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Climate Resilient Sustainable Agriculture options for High Barind Tract in Bangladesh

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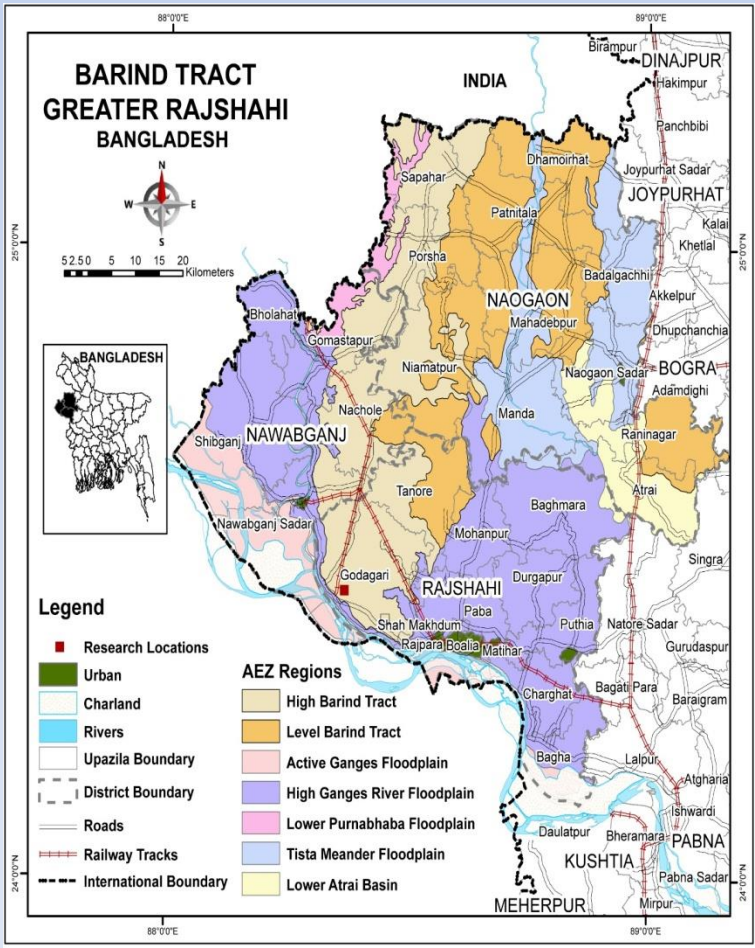
The High Barind Tract and CRSA

Climate Resilient Sustainable Agriculture (CRSA)

ensures health safety of farmers and farming households,

conservation of environment and natural resources and reduces dependency on external resources.

It considers and build resilience against present and future climate stressors and reduces greenhouse gas emissions.



Research Objective

Objective:

Experiment and recommend location specific CRSA practices for High Barind Tract

Principles:

- Use of low water requirement crops;
- Use of different cropping patterns;
- Seed priming:
- Minimize use of fertilizers both organic and inorganic; and
- Soil conservation practices (minimum tillage, mulching and efficient water use, etc) that involve reduction of GHG emission from crop fields, while crop production is expected to increase.

Material and Method

Six cropping patterns were tested at Saroil, Godagari,Rajshahi, at farmer's field (AEZ 26). Field experiment was conducted in randomized complete block design with three replications. Unit plot size was 4m X 5m. Field data were calculated and yield in t ha^{-1} and BCR were recorded for Kharif I, Kharif II and Rabi seasons.

Rabi	Kharif-i	Kharif-ii	C. Pattern
Wheat (BARI Gom-27)	Aus BRRI Dhan-48	T- Aman BRRI Dhan – 48	CP-1
Mustard (BARI Sarisha 14)	Sesame (BARI Til-3)	T- Aman BRRI Dhan – 48	CP-2
Mustard (BARI Sarisha 15)	Mung (BARI Mung-6)	T- Aman BRRI Dhan – 56	CP-3
Wheat (BARI Gom 28)	Mung (BARI Mung-6)	T- Aman BINA Dhan – 7	CP-4
Potato (Cardinal)	Sesame (BARI Til-4)	T- Aman BRRI Dhan – 39	CP-5
Chickpea (BARI Chola-5)	Maize (B H-7)	T-.Aman BRRI Dhan- 57	CP-6

Result and Discussion : Fertilizer Application

Kharif I - (kg ha^{-1})

