CHALLENGES FOR RICE PRODUCTION TECHNOLOGY TRANSFER AND ADOPTION

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Sri Lanka

- Location

  North latitude ; 5^0 -10^0
  East longitude ; 79^0 -81^0

- Climate

  Tropical

- Topography

  Central part - mountainous with complex topography
  Remainder - nearly flat to undulating

strongly affect the winds, seasonal rainfall, temperature, relative humidity and other climatic elements

Where we are in the world

- Mean annual Rainfall
  - Varies 900 mm to 5000 mm
  - Multiple origin (monsoonal, convectional)
    - March-April -1st inter monsoonal
    - May-September –South West monsoonal
    - October-November -2nd inter monsoonal
    - November-February-North East monsoon
- Mean annual temperature
  - 27^0 C -16^0 C

Rice cultivation in Sri Lanka

- Two seasons
  - Yala (May - August)
  - Maha (November - February)

- Occupy 34% (1 million ha) of total cultivated area

  (Yala 0.4 million ha , Maha 0.6 million ha)

Rice Consumption in Sri Lanka

- Staple food -Population million 20.65 (2010)
- Per capita consumption
  116 kg rice/year/person
  (Raw rice, parboiled rice, rice flour,
  value added products)
- Produce 3.1 million tons /year (rough rice)
- Provides - 45% total calories
  - 40 % total protein requirement

