

SAFE-World Project/Initiative Summary

Country: Bangladesh

Project/Initiative Title: Minimum tillage wheat CIMMYT Bangladesh 1982

Scale: individual – many communities Nos. farmers: 710,000 Hectares: 262,700 ha

Agro-Ecological Zone: IV

Improvement types

1x	2	3	4	5	6x	7	8	9
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Success and Limits to spread

Success	Limits
3b,3c	3c

A. Key Impacts

A1 – Productivity

	Before/Without	After/With	% change
Wheat	1600 kg/ha	2340 kg/ha	46

A2 – Impacts on natural capital

Wheat requires the least irrigation water of all the winter crops of Bangladesh. Also, wheat represents much better food for human nutrition compared to the traditional staple, rice. Wheat requires NO PESTICIDES although we recommend a seed treatment but no one uses it. We recommend a combination of organic and inorganic forms of fertiliser which most growers use. Wheat works well with agroforestry; the reforestation of Bangladesh has been dependent on intercropping of cereals, and wheat fits well with agroforestry. Wheat straw is valuable as the thatch for roofs. In the past another permanent pasture grass was used. However, nowadays no one can allow land to remain idle for a permanent pasture, thus wheat fills the need for thatch

A3 – Impacts on local community (social capital)

Our studies show that wheat production is a family enterprise and thus, involves the whole family. We have surveyed many areas and developed a new methodology for training that is non-biased to gender called Whole Family Training. The husband, wife, and two adult children are invited (one should be a daughter). Together they participate in shared experiences of a group of 7 families about wheat production. One female trainer facilitates the group in discussions and one wheat scientist remains as a resource person—outside the circle of the group. Wheat researchers only facilitate, even sitting outside the group if they can offer something vital. Over 6000 families have had the training, but we feel that they in turn train others informally through discussions with neighbours

?? these are grower family groups among NGOs with whom we collaborate. That is the

real reason for success--the NGOs keep up the relationship with the families and groups hopefully supporting the technology training.

A4 – Impacts on households and individuals (human capital)

Our studies have shown that growers are motivated to grow wheat for cereal food security. Wheat is harvested in the driest time of the year and thus, is quite storable. Food security is the major stepping stone out from subsistence farming to more of a farming enterprise. Wheat has double the protein of rice (the major cereal in Bangladesh --Bangladesh consumes more rice per capita than any other country in the world except Madagascar). Thus, the nutritional value of wheat production lies in its consumption and our studies show the poorer marginal growers as well as a growing number of the middle class consume wheat.

A5 – Key changes in farm / regional system

We have also worked hard to ensure wheat prices to be at world levels. We have also pushed wheat consumption due to the additional value over rice, the major cereal of Bangladesh. We have also pushed minimum and/or zero tillage for wheat cultivation.

Changes in input use: Wheat requires less water--more sustainable. No pesticides as there are no pests. Studies show there are few scopes for increase in pests in the future. Also surveys confirm more balanced use of organics, N, P, K, and even more micronutrients like Zn and S. We are trying to engage more hand tractor accessories that allow rice and wheat stubble to be incorporated for sustaining the OM of the soil better.

Change in local/ regional food security: Mentioned above the cereal security pesticide, fertiliser use and its fruits. Wheat is harvested in the leanest period of cereal production; thus, wheat is largely consumed when harvested. However, wheat represents only 2 Mt out of the required 22 Mt.

By far, having the amount of minimum tillage gave increases in wheat production due to the less turn around time and the timeliness of sowing wheat compared to conventional tillage that must wait for ideal soil conditions for plowing, soil drying, and levelling.

B. Types of Sustainable Agriculture Improvements

- Type 1: Better use of available renewable natural capital
- Type 2: Intensification of single sub -component of farm system
- Type 3: Diversify by adding new productive natural capital and regenerative components
- Type 4: Better use of non-renewable inputs and technologies
- Type 5: Social and participatory processes leading to group action for making better use of natural capital
- Type 6: Human capital building through training-learning programmes
- Type 7: Access to Finance
- Type 8: Add value by processing to reduce losses and increase returns
- Type 9: Add value by direct or organised marketing of produce to consumers

	Yes/No	Narrative
Type 1	x	Minimum tillage for wheat after rice -wheat seed production and preservation; zero tillage for wheat for quick turnaround time

		after monsoon rice.
Type 2		
Type 3		
Type 4		
Type 5		
Type 6	x	the Whole Family Training that uses participatory approaches for exchange of information. The powers of NGOs within villages are tapped to produce change or transfer technologies
Type 7		
Type 8		
Type 9		

C. Key Lessons: Success, Spread and Constraints

C1 – Key Lessons Learned

That if a technology is jointly produced and then jointly transferred to other growers, the chances of its success will be greater. The zero (surface seeding) tillage has just begun in Bangladesh but there is room for expansion as the growers want to take this up. Minimum tillage was demonstrated to growers for 6 years and when conditions for its use occurred in 1998/99, the growers adapted it by 70% of their areas.

C2 – Aspects of local/national context contributing to success

Wheat mills have emerged all over the country, providing an outlet for wheat production on a sustainable level throughout the year. Quality data are provided for the wheat produced in Bangladesh.

There are approximately 25 wheat research scientists who work collaboratively and offer the leadership for the programs. CIMMYT acts only as a partner/facilitator in their work. It has been their dedication throughout the years that have given wheat producers the technologies, seed, and varieties to make wheat production increase.

C3 – Limitations preventing spread

The scientists work under an institute that does not facilitate to their scientific needs very well. Lack of promotions, financial and incentives has crippled their working environment such that over 40% have immigrated to other countries. Lack of outside funds has also limited the amount of resources CIMMYT can provide as a supplement to their government funding.

Funding is one major constraint we are facing now. We have \$100K per year from USAID, but over 50% must go to maintaining the CIMMYT office and administration leaving limited funds to do justice to the operation of the Whole Family Training as well as conducting future research.

C4 – Policy issues

Fortunately, the agricultural policy of the government of Bangladesh is very market oriented with no subsidies on inputs and having the highest commodity prices of South Asia. I already mentioned the institutional and economic factors that were preventing expansion.

C5 – Scaling-up

More funding needed

D. Contact Point for Project/Initiative

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