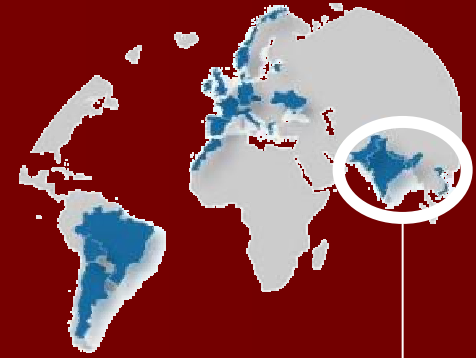


KASSA

GOCE-CT-2004-505582



Asian Platform Main Results

Bharath Krishnan, RWC, India
Knowledge Assessment and Sharing for Sustainable Agriculture
Brussels, February 20, 2006

Partners

<i>Country</i>	<i>N^o</i>	<i>Organization</i>	<i>Participant Name</i>
INDIA	Platform Coordinator 24	Rice-Wheat Consortium (RWC) Directorate of Wheat Research, ICAR	Raj K. Gupta H.K. Rai Bharath Krishnan A.D. Mongia Subhash C. Tripathi
PAKISTAN		National Agricultural Research Center (PARC)	S.G.Abbas Imtiaz Husain
INDIA	27	Centre for advancement of sustainable agriculture (CASA)	Inder.P.Abrol Sunita Sangar
VIETNAM	28	Vietnam Agricultural Science Institute (VASI)	Ha Dinh Tuan

Central strategy for Asia (as it were)

- **Green Revolution:** Self-sufficiency in food-grains
 - Expansion of irrigation coverage
 - Increased inputs for high-yielders
 - Strengthen institutional support
 - Favorable policies

Central strategy for Asia (as it were)

■ The concerns

- Sustainability of the ecosystem
- Indiscriminate input use
- Socio-economic differences

The Indo-Gangetic Plains



Vietnam



Transect 5. West Bengal and Bangladesh

Climate

- Hot sub-humid
- Annual rainfall up to 1800 mm
- 70 to 78% rainfall received during monsoon season

Physical features

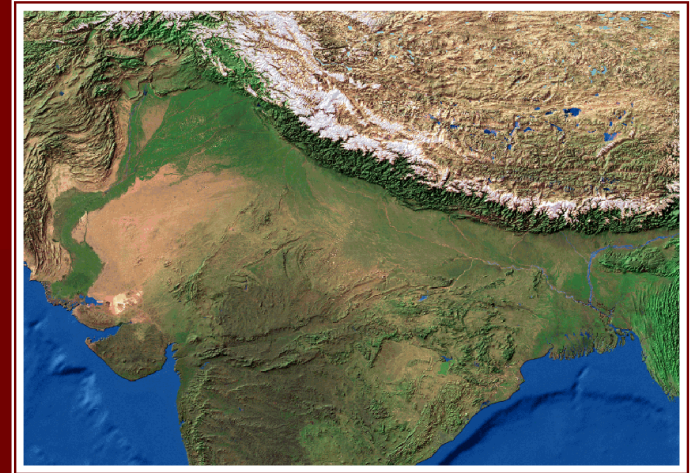
- Farmholdings are fragmented and relatively small in size
- Farms are highly diversified and flood-prone
- Other physical features are similar as in Transect 4