Extent of paddy 2010

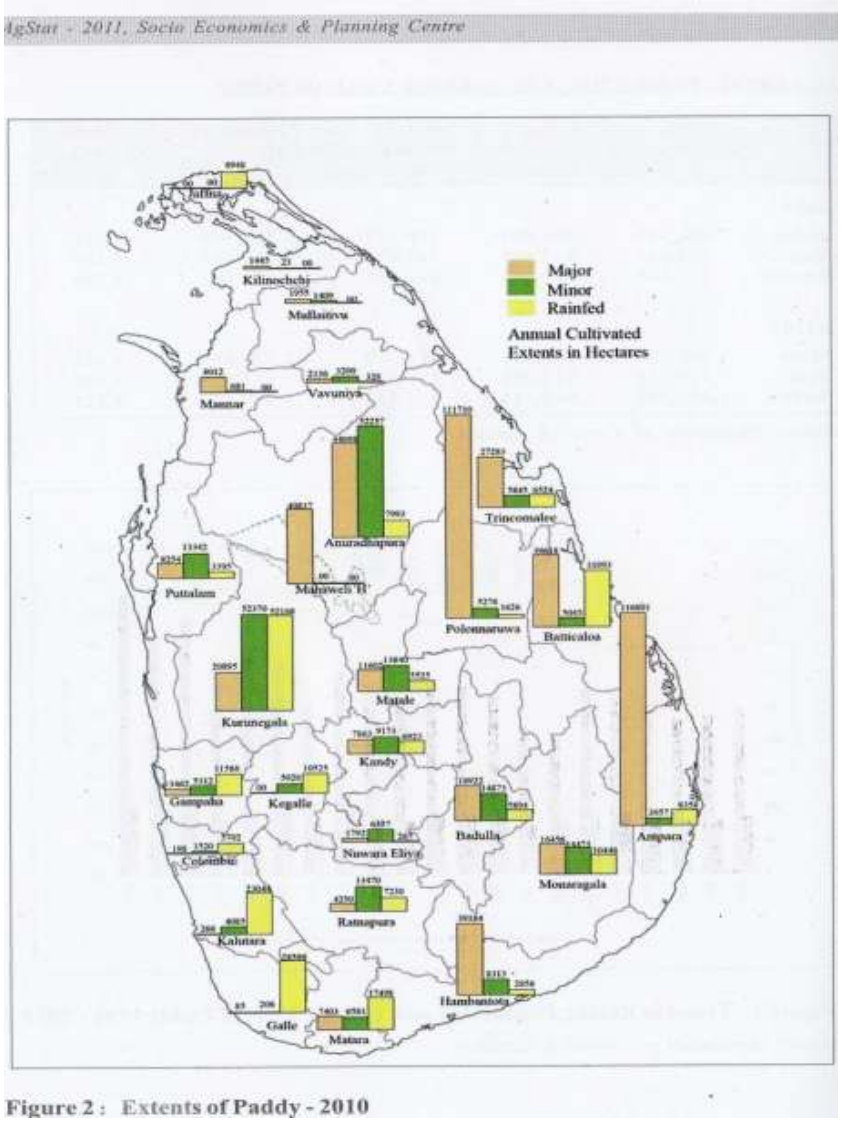
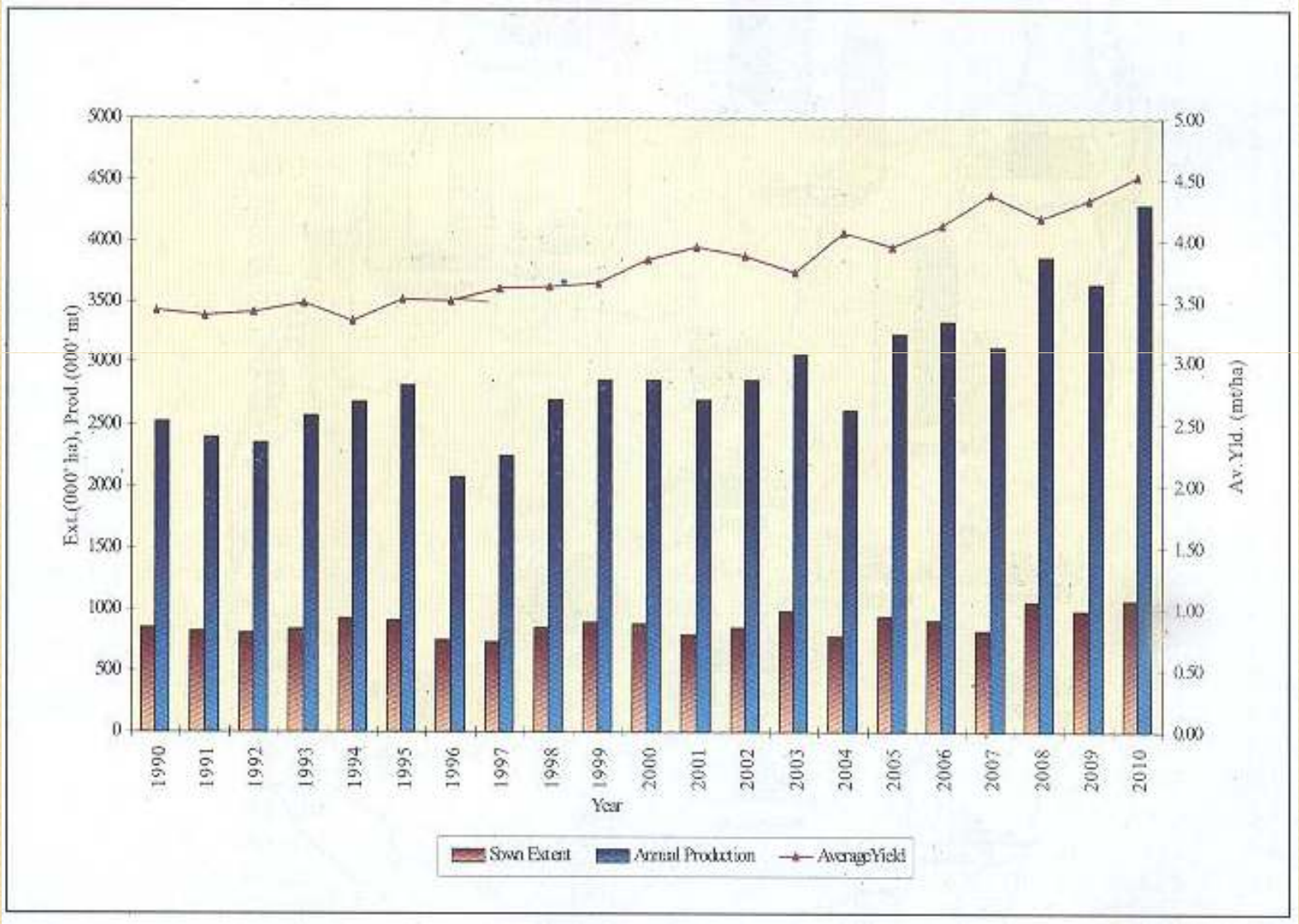


Figure 2 : Extents of Paddy - 2010

Present status of rice cultivation

Year	Sawn extent (ha)	Net harvested extent (ha)	Production (mt)	Average yield (Kg/ha)
1997	729,808	618,872	2,239,369	3,618
1998	848,267	740,389	2,692,335	3,636
1999	892,053	779,449	2,857,113	3,666
2000	877,994	741,651	2,859,891	3,856
2001	798,260	681,546	2,695,076	3,954
2002	852,529	733,621	2,859,467	3,898
2003	982,617	816,621	3,071,204	3,761
2004	778,542	642,980	2,627,838	4,087
2005	937,181	819,179	3,246,190	3,963
2006	910,493	807,760	3,341,992	4,137
2007	816,716	713,872	3,131,082	4,386
2008	1,052,995	925,505	3,875,200	4,187
2009	977,562	842,136	3,651,678	4,336
2010	1,065,280	949,812	4,300,626	4,528