Fertilizer	Aus	Til	Mung	Mung	Sesame	Maize	Remarks
Urea	196/2	0	40/2	40/2	100/2	216/2	Cow dung blanked applied@ 3.5 t ha^{-1}
TSP	100	0	80	80	130	132	
MoP	70	0	30	30	40	92	
Gypsum	110	0	0	0	100	96	
Znsulphat	06	0	0	0	0.5	07	
Boron	0	0	05	05	0	05	

Kharif II - (kg ha^{-1})

Fertilizer	T. Aman
Urea	196/2
TSP	100
MoP	70
Gypsum	110
Znsulphat	06
Boron	0

Rabi - (kg ha^{-1})

Ferti.	Wheat	Mustard	Potato	Chickpea
Urea	110	200	106	10
TSP	22	150	27	19
MoP	60	70	90	17
Gypsum	15	120	20	10
Znsulphat	4	5	205	1
Boron	1	.5	1	

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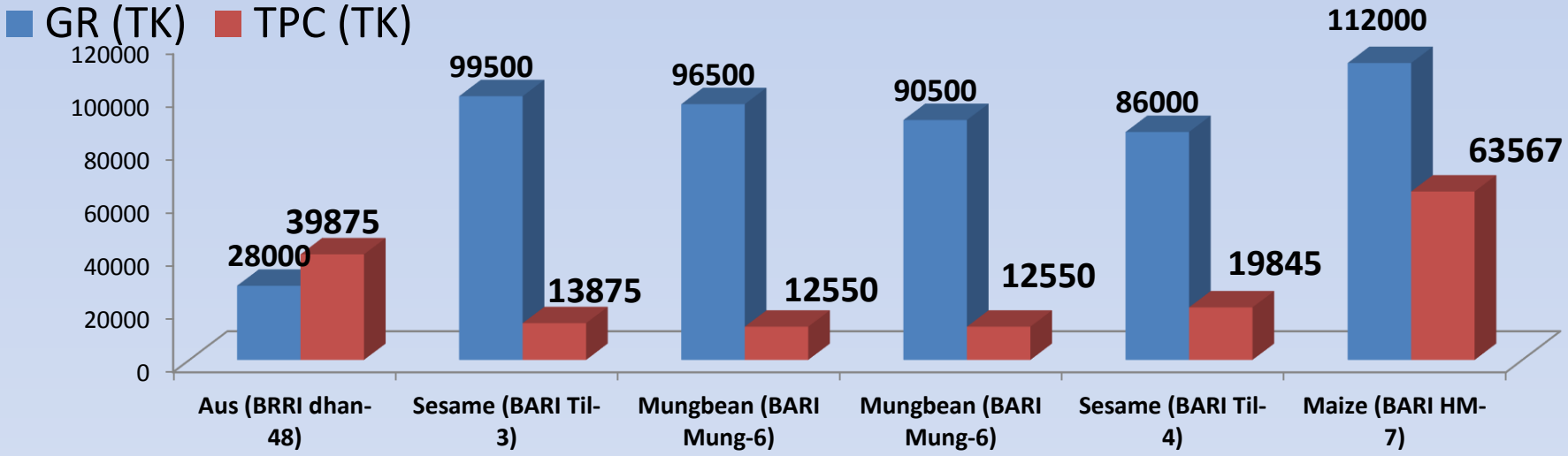
Kharif-i
Aus BRRI Dhan-48
Sesame (BARI Til-3)
Mung (BARI Mung-6)
Mung (BARI Mung-6)
Sesame (BARI Til-4)
Maize (B H-7)

Result and Discussion

Cost and return analysis of different crops under CRA practices conducted at Saroil, Godagari, Rajshahi during kharif-1 season 2016



Higher economic return can be ensured through cultivation of pulses and oilseeds

[BARI Mung-6(83950 Tk) / BARI til-3 (85625)]

GR=Gross return, TPC= total production cost

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Kharif-ii
BRRI Dhan – 48
BRRI Dhan – 48
BRRI Dhan – 56
BINA Dhan – 7
BRRI Dhan – 39
BRRI Dhan- 57

Result and Discussion

Cost and return analysis of different varieties of climate resilience agriculture (CRA) practices cropping patterns experiments conducted at Saroil, Godagari, Rajshahi during Kharif-II season 2016

