

## **Recent deliverable technologies and issues on various crops developed by NARC**

- Drs NP Adhikari and TB Ghimire

### **Latest advances in rice research in context of climate change**

#### **(For drought condition)**

1. Sukkhkha dhan 1 (IR74371-46-1-1)
  2. Sukkhkha dhan 2 (IR74371-54-1-1)
  3. Sukkhkha dhan 3 (IR74371-70-1-1)
    - Maturity : 125-130 days
    - Yield : 3.5- 4.0 t/ha
- ☞ Tasty and high milling recovery
- ☞ Diseases and pest field tolerance

### **Latest advances in rice research in context of climate change**

- A) Drought tolerance rice varieties released to mitigate the climate threat; 2010
- Early: Hardinath-2 :125 days, 3.1-4.1 t/ha,
  - rainfed low land of terai & inner terai
  - Medium: Tarahara-1 : 113-125 days; 4.2 t/ha,

- Mid & Eastern terai region, aerobic condition
- Palatable and high milling recovery
- Diseases and pest field tolerance



**Latest advances in rice research in context of climate change**

**(Flood prone areas)**

**Submergence tolerance rice varieties identified to mitigate the climate threat;**

- Swarna sub1 (Sona masuli) and Samba mahsuli sub 1
- For Central & Eastern Nepal
- Cooking quality (Softness) improved
  - IR-64 sub1 : Western Nepal
  - Submergence tolerance (up to 15 days)



### Rice varieties for Import substitution and for Upland condition, 2010

- ✂ **Basmati** for both irrigated and rainfed condition of Terai (Mid & Eastern Region)
- ✂ 150 days, 2.5-3.5 t/ha
- ✂ Blast tolerant
- ✂ **Ghaiya-1** (Radha-32) for Rainfed upland, terai, river basin & mid hill valleys
- ✂ 115 day, 2.5-3.5 t/ha
- ✂ Blast and Blight tolerant



Lalka Basmati



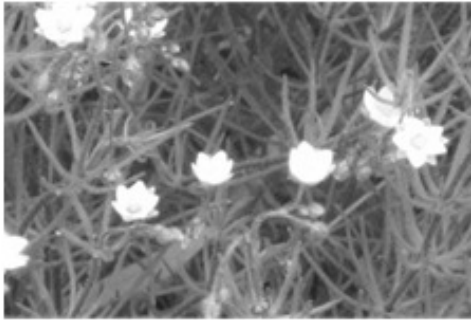
Ghaiya-1

### Dry seeded rice (DSR) technology

- Last week of May to 2<sup>nd</sup> wk of June -Opt. time of sowing in mid hills of CDR
- Buck wheat cover crop -minimum no. of weed & max. yield
- For the control of Spargulla (Thangne Jhar)- Pendimethaline @3.3 Lha



***Spergula arvensis* (Thangne Jhar) management (Parvat)**



### Research on Water Use Efficiency



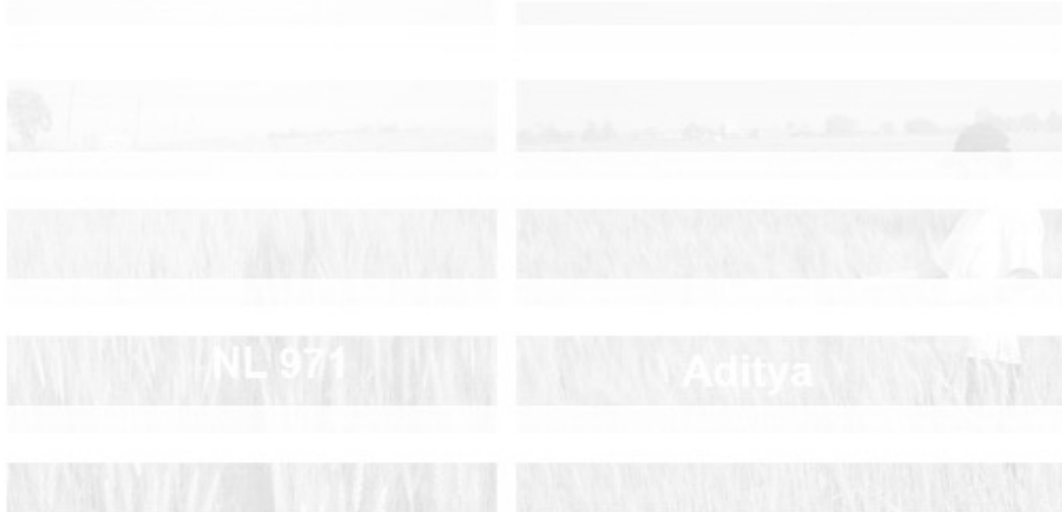
Alternate wetting and Drying save water by 35-40%