Production and average yield of paddy 1990-2010



Self sufficiency rate of rice 2005-2010

year	Paddy production (mt)	Paddy availability for human consumption (mt)	Total rice availability from domestic source (mt)	Total rice requirement (mt)	Rate of self sufficiency(%)
2005	3,246,000	2,953,962	2,058,694	2,045,472	100.65
2006	3,341,000	3,045,711	2,129,830	2,068,144	102.98
2007	3,131,000	2,856,682	2,009,985	2,081,040	96.59
2008	3,875,000	3,536,269	2,454,663	2,101,840	116.79
2009	3,652,000	3,331,470	2,415,400	2,249,500	107.37
2010	4,301,000	3,697,712	2,681,518	2,354,100	113.91

Challenges of technology transfer

1) Technological challenges

2) Socio economic challenges

2) Policy issues

Technological Challenges

1) Technology transfer problem.

- Poor extension network

  (one officer covers 10-15 villages, less subject matter specialist, poor research extension linkage)

- Only government sector involves

  Technology transfer through media less effective

- Less use of internet

  - Language problems
  - High technology not applicable

2) Problems of selecting suitable technology

-Diversity of agro climate → agro ecological zones 46

-Variable soil conditions within short distance → major Soil types 13

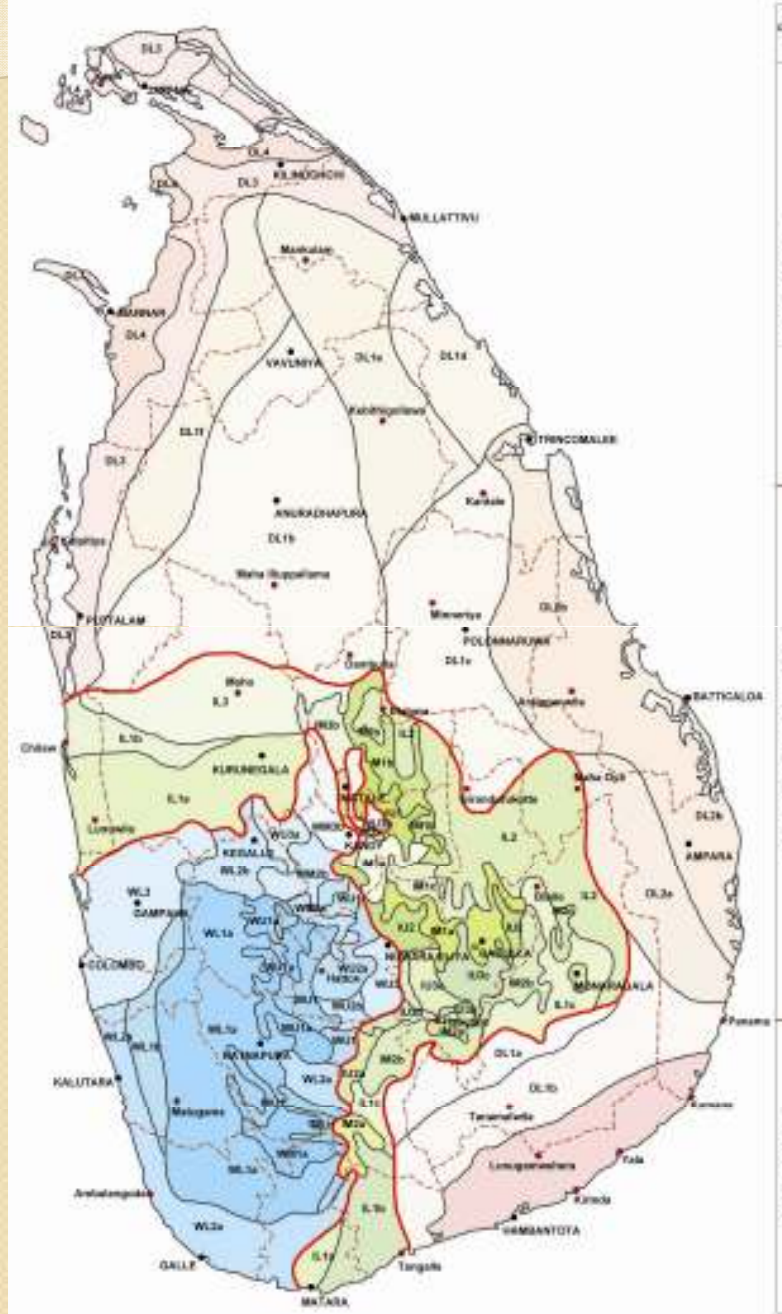
-Three different rice eco systems ⟹ major irrigation,
minor irrigation,
rain fed

