



An overview of CIP Research Activities on potato in SWA region and CIP-Lima

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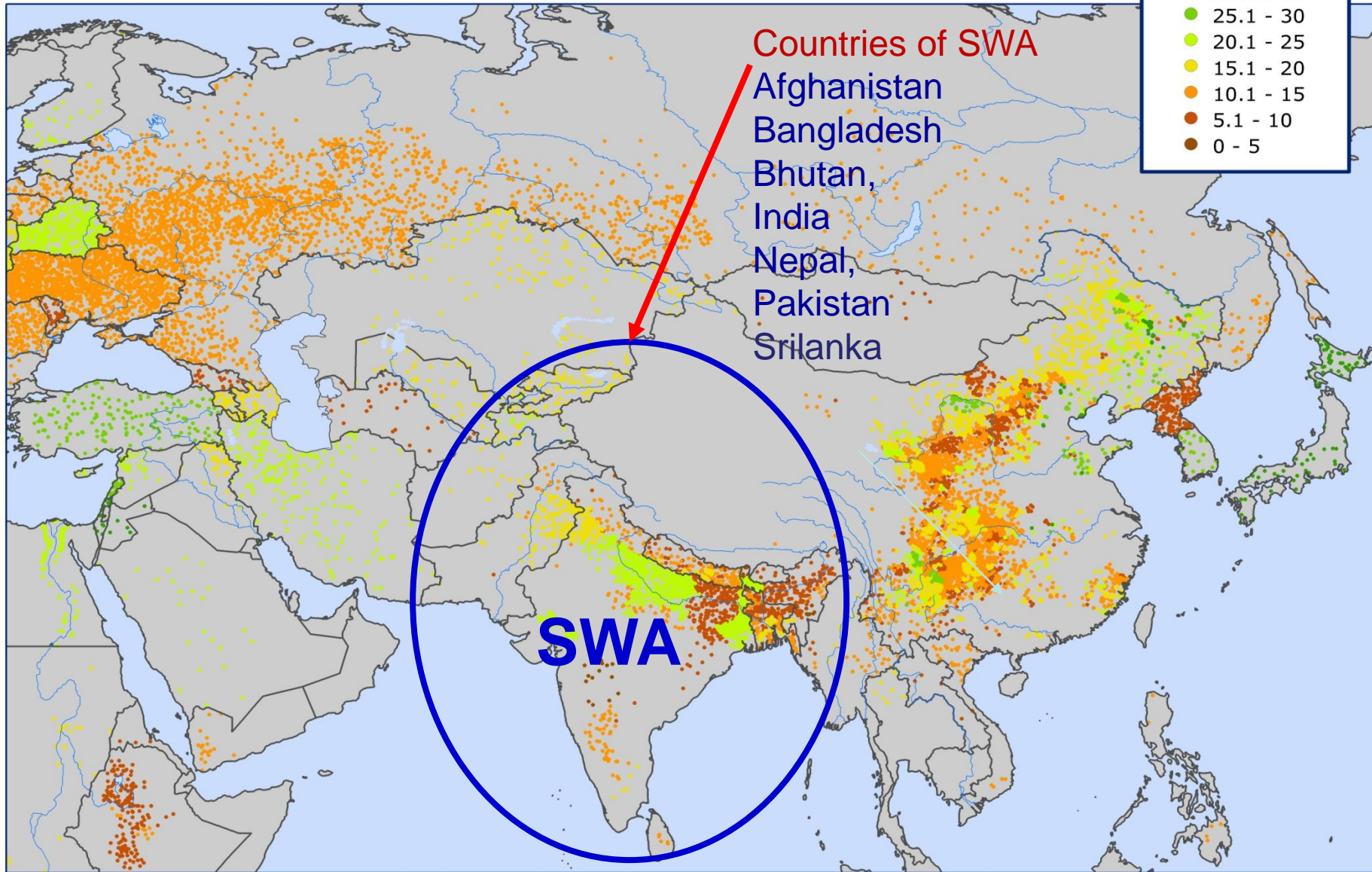
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Potato Production in Asia

