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International Fertilizer Development Center (IFDC) is a Public International Organization (PIO) based in Alabama, USA. IFDC focuses on increasing and sustaining food security and agricultural productivity in developing countries.

Managing Editor:
Ishrat Jahan
Resident Representative
IFDC Bangladesh
Eurasia Division and
Project Coordinator, AAPI

Design and Layout:
Syed Afzal Hossain
Data Management Unit, AAPI

Notes from Chief of Party, AAPI

As we said last month, the *Aus* crop has not fared well this year. The *Aus* lands were flooded early, and seedbeds were damaged by torrential rain. With the number of areas of transplantation down, our areas of urea deep placement (UDP) coverage are down proportionally. The *Aus* crop is renowned as a high-risk crop and we feel the impacts of the weather just as the farmers do. It is *Aman* and *Boro* where the larger areas are planted and where UDP makes its biggest impact.

This bulletin includes articles on our UDP demonstrations. Dr Shaharuk Ahmed has written about UDP demonstrations. Ms Sonia Kutubuddin writes about a successful woman farmer in Gopalganj and how UDP technology is changing the life of her and her husband.

It is pleasing to see the greenhouse gas (GHG) emission research has settled into its locations in Bangladesh Agriculture