### Recently released Wheat varieties

Vijay (BL 3063): Ug 99 (stem rust) resistant, for terai, tar and lower valleys. Early in maturity & suitable for late planting



## Wheat varieties for all over Terai Released in 2009



122 days, 4.5 t/ha, Terai, tar & lower valley,  
Res. against HLB, LR; heat stress condition

118 days, 4.8 t/ha, Terai, tars & lower valleys, Res.  
to L& YR, Tol. to HLB

## Promising wheat genotypes for hilly region

- BL3235,
- BL3503 and
- NL1064 (Dhanphe) YR-R



BL 3503



BL 3235

### Pipeline varieties for the terai

- BL3623, BL3555 and NL1073 varieties were found promising for terai region.



BL3623



NL1073

### Wheat varieties for bakery purpose

- BL 1053, BL 1050, BL 3623,
- BL 3625, BL 3235, NL971, NL 1073

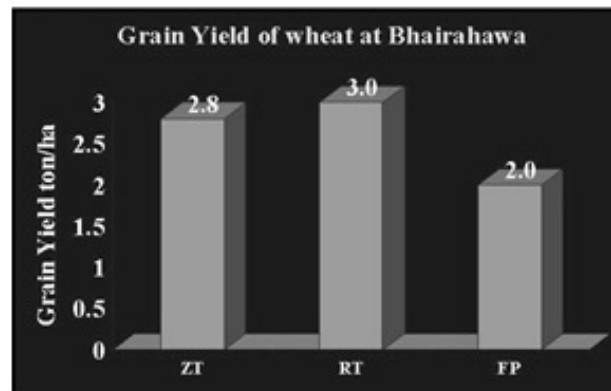
### Promising Wheat genotypes for high hills of Nepal

- WK1902,
- WK1776
- WK1723

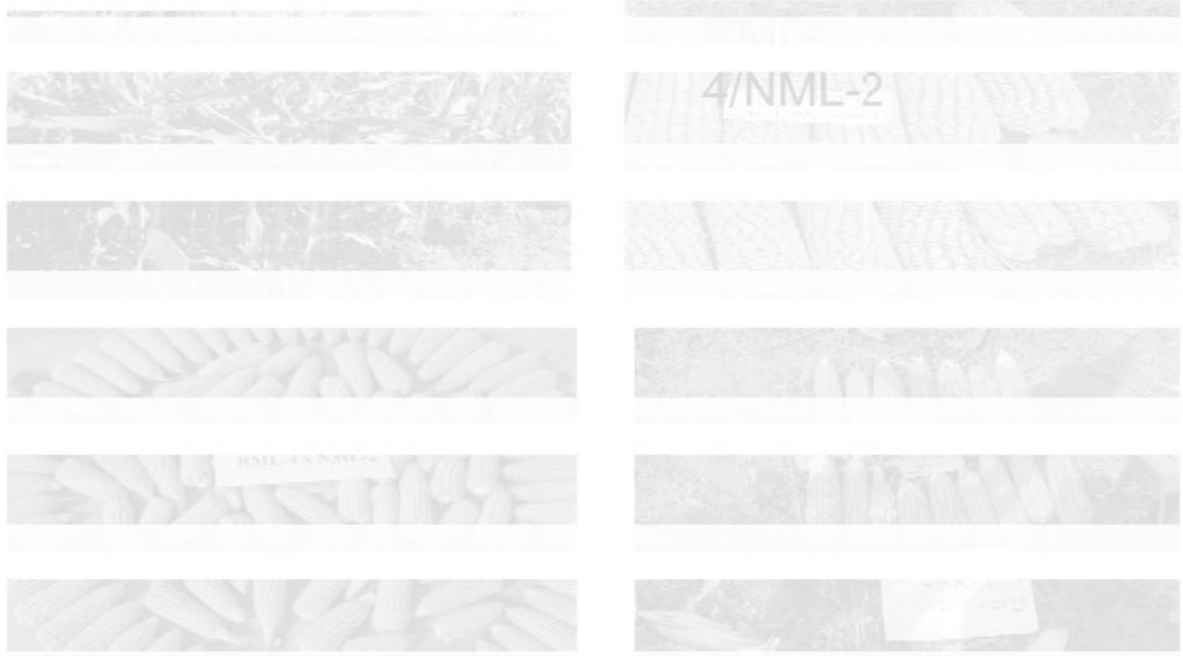
### Spot blotch (*Bipolaris sorokiniana*) disease management in Wheat