Crops/varieties	Yield(kg ha^{-1})	GR Tk(kg ha^{-1})	TPC Tk (kg ha^{-1})	NR Tk(Kg ha^{-1})	BCR
BRRI dhan-48 (farmer practice)	**6700**	134000	48600	85400	2.75
BRRI dhan-48 (farmer practice)	5200	104000	48600	55400	2.13
BRRI dhan-56	4500	90000	48600	41400	1.85
BINA dhan-7	5800	116000	48600	67400	2.38
BRRI dhan-39	6200	124000	48600	75400	2.55
BRRI dhan-57	5000	100000	48600	51400	2.05

GR=Gross return, NR= Net return, TPC= total production cost, BCR= Benefit cost ratio

Rabi
Wheat (BARI Gom-27)
Mustard (BARI Sarisha 14)
Mustard (BARI Sarisha 15)
Wheat (BARI Gom 28)
Potato (Cardinal)
Chickpea (BARI Chola-5)

Result and Discussion

Cost and return analysis of different varieties of climate resilience agriculture (CRA) at Saroil, Godagari, Rajshahi during Rabi season 2016-17

Crops/varieties	Yield (kg ha^{-1})	GR Tk (kgha^{-1})	TPC Tk (kg ha^{-1})	NR Tk(Kg ha^{-1})	BCR
Wheat (BARI Gom 27)	2800	57700	20025	34675	2.88
Mustard(BARI Sarisha 14)	1000	53000	22220	30780	2.38
Mustard(BARI Sarisha 15)	1200	63400	22220	41180	2.85
Wheat (BARI Gom 28)	3100	62000	20025	41978	3.09
Ptato (Cardinal)	17000 (tuber)	340000	192140	147860	1.76
Chickpea (BARI Chola 5)	1500	90500	16950	73550	5.33

- **BARI Chola 5 cultivation is highly profitable**
- **Potato cultivation though provide higher income but require higher production cost**

EXPERIMENTATION OF CLIMATE RESILIENT AGRICULTURE PRACTICES IN DROUGHT-PRONE HIGH BARIND TRACT
মাঠ দিবস খরিফ-১
খরা প্রবণ উচুঁ বরেন্দ্র অঞ্চলে উপযোগী জলবায়ু সহনশীল কৃষি পদ্ধতি পরীক্ষণ
প্রধান অতিথি : জনাব ড. আকরাম হোসেন চৌধুরী (সাবেক এম পি), চেয়ারম্যান, বরেন্দ্র বহুমুখী উন্নয়ন কর্তৃপক্ষ
বিশেষ অতিথি : জনাব দেব দুলাল ঢালী উপ-পরিচালক, কৃষি সম্প্রসারণ অধিদপ্তর, রাজশাহী
সভাপতি : জনাব মোঃ কামরুজ্জামান কামরু কাউন্সিলর, বেনা ওয়ার্ড, রাসিক এবং 'প্রভা'র সম্মানিত সভাপতি
তারিখ : শনিবার ২৮ মে ২০১৯ খ্রী/১৪ জৈষ্ঠ্য ১৪২৩ বঙ্গাব্দ
সারোইল, গোদাগাড়ী, রাজশাহী
Brot für die Welt
বিশেষ অতিথি
সভাপতি
বিশেষ অতিথি