Cropping systems

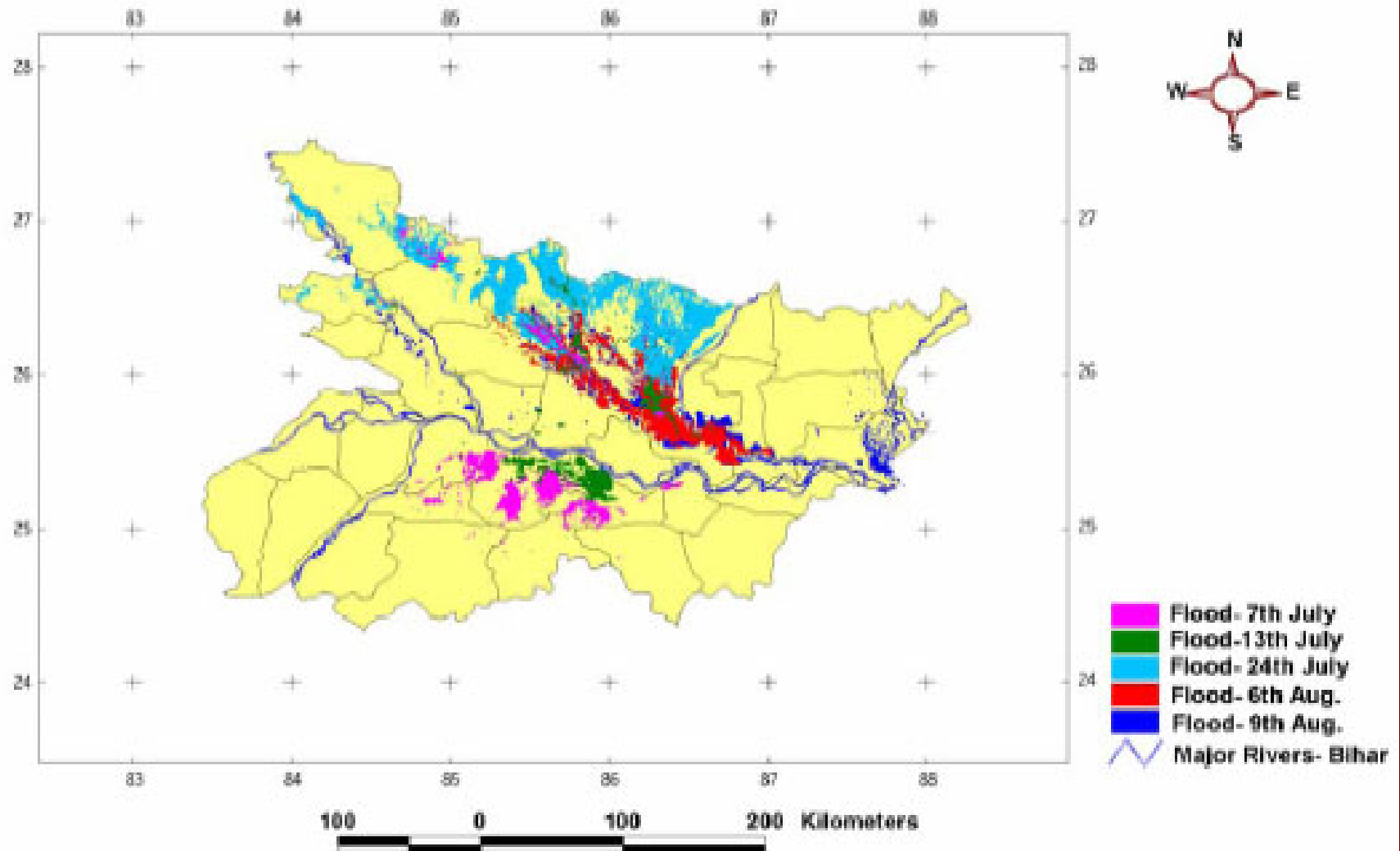
- Rice-Jute
- Rice-Potato-Rice (Boro)
- Rice-Potato-Onion
- Rice-Rice (Boro)



- Rice-Potato-Wheat/Sunflower
- Rice-Jute
- Rice-Wheat-Rice
- Rice-Potato-Maize
- Rice-Rice
- Rice-Potato-Rice (Boro)
- Rice-Potato-Onion
- Rice-Lentil-Onion



Flooding in Bihar



Rice-Wheat

- Opposing needs
 - Standing water for rice
 - Mulch for wheat is ideal
- Challenge: develop double no-till system
- Brown manuring can help in contrasting edaphic requirements

IGP Overview

- Western IGP (irrigated)
- Land holding
 - Large: > 4 ha
 - Medium: 1 – 4 ha
 - Small: <1 ha
- High mechanization

- Eastern IGP (rainfed)
- Land holding
 - Large: > 3 ha
 - Medium: 0.5 – 3 ha
 - Small: < 0.5 ha
- Low mechanization

Vietnam

- 22% agriculture area; total land area 33mha; 75% dependence
- Per capita agri lands 900 m³
- Forest coverage 36.5%
- 7.4mha rice; 3rd largest exporter



Key Issues: Vietnam

- North Vietnam
 - Irrigated: 2 rice crops and 1 winter crop
 - Central to food security
- Hillside
 - Steep slopes
 - Heavy population
 - Livestock
 - Area sizes declining
 - “Shifting cultivation”



