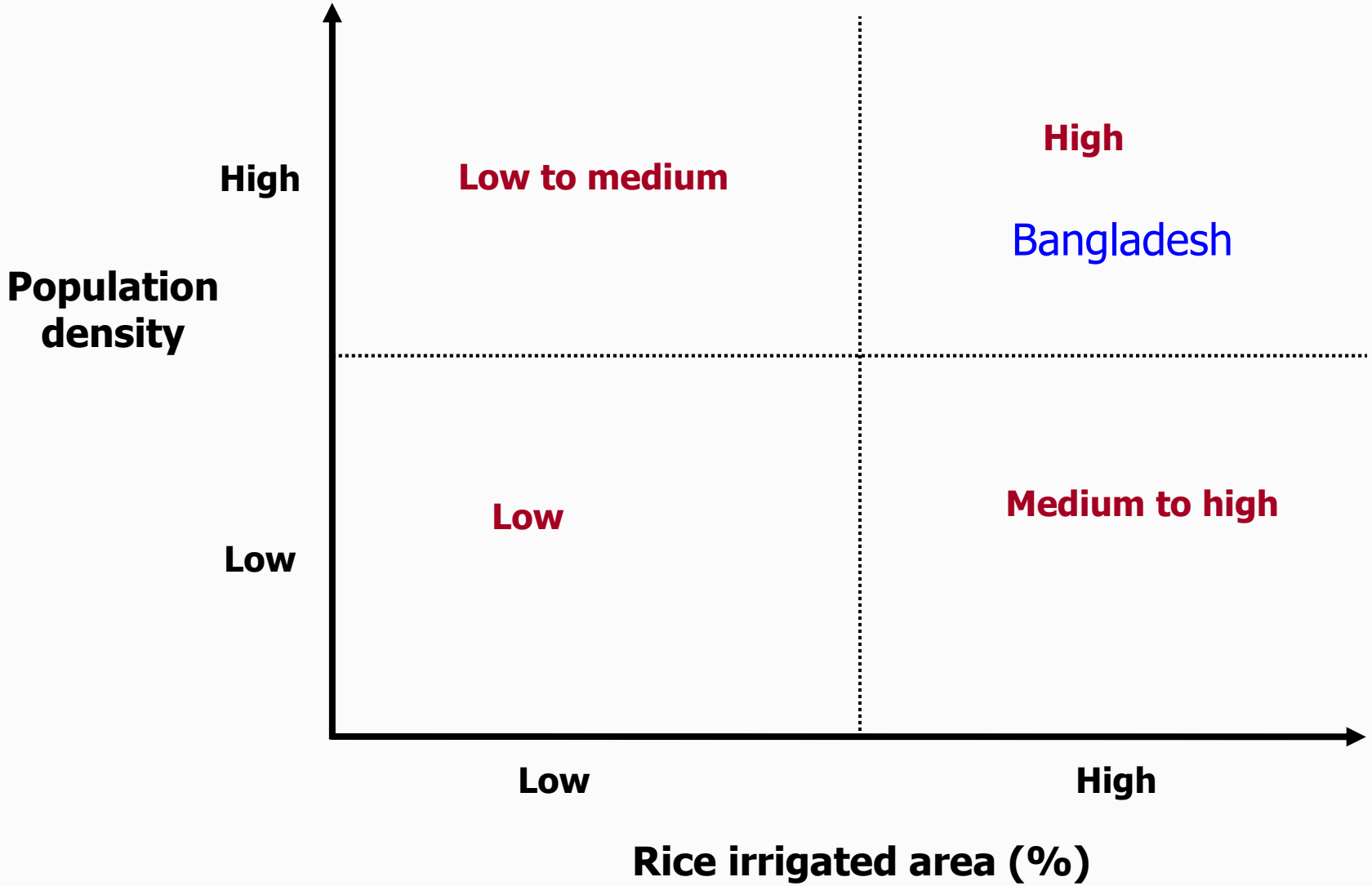
Hybrid rice: Scope

- Large irrigated area in the Boro season
- Declining farm size
- High population density

Hybrid rice: new opportunities

- High price of rice
- Continued technological progress
- Expanded possibilities for public-private partnerships

Hybrid rice production suitability



Potential impact of hybrid rice in Bangladesh

Rice season	Area (million ha)	Adoption rate Potential (%)	Yield gain (%)	Total production increase (million ton)
Boro	4.9	50	25	3.6
Aus	1.2	25	30	0.2
Aman	5.9	15	30	0.9
All seasons	**12.0**			**4.7**

- This extra amount of rice is sufficient to feed additional 16 million people

Constraints to adoption of hybrid rice

- Seed: price, supply, quality
- Grain: poor quality and low market demand
- High risks (pests and diseases)
- Long duration
- Management responsive (planting, irrigation, fertilizer)

Conclusions

- Hybrid rice cultivation expanded rapidly in recent year.
- Progress in developing varieties and producing seeds is limited.
- Farmers achieve 25-30% yield gains from hybrids as compared to best inbreds.
- Hybrid rice is highly profitable despite lower market prices.
- Hybrid rice can play a vital role in future food security of Bangladesh.
- Seed price could be reduced by producing hybrid rice domestically.
- Seed (price, supply, quality), production risks, poor grain quality, low market demand, and low market prices are main obstacles for spread of hybrid rice.


Thank You