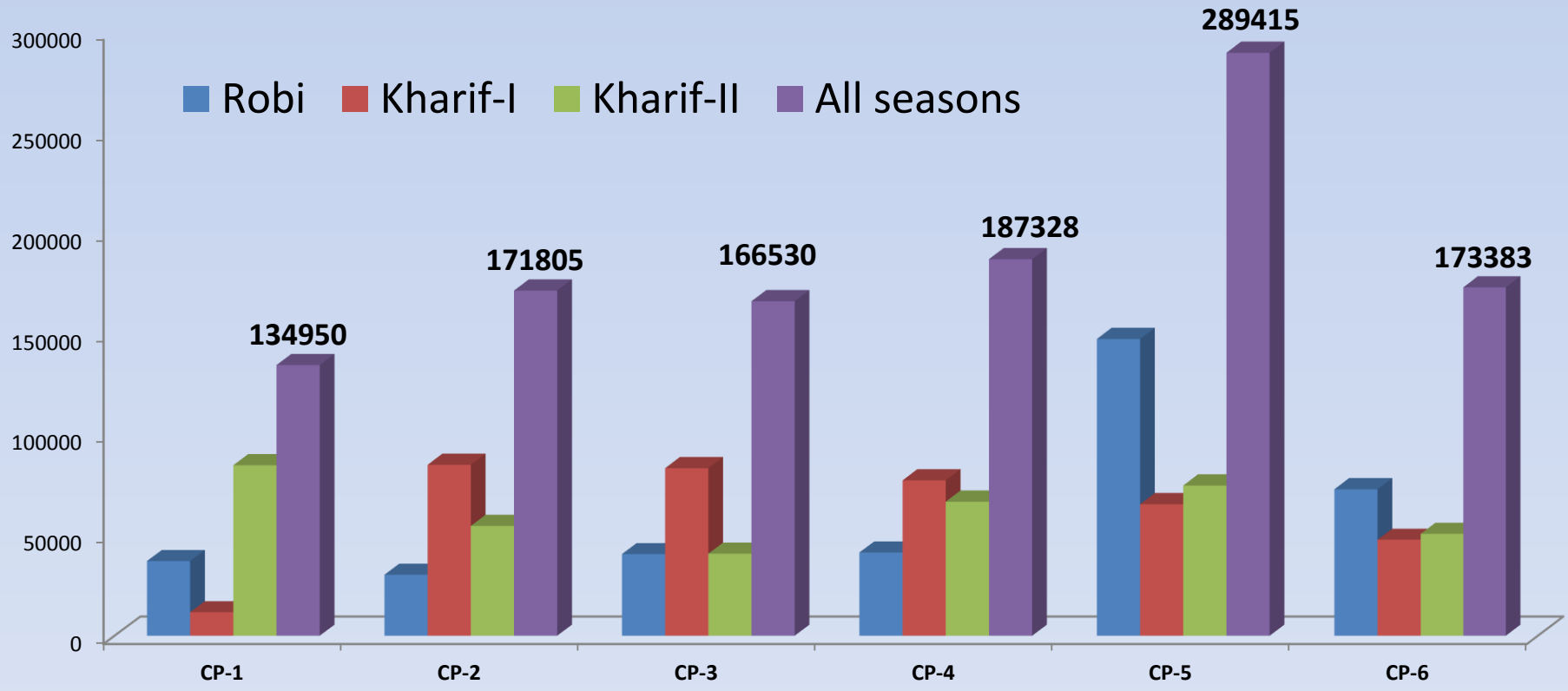
T6-BARI Chola-5
বারি ছোলা-৫

OF CLIMATE RESILIENT AGRICULTURE
CES IN DROUGHT-PRONE HIGH BARIND TRACT
মাঠ দিবস খরিফ-২
খরা প্রবণ উচুঁ বরেন্দ্র অঞ্চলে উপযোগী জলবায়ু সহনশীল কৃষি পদ্ধতি পরীক্ষণ
প্রধান অতিথি : জনাব মোঃ জাহিদ নেওয়াজ
বিশেষ অতিথি : কৃষিবিদ তৌফিকুর রহমান
সভাপতি : জনাব মোঃ কামরুজ্জামান কামরু
তারিখ : ২৩ অক্টোবর ২০১৬ খ্রীঃ, মঙ্গলবার
সারোইল, গোদাগাড়ী, রাজশাহী
Brot für die Welt
বিশেষ অতিথি