CA in the IGP

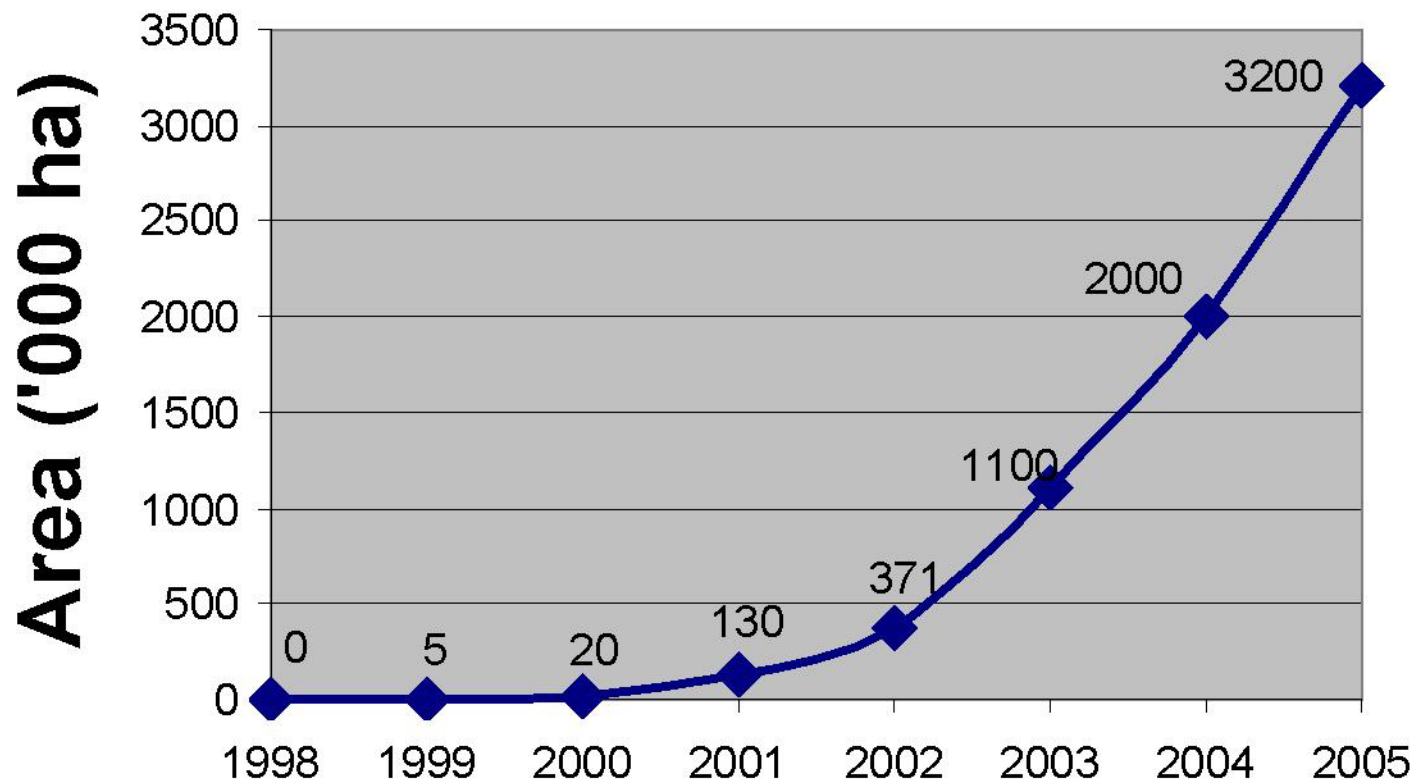
- Requirements: growing rice and wheat
- Using Resource Conserving Technologies
- ZT wheat after rice
 - Short-term profitability
 - Savings in cost, fuel
 - Increase in yields

Rice, Maize in Vietnam

- Variation between northern (sub-tropical) and southern (tropical) parts
- Diverse CS exist in mountainous regions
- South – warmer: three rice crops
- North – 2 rice varieties, maize, legumes, vegetables
- Upland/sloping: double maize, intercrop, relay cropping
- Goats are reared

Adoption

Zero-Till Wheat



Resource Conserving Technologies

- Offers options to farmers
- Provides complementary packages
 - ZT DSR
 - FIRB
 - Laser leveling
 - Double no-till rice + following crops
 - Direct dry seeding
 - Residue management practices