-land form and land size

-unpredictable climatic changes

3) No enough feedback from farmers about the appropriateness of the introduced technology

Agro Ecological Zones of Sri Lanka



CLIMATIC ZONE	AGRO-ECOLOGICAL REGION		75% EXPECTANCY VALUE OF ANNUAL RAINFALL (MM)
WET ZONE	UP COUNTRY	WU1	> 2,100
		WU2a	> 2,400
		WU2b	> 2,200
		WU3	> 1,800
	MID COUNTRY	WM1a	> 2,200
		WM1b	> 2,000
		WM2a	> 2,200
		WM2b	> 1,800
		WM3a	> 1,900
		WM3b	> 1,400
	LOW COUNTRY	WL1a	> 2,200
		WL1b	> 2,000
		WL2a	> 2,400
		WL2b	> 2,200
		WL3	> 1,750
INTERMEDIATE ZONE	UP COUNTRY	IU1	> 2,400
		IU2	> 2,100
		IU3a	> 1,900
		IU3b	> 1,750
		IU3c	> 1,600
		IU4a	> 1,200
		IU4b	> 1,400
	MID COUNTRY	IM1a	> 2,000
		IM1b	> 2,000
		IM1c	> 1,200
		IM2a	> 1,800
		IM2b	> 1,800
		IM3a	> 1,800
		IM3b	> 1,250
		IM3c	> 1,100
	LOW COUNTRY	IL1a	> 1,400
		IL1b	> 1,100
		IL1c	> 1,200
		IL2	> 1,800
		IL3	> 1,100
DRY ZONE	LOW COUNTRY	DL1a	> 1,100
		DL1b	> 900
		DL1c	> 900
		DL1d	> 900
		DL2a	> 900
		DL2b	> 900
		DL2c	> 1,300
		DL2d	> 1,100
		DL3	> 900
		DL4	> 750
		DL5	> 900

Socio economic challenges

1)High cost of production

Rs.14-16/= per kg

- labor cost 55%
- farm power 22%
- tradable inputs 23%

2)Land ownership problems

Tenant farmers

- use less inputs
- minimum technology

3)Land fragmentation

Land holding size decreasing (mechanization difficulties)

Paddy land use for other purposes

4)Water issues

Less water for rice , priority for consumption , hydropower generation industries

5)Labor shortage

New generation deviate from agriculture , particularly rice farming

6)Seasonal production

-Processing and harvesting mechanization needed (less machine)

-Less drying and storage facilities and knowledge

-Price of paddy decline during peak production

7)Problems of mechanization

- Economical level of farmer- machine ownership
- No proper operator training

- Less spare parts availability
- Less repair shops for agricultural machineries
- Less suitability of machine to local conditions
- Low credit facilities to buy machines

Policy issues

- Fertilizer subsidy Rs.28 billion
- Production increases
- Minimum ceiling price
- No proper export marketing channel for excess production
- Customer oriented rice marketing
- No quality assessment of agriculture machinery at the importation

Steps to overcome challenges

1) Strengthening the extension network

- New recruitment of officers- Sinhala ,Tamil adult farmer education

2) Inorganic Fertilizer subsidies

- Encouraging organic fertilizer use – straw burning banded
- yield based fertilizer recommendations

3) Breeding of suitable verities

- High yielding, high grain quality, salinity tolerant, short age verities

4) Reduce the wheat flour consumption

Increased the rice flour consumption (Wheat flour price increased, rice based product availability increased)

5) Steps to control the farm gate price

(fix price for paddy at harvesting, paddy marketing board, large scale paddy stores)

6) Government low interest credit facilities

(farming, paddy marketing and processing)

7) Tenant farmer act, Wetland act

7) Steps to farm mechanization

- Law tariff on farm machinery import
- Proposed farm machinery act
- Credit facilities for local machinery manufacturers
- Straitening the farmer organization
  - To buy required farm machinery
- Farm machinery donation
  - North, East

THANK YOU