মাঠ দিবস, রবি,২০১৬-১৭

Result and Discussion

Economic valuation of different cropping patterns, 2016-17

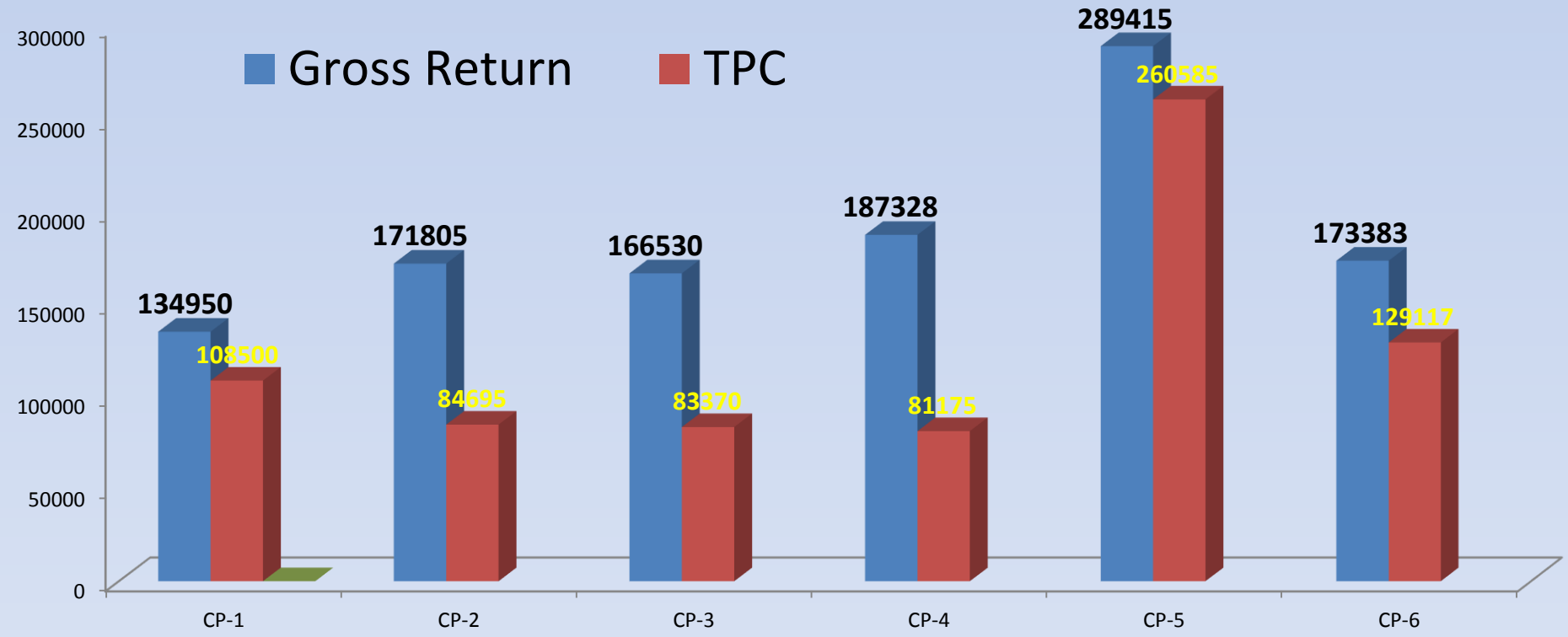


CP-1	Wheat(BARI Gom-27)-Aus(BRRI dhan-48)-T. aman(BRRI dhan-48) (Farmers practice)	CP-4	Wheat(BARI Gom-28)-Mung(BARI Mung 6)-T.aman(BINA dhan-7)
CP-2	Mustard (BARI Sarisha-14)-Sesame(BARI Til 3)-T.aman(BRRI dhan-48) (Farmers practice)	CP-5	Potato(Cardinal)-Sesame(BARI Til 4)-T.aman(BRRI dhan-39)
CP-3	Mustard(BARI Sarisha-15)-Mung (BARI Mung 6)-T.aman(BRRI dhan-56)	CP-6	Chickpea(BARI Chola-5)-Maize(H B 5,6)-T.aman(BRRI dhan-57)

Price: Wheat Tk.20.00 /Kg, Rice Tk. 25.00 /kg, Mustard Tk 50.00/Kg, Sesame Tk90.00/Kg , Potato Tk20.00/Kg ,Mung Tk.60.00/kg ,Chickpea Tk. 60.00/kg,Maize Tk.20.00/kg.

Result and Discussion

Analysis of pattern wise rice equivalent yield (REY), 2016-17.



GR=Gross return, TPC= Total production cost,
REY= Rice equivalent yield=Yield of each crop(t.ha^{-1}) x Economic value of respective crop (Tk./ton^{-1}) / Price of rice grain (Tk. t.ha^{-1})

CP-1	**Wheat(BARI Gom-27)-Aus(BRRI dhan-48)-T. aman(BRRI dhan-48) (Farmers practice)**	**CP-4**	**Wheat(BARI Gom-28)-Mung(BARI Mung 6)-T.aman(BINA dhan-7)**
CP-2	**Mustard (BARI Sarisha-14)-Sesame(BARI Til 3)-T.aman(BRRI dhan-48) (Farmers practice)**	**CP-5**	**Potato(Cardinal)-Sesame(BARI Til 4)-T.aman(BRRI dhan-39)**
CP-3	**Mustard(BARI Sarisha-15)-Mung(BARI Mung 6)-T.aman(BRRI dhan-56)**	**CP-6**	**Chickpea(BARI Chola-5)-Maize(H B 5,6)-T.aman(BRRI dhan-57)**

Conclusion and Recommendations

- **The CRSA practices is supportive to the conservation of scare water resources and considered no / minimum irrigation;**
- **Crop diversification and promotion of pulses and oil seeds might be a good option if CRSA can be promoted;**
- **Reduction of GHG from agricultural sector is possible through judicious use of fertilizer and other CRSA practices.**

Thank You

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