RCT Benefits

- Timely sowing
- Higher yields
- Better nutrient and water use efficiency
- More diverse rotations
- Less use of fossil fuel
- Prevent residue burning
- Better crop stands
- Lower costs
- Less water pollution, less ground water mining
- Fewer weeds and pests
- Reduced cost & CO₂ emission
- More C sequestration and better soil health

Effect of precision land leveling on water use and yield of unpuddled transplanted rice

Leveling practice	Total water use (m ³ ha ⁻¹)	% Saving in water	Rice yield (kg ha ⁻¹)	WP (Kg m ⁻³)
Laser leveling	6900	31.16	5800	0.84
Traditional leveling	9050	-	5500	0.61

† Mean of 40 farmer participatory trials



Crop Residue Burning



Zero-Till Technology: Reducing soil compaction



Zero Tillage Wheat in Control Traffic
Rice+ Sesbania
D/S-26/12/04

Controlled Traffic



Paired Rows



Controlled traffic-Paired Rows

FIRBS : Promotes Alternate Sources of Productivity Growth



Sugarcane + Wheat



Wheat + Mint

Crop Residues Management

- Punch Planter
- Double disk drill
- Happy Seeder
- Roto-double disk planter




Reduced Soil Disturbance

Surface Seeding



Rice Fallows



SURFACE-
SEDED WHEAT
100 Kg/ha.
DVS 11.1.2000

Brown Manuring in DSR Rice



12 11:45PM

03/08/2004

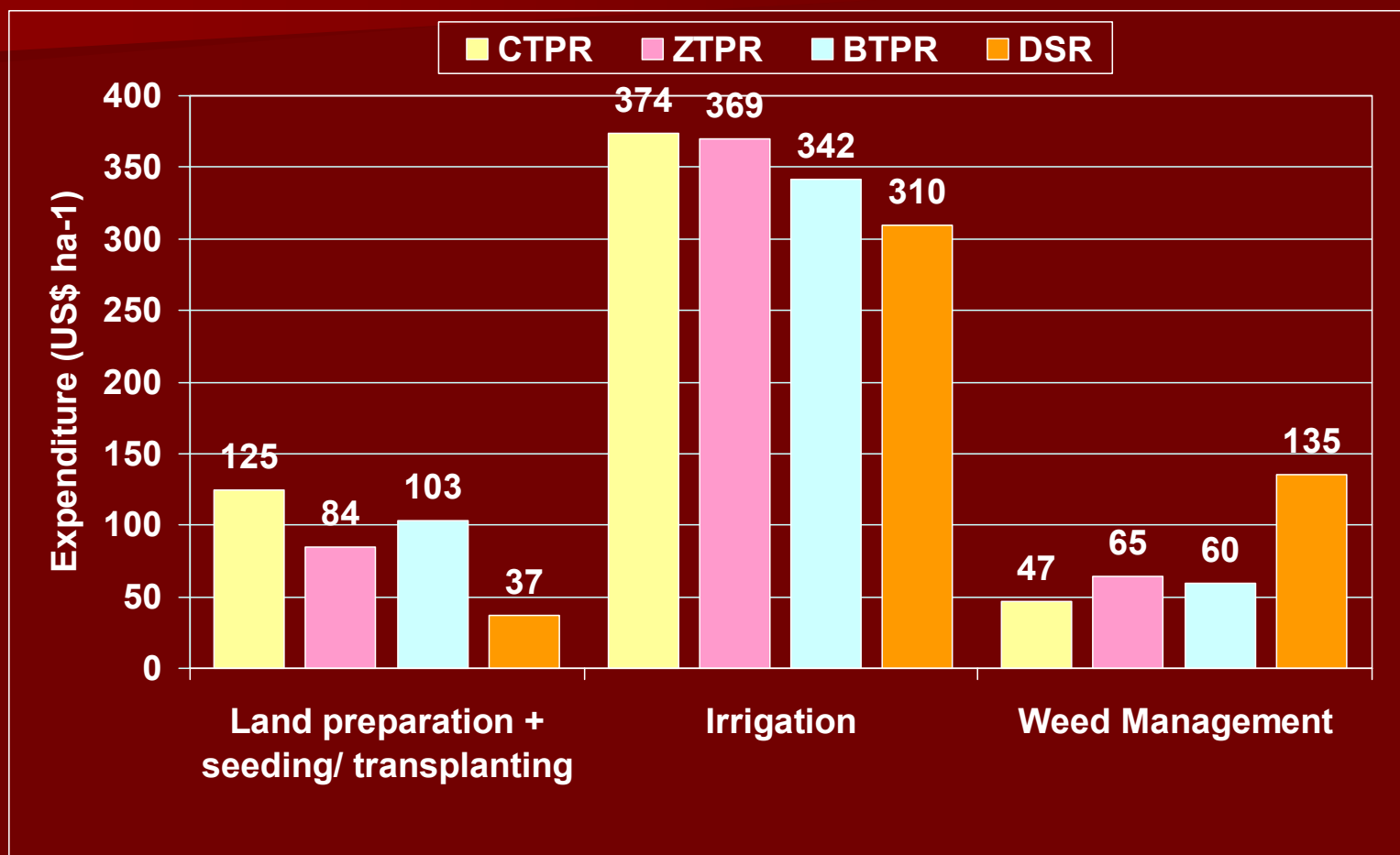
Water-wise Technologies: FIRB Systems



ZT Wheat after Rice

- Big savings for small farmers
 - Fuel/ha: USD 40 (Pakistan); USD 50 (India)
- Encourages timely sowings
- Stronger crop establishments
- Yields: USD 20-40 / ha
- Farmers purchase ZT drills
- Weed and residue management

Major contributions towards cost of cultivation in different CETs



N Management-LCC & USG



- Single deep placement of N, USG and LCC all can save $\sim 20\%$ N in RWCS.

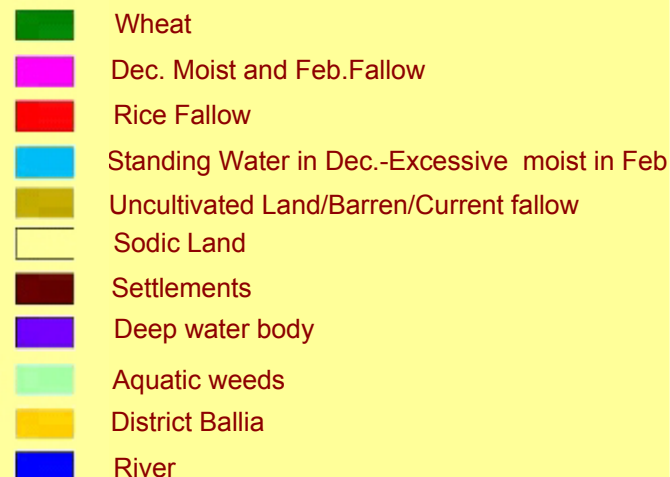
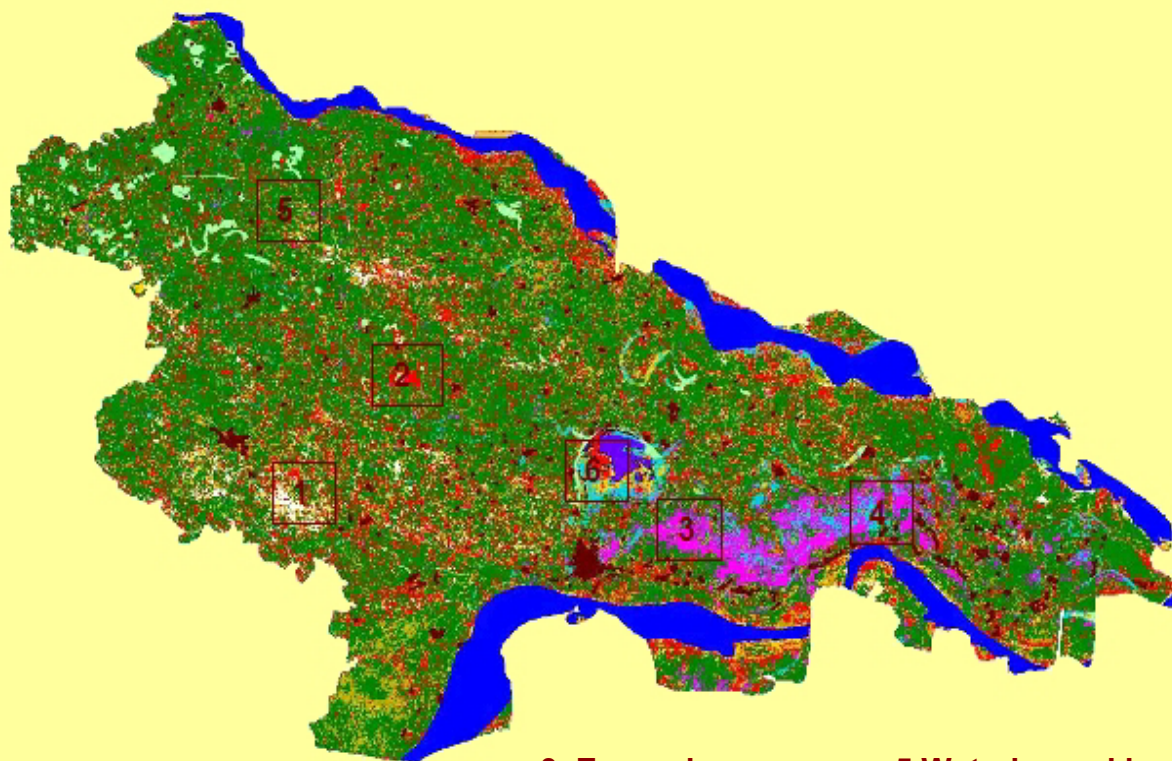