- Two spray of Tilt (propiconazole) @ 1.5 ml/L at 70 and 85 DAS is most effective and economical
- Application of fungicide can save the wheat yield loss ranges from 24.5% to 42%

### Outputs from Resource and Crop Management Activities



## Maize Hybrids in process of release



## Performance of Indian Hybrid maize in Chitwan (Winter season)

- |   |  |                                   |
|---|--|-----------------------------------|
| <ul style="list-style-type: none"><li>• Jaya Kisan 6485 ( 1255 kg/ha)</li><li>• Thunder 1203 kg/ha</li><li>• Bioseed 9681 (1191 k g/ha)</li><li>• C-6485 (1151.3 kg/ha )</li><li>• Sahara Premium</li><li>• Prince</li><li>• Challenger</li><li>• Pioneer 30V92</li><li>• Pioneer 30B07</li></ul> |  | Rainfed condition                 |
|   |  | High input, irrigated condition s |
|   |  | Grain setting problem             |

## Resource Conservation Technology of Maize

RCT of bed planting (direct bed preparation) provides the highest grain yield of maize 4.8 ton/ha (Rampur Composite ) against Farmers Practice (3 harrowing and broadcasting) under Rampur condition.

## Ear rot resistant maize vars/lines

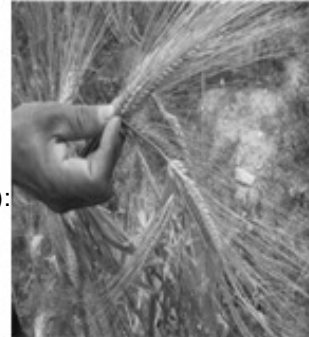
- OPVs : Arun 4, Pool-16, Narayani, Manakamana-3
- Hybrid : RML-4 x NML-2, RML-3 x NML-2, RML-8 x RC

### **Foliar diseases tolerant lines**

- Southern LB tolerant lines:
  - Posilo Makai-1, Ram SO3FO6
- **Grey Leaf Spot:**
  - Manakamana-3, Deuti, Manakamana-1, Ganesh-1 and Okhaldunga local:  
Moderately Resistant

### **Turcicum blight in maize**

- Use of balanced dose of fertilizer along with Zn fertilizer
- 120:60:60:25 Kg NPKZn/ha



### **Barley**

- Pipeline (ready for recommendation for general cultivation):
  - X-Veola 38 and
  - X-Veola 45 for malt barley

### **Lentil varietal evaluation**



Maheswor Bharati- Khumaltar



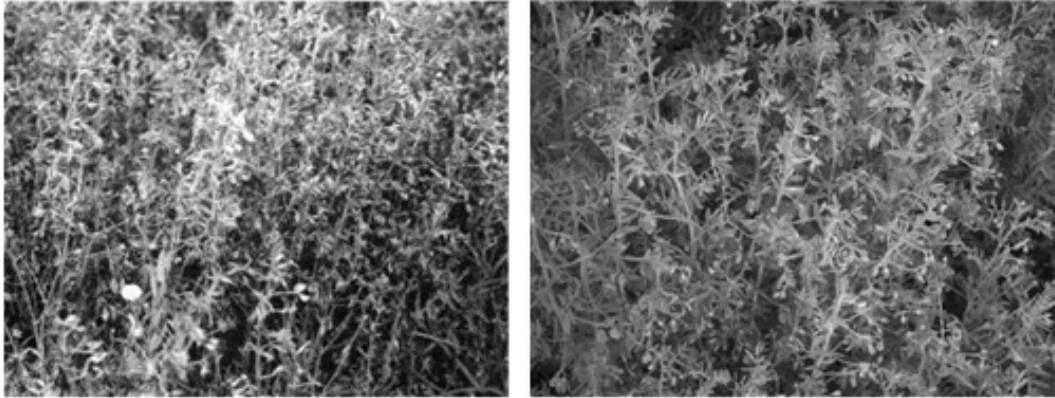
Varietal testing at NGLRP Rampur

### **Promising lines of Lentil**

- ILL-7232 (For terai of Mid and Far western)
- ILL-7164
- ILL-7515
- ILL-9993
- PL 406

**Stemphylium blight (Stemphylium botryosum ) of lentil**

Genotype ILL 7164 with good yield potential combined with disease resistance



Stemphylium blight

**Lentil (ILL 7723) genotypes at RARSN**



### Chickpea Promising lines



KPG173-4 at Lalmatiya, Dang



KPG 59, BGM tolerant line For whole terai region

### Pegionpea (ICP 7035)



### Promising Phaseolus bean varieties

- Amber
- PDR-14
- Utkarsha
- 120:60:40 NPK kg/ha is recommended in irrigated condition of Central terai