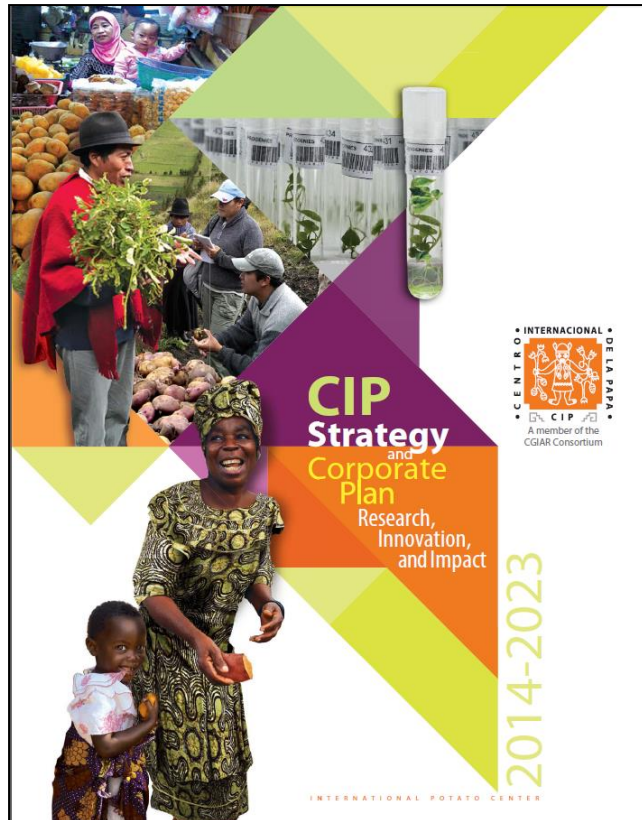
Each dot represents 1,000 hectares.

Potato yields, in tons per hectare:

- Above 30
- 25.1 - 30
- 20.1 - 25
- 15.1 - 20
- 10.1 - 15
- 5.1 - 10
- 0 - 5



CIP-Strategic and Corporate Plan 2014-2023



New research program:

SO 1: Combating Vitamin A Deficiency with Resilient, Nutritious Orange-Fleshed Sweetpotato (OFSP)

SO 2: Enhancing Food Security in Asia through the Intensification of Local Cereal-based Systems with the “Agile Potato” with the Early-Maturing Agile Potato

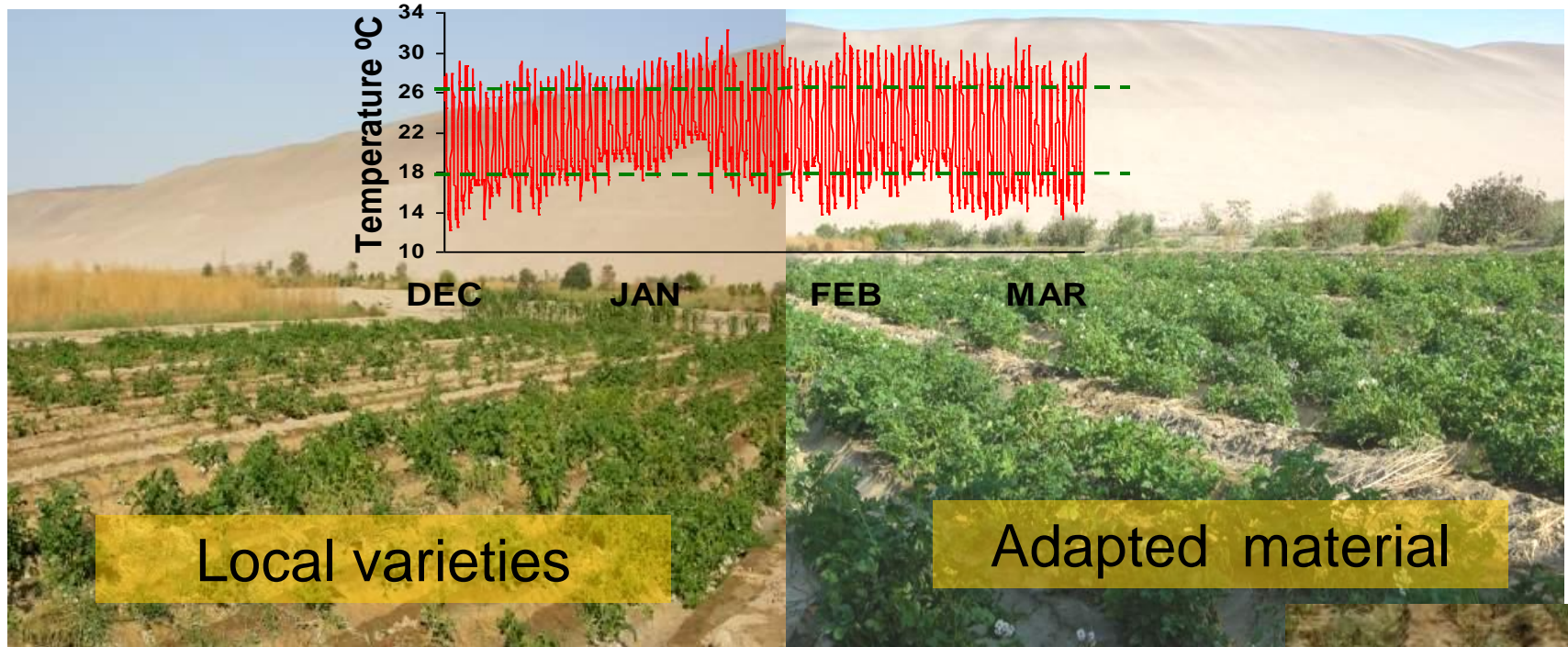
SO 3: Improving Livelihoods of Potato Farmers in Africa by Tackling Deteriorated Seed