Quality Protein Maize

- Double productivity and profitability
- Improved balance and composition of amino-acids
- Improved Biological Value and digestibility



Targeting the Resource Conserving Technologies



**1. Sodic Land-
Bed Planting**

**2. Late Wheat (Area more
than 85% of the wheat
area) -Advancement of
sowing date through
Zero Till**

**3. Excessive
Moisture in Dec.-
Surface Seeding**

**4. Very Deep water
During Kharif-Deep
Water Rice**

**5. Waterlogged in
Dec.-Boro Rice In
Jan-Feb**

**6. Diara Lands/Rice
fallow-Introduction of
Pulses**

Using IT to spread knowledge

- Networking
- Knowledge
- Visibility
- Output
- Learning
- Memory
- Ownership



The screenshot displays the KASSA website interface. At the top, there is a banner image of a rural landscape with a small house and fields, followed by the large text 'KASSA' and the code 'GOCE-CT-2004-505582'. Below this, the tagline 'Knowledge Assessment and Sharing on Sustainable Agriculture' is visible. The left sidebar contains a menu with links: Search, News, Project, Partners, and Project members only. The main content area shows the search results for 'rice', with a search bar containing the word 'rice' and a 'Search' button. Below the search bar, the text 'KASSA Database' is displayed, followed by the results 'Results 1 - 25 of about 140 for rice.' The first result is titled 'Applications of farm planning models for alternative crops adjustment in the rice wheat system' and includes a brief description and authors: 'M.A.Khan, T.Rehman and H.Shah (for PARC)'. The second result is titled 'Opportunities for crop diversification- An Indian perspective' and includes a brief description: 'Exploring the innovative ways of diversification of rice-wheat system with help of RCTs ...'.

KASSA
GOCE-CT-2004-505582
Knowledge Assessment and Sharing on Sustainable Agriculture