PDR-14

#### White mold diseases of Rajma bean



#### White mold (*Sclerotinia sclerotiorus*)

- Benomyl 50 WP spray @ 1 g/L or Bavistin seed treatment + Bavistin foliar spray effective in reducing white mold disease.
- WM could be managed efficiently integrating the cultivation of disease tolerant variety (PDR-14), planting the crop in the last week of Aswin, spraying either carbendazim or benomyl and adopting crop rotation of 4-5 years

## Promising Rapeseed & mustard line

**Toria** : Morang Tori



**Rayo** : ICJ 9704, Divya



## Diseases management in rapeseed & mustard

Mixing of *Trichoderma viridae* @10g/kg with well decomposed compost @10 ton/ha and incorporated in the soil was found effective in controlling the Alternaria disease and produced the highest seed yield.

## Pipeline varieties of Buckwheat

- GF-5063- Sweet type
- Acc# 2227-1- Bitter type

## Promising varieties of Jute

- JRO 524
- KEN-DS-058
- KED-DS-056
- F6 Oli
- O-4



## Weed infested jute field





### **Promising technology in Jute**

- Targa super @ 2ml/L-15-20 DAS for weeds
- Red amaranthus 10 kg + Jute 6 kg/ha mix cropping for weed smothering •
- Bavistin @2g/L at 60,70 & 80 DAS-Stem rot disease in seed crop
- 40:20:60 NPK kg/ha for higher fibre yield

### **Sugarcane promising line**

- Cose-98231 - For irrigated and rain fed, tolerant to red rot. •
- UP 9742 - In mid late and upland.
- Cose 98182 and BO-131 - In rainfed condition

### **Malepatan 1- Vegetable cowpea**



### **Hybrid tomato seed production (At Farmers group)**

- Female: HRD-1
- Male: HRD-17
- F1-Shrijana
- Yield 3-4 g/kg fresh fruits



### **Root Knot Nematode mgmt in plastic house**

- Grafting tomato with wild brinjal (*Solanum sissimbrifolium*)
- 38% fruit yield increment

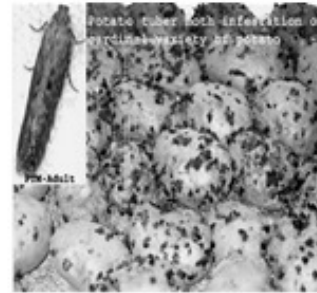


### Pipeline potato clones

- Clones CIP 389746.2
  - BSUPO3
  - LBr40 and CIP 388580.6 - Hills
- Terai conditions

### Late blight resistant Potato clones

- CIP 393385.39, PR 85861.11,
- PR 35861.2, CIP 393280.57,
- CIP 392657.8, PR 85861.12 and
- CIP 384321.15



### Potato tuber moth control

Sweet flag (*Acorus calamus*) stolen dust with potato tuber @ 5g dust per kg of potato tuber for 3-4 months

### Club root of Crucifer mgmt

- New chemical Fluazinan @ 0.2% is found as effective as Nebijin.
- Two bio control agent i.e. *Trichoderma harzianum* (T22) and T69 are effective
- Tolerant line of cabbage:
- Clapton B, Clarify A and B, Kilaton, Kilaherb, Kilaxy, Kilazol and Tekila



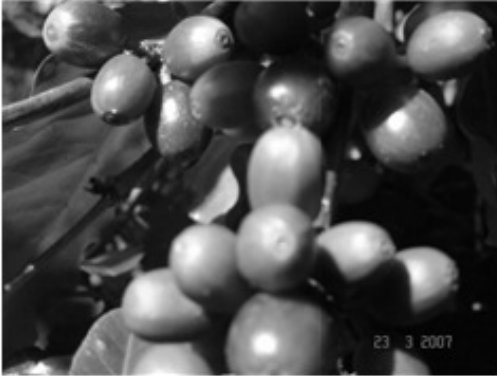
### Organic Coffee production

Promising coffee genotypes:

- Yellow Catura
- Tekisik
- Chhetradeed

Nutrient mgnt:

- Mustard cake @ 2.5 t/ha and Poultry litter@ 5 t/ha proved better for plant growth and berry size
- 15 kg compost/plant with mulching



skmLsf kmn l6kfO tyf kz fwg



**Recently Established Varietal Evaluation Block of Spur type of apple varieties at HRS, Jumla**





Red Chief

Golden Spur

**Drumstick plant propagated through seeds**