SO 4: Accelerating the Discovery of Game-changing Solutions for Food Security

SO 5: Addressing the Food Security Challenge through Roots and Tubers: Transforming Vulnerability to Resilience

SO 6: Conserving Biodiversity for the Future

Selection under warm and saline conditions in the coast of Peru



Local varieties

Adapted material



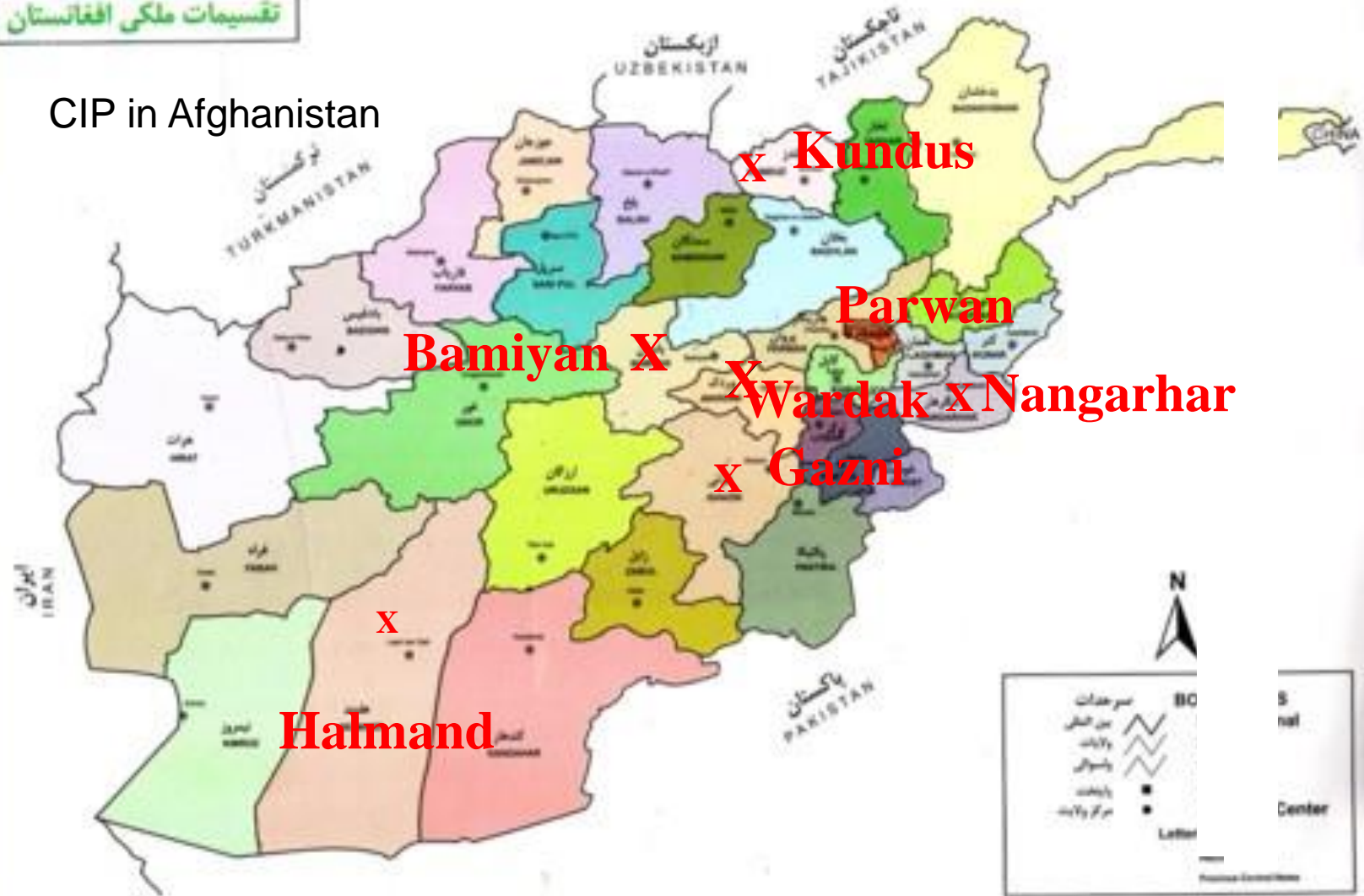
Major potato producing countries

Country	Area (Ha)	Production (MT)	Productivity (T/Ha)
Afghanistan	25,009	340,257	13.60
Bangladesh	461,710	8,95,0000	19.38
India	2,02,4000	46,395,000	22.92
Nepal	2,05,725	2,817,512	13.69
Pakistan	159,831	2,901,029	18.15
Indonesia	76,291	1,347,818	17.67
Vietnam	22,823	321,700	14.10
China	5,647,216	95,570,393	16.92
Kazakhstan	185,103	3,410,500	18.42
Kyrgyzstan	78,892	1,320,700	16.74
Tajikistan	35,543	85,3739	24.02
Turkmenistan	57,337	340,437	5.94
Uzbekistan	79,900	2,452,400	30.70

Source: FAOSTAT 2014 (<http://www.fao.org/faostat/en/#data/QC>)

تقسيمات ملكي افغانستان

CIP in Afghanistan



CIP introduced quality Seed production system introduced in in Afghanistan in 2002



Potato seed produced in spring season and packed



Frost damage in Jalabad

Single plant harvest of KCM

Quality potato seed produced in Afghanistan during 2004-2005

Province	Variety	No. of farmers Involved		Seed produced (MT)		Total	
		2004	2005	2004	2005	Farmers	Seed produced (MT)
Ghazni	KCM/ Desiree	77	165	533	644	242	1177
Nangarhar	KCM/ Desiree	17	153	69	972	170	1041
Parwan	KCM/ Desiree	25	104	130	725	129	855
Total		119	422	732	2341	541	3073

Capacity Building



**IDM training for quality seed
production in Ghazni, Afghanistan**

Seed Storage Systems

Traditional type potato stores



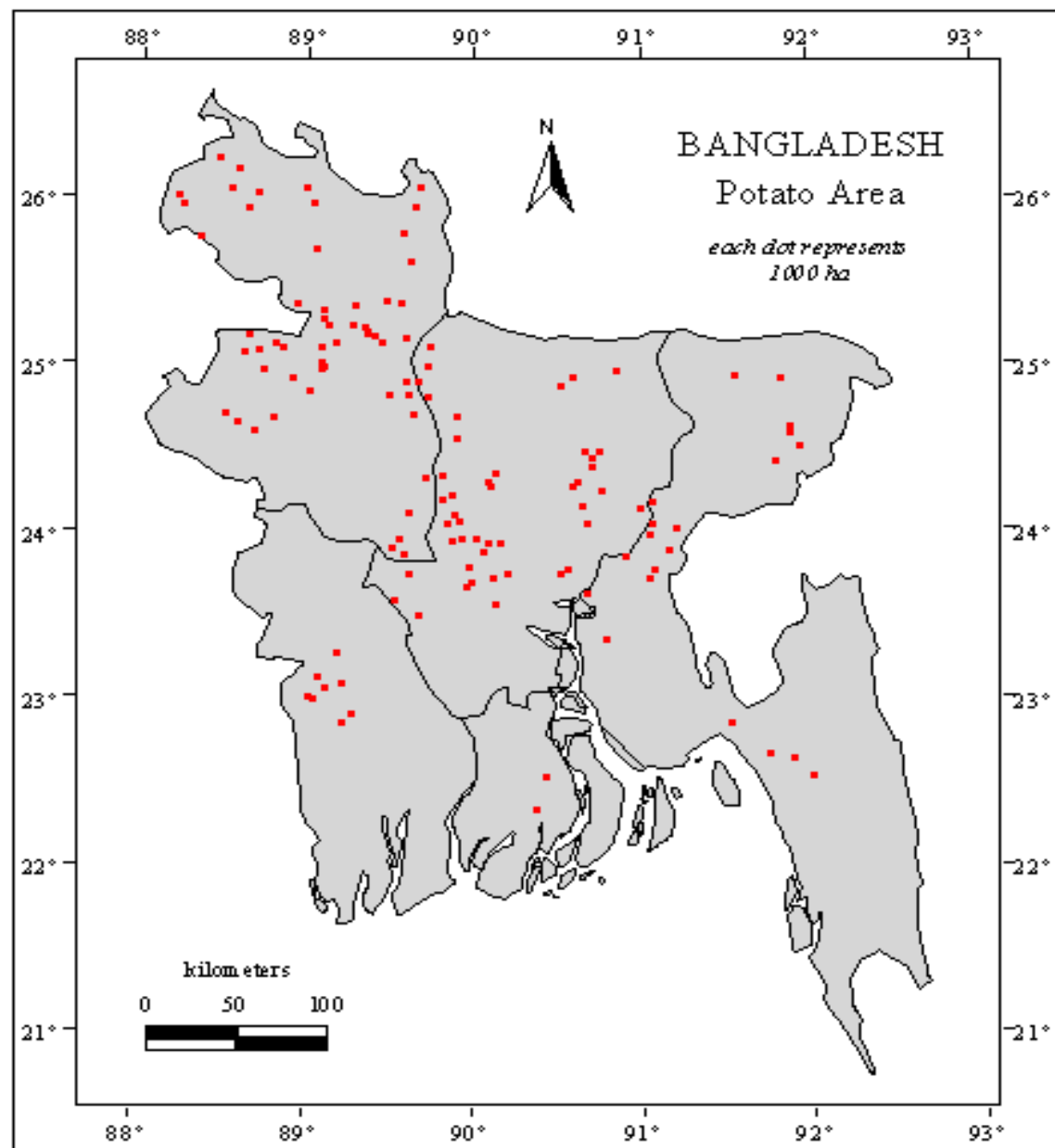
Underground store



Pit store

CIP Designed Store



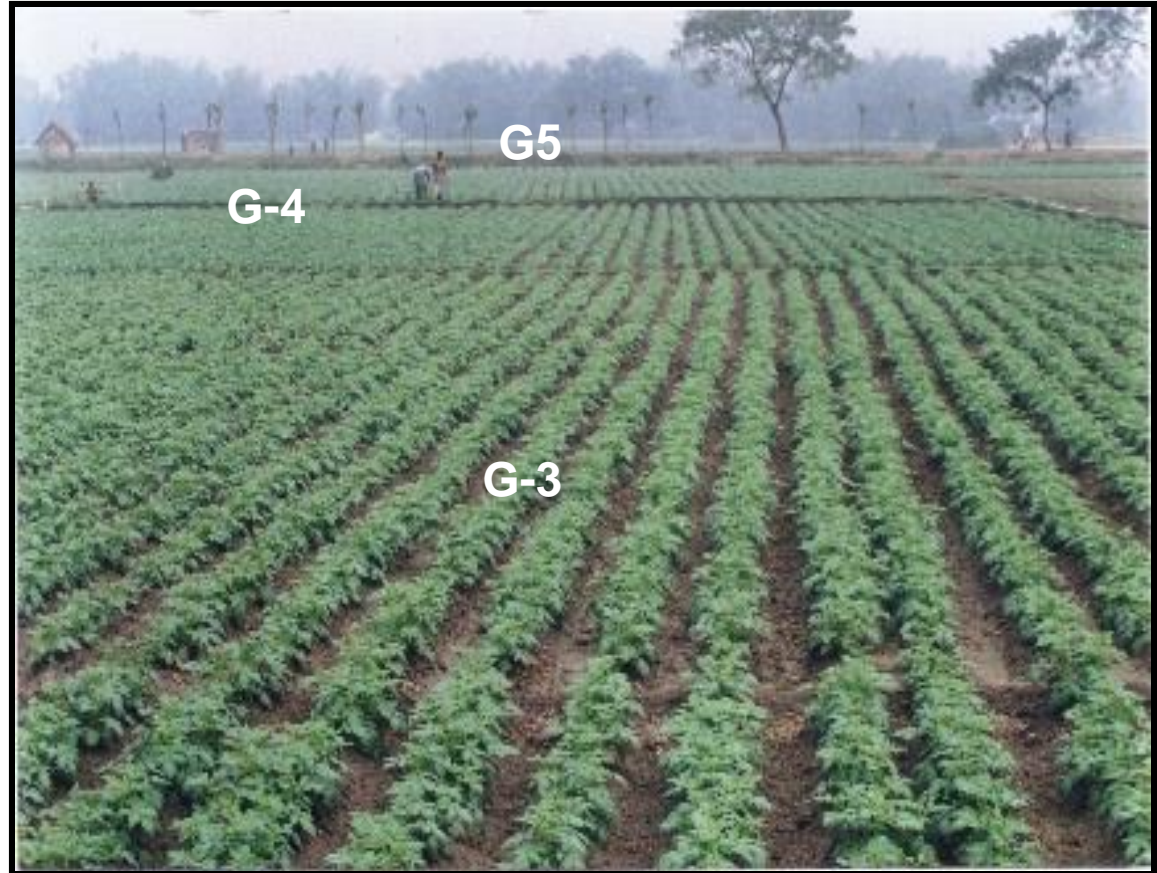


CIP Role in Bangladesh

1. Strengthening seed production systems (CIP/TCRC)

Constraints for potato production:

- Inadequate quality seed
- TCRC, BRAC, DAE produces formal seed
- Late blight and BW
- Viruses



Developing locally adapted new varieties having:

- Slow degeneration rate
 - Resistance to LB and viruses; drought, heat and salt tolerant
 - Productive under low inputs
 - Good keeping quality in country stores
 - 70 day high yielding for rice based system
 - Consumers preference
-
- 6 varieties released so far from CIP clones (3 table, 1 LB resistant, 1 red skin moderately LB resistant and one heat/tolerant tolerant)



■ Introduction of PVS approach:

1. Accelerate variety release channel
2. Varieties of stakeholder's choice
3. Wider adoption of varieties
4. Needs change at public sector policies

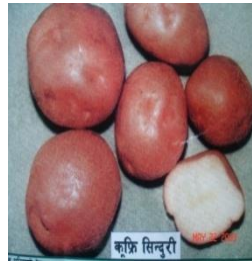
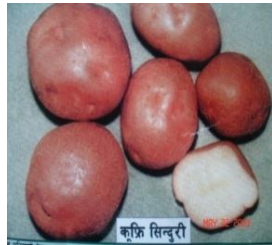


Area, production and productivity of major food crops in Nepal (ABPSD, 2014)

Food crops	Area (ha)	Rank	Prodn. (tons)	Rank	Productivity (t/ha)	Rank
Potato	205725	V	2817512	II	13.7	I
Paddy	1,486,951	I	5,047,047	I	3.39	II
Maize	92,8761	II	2283222	III	2.45	III
Wheat	754,474	III	1,883,147	IV	2.49	IV
Millet	271183	IV	304,105	V	1.12	V

Source: MOAD Nepal (2014).

Varieties released in Nepal



Pipeline clones



Highly promising bio-fortified potato clones identified through PVS



*LB resistant, ZN & Vti C high



*LB resistant & Vit C high

Issues & challenges

1. Development of varieties resistant to major diseases through own breeding program
 2. Development of varieties for processing
 3. Development of low-cost source seed production technologies
1. Continuation of research on TPS technologies,

CIP in Bhutan and Nepal



- 1. Providing Germplasm to National Program for abiotic and biotic stress tolerant and bio-fortified**
- 2. Collaboration on developing varieties and seed systems**
- 3. Capacity building:**
 - Promote researcher and farmer exchange between Nepal and Bhutan for mutual learning in PVS.
 - Implement regional training in breeding procedures and micronutrient /resistance screening methodology and data management and analysis.
 - 1213 stakeholders including 660 women and 427men were trained on participatory mode of selecting locally adapted varieties from CIP clones of their choice at project sites

CIP helped farmers to improve farmers based seed systems by intervention of positive selection





Demonstration of potato sample preparation (washing, peeling, slicing and placing on the oven)

Potato Varieties grown in Bhutan

Variety Name	Accession no.	Origin	Year of introduction	Year of release
Desiree	800048	Netherlands	1970	1988
Yusikaap	720088	Argentina	1981	1988
Kufri Jyoti	800258	India	1970	1988
Khangma Kaap	378015.13	Peru	1989	2002



CIP R and D Role in India in Partnership with CPRI/ICAR

Supplying Germplasm to CPRI and its use in developing varieties for abiotic, and biotic stress tolerant , processing quality and nutrient rich in Fe and Zn

Variety/Characterstics	Parentage	CIP Parent
K. Chipsona (Processing)	MEX. 750826 x MS/78-79	MEX.750826 (CIP 720124)
K. Chipsona 2 (Processing)	F-6 x QB/B 92-4	F-6 (CIP 377427.1)
K. Surya (Heat (tolerant /processing)	K. Lauvkar x LT-1	LT-1(CIP377257 .1)
K. Chipsona 3 (Processing)	MP/91-86 (CIP 377427.1) x QB/B 92-4) x K. Chipsona 2	F.6 9CIP 377427.1)
K. Himalini (DN,LB resistant)	I-1062 x Tollocan	Tollocan (CIP 720054)
K. Frysona (French Fries)	MP/92-30 (CIP-378711.5 x AL-575) x MP/90-94 (CIP 378711.5 x MS/78-79)	Muziranzara (CIP-378711.5) and AL-575
K. Chipsona 4 (Processing)	Atlantic x MP/92-35 (CIP 378711.5 x CIP 720125)	CIP 378711.5 and CIP 720125
K. Lalit (Table)	85-P-670 x CP 3192 (CIP 380013.12)	CIP 380013.12

Over 1100 potato accession including advanced clones, parental lines and TPS population supplied to CPRI since 1975

Screening of CIP germplam to abiotic/biotic stress:

Main emphasis:

- Short maturing potatoes for scattered harvest and marketing and efficient land utilization.
- Heat and drought tolerant varieties for arid, semi-arid, hot-humid agro-ecologies for cereal based system in subtropical region.
- LB and virus resistant for high-humid and sub-humid regions where humidity is high and temperatures are moderate



Culture : CP4054 (397065.28)

Year of cross : 1997 (CIP, Lima, Peru)

Parentage : C90.266 x C93.154

Year of introduction into AICPIP : 2011

Area of adaptation : Early season planting in plains



Developing sustainable potato system in non-traditional seed producing areas to decentralize the seed system

1. De-centralization of seed production from North to South/West and East India
2. Linking PPP for fast seed multiplication and supply

Objectives:

- Reduced seed cost by diminishing transport cost
- Improve seed quality
- Timely availability of seed
- Improve productivity and Profitability



Present seed potato seed movement



Basic seed multiplication in temporary net house

Seed potato production under low cost insect proof net house:

The low cost low cost insect proof temporary insect proof net house technology with drip-irrigation successfully tested in KVK Narayangaon, Pune to multiply the basic seed to check the virus vectors for sustainable seed production in plateau region. Suitable locations below thresh-hold level of aphid population were



**20mm of insect net house: US\$ 4000 /ha
(life 5Yr)**

Improving livelihoods of poor farmers by expanding potato in lowland rice system in non-traditional potato system in North West Bengal.

PROJECT GOAL: Increase area and production of potato in lowland Rice-Rice system without affecting yield of either of the crop and resources in non-traditional potato area.

Project Outputs

- 70 acre was planted by 209 farmers in 2014-15 under boro rice-potato- double transplanted boro rice and expect 5000 farmers to adopt it by 2020
- 1518 stakeholders trained on best practices on potato and double transplanted boro rice
- Cost benefit analysis of boro rice-kharif rice and boro rice-potato-kharif rice studied in three project sites (27% over kharif rice-potato-boro rice and 290% over kharif rice-boro rice system)



CIP in collaboration with CPRI (for past 3-4 years) introduced potato cultivation successfully in the Thar deserts of Rajasthan to realize a dream to alleviate poverty by cultivating potatoes. The farmers got quite involved in the project, broke the norms of old traditional subsistence farming by adopting Potato as an important income generating crop.



PVS introduced in Indian variety selection system approach to:

1. Accelerate variety release channel
2. Varieties of stakeholder's choice
3. Wider adoption of varieties
4. Needs change at public sector policies





THANK YOU