Search
News
Project
Partners
Project members only

Home > Search

Search

rice Search Search Options

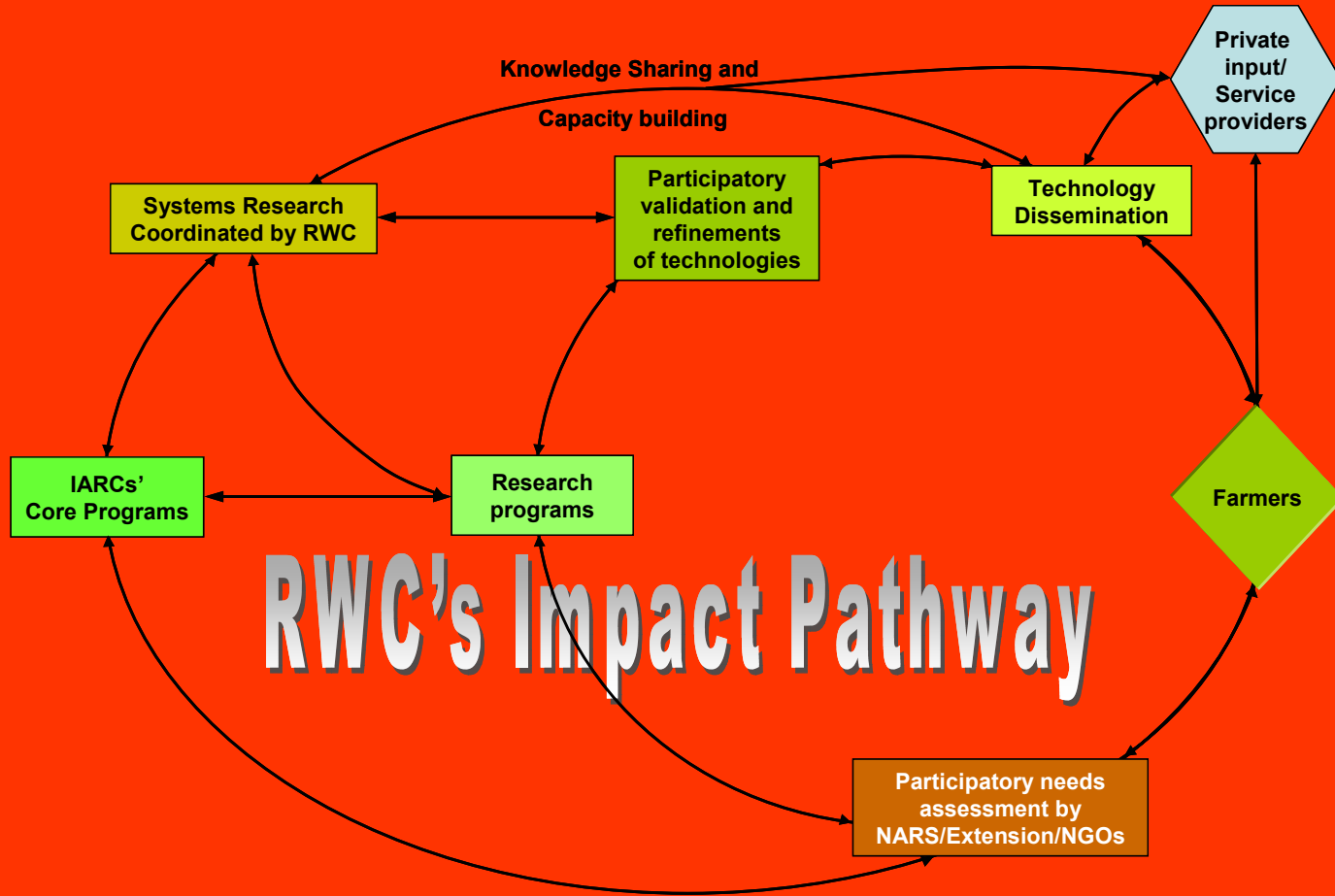
KASSA Database Results 1 - 25 of about 140 for rice.

Applications of farm planning models for alternative crops adjustment in the rice wheat system
A mathematical programme model was built to measure the potential adjustment required on small family farm household on introducing sunflower as an alternative crop in the rice wheat system. ...
M.A.Khan, T.Rehman and H.Shah (for PARC)

Opportunities for crop diversification- An Indian perspective
Exploring the innovative ways of diversification of rice-wheat system with help of RCTs ...

The database search service
in classrooms, on fields ...
on the KASSA website

IGP: Impact Pathway



Research Gaps

- Crop Establishment
 - RCT/CA in contrasting edaphic conditions
 - Prevent run-offs and water infiltration in sloping areas
 - Modify drill design for planting in loose residues

Research Gaps

■ Soil Fertility & Crop Nutrition

- Develop co-culture of green manure and cover crops
- Study role of residues in improving soil structure and quality
- Study detailed role of organic matter and carbon in soils
- Include sensor based technologies for improved N management

Research Gaps

■ Genetics

- Develop high quality grains for better health and nutrition

■ Environment

- Review & adjust practices to reduce GHG emissions and climate change concerns

■ Dissemination

- Development of effective knowledge management processes, information sharing, rural information centers with internet & DSS for Farm Advisory Services

Research Gaps

- Socio-economics
 - Develop indicators to assess costs and benefits of CA systems
 - Develop knowledge-based systems for upscaling and scaling out CA know-how

[Back to Menu](#)

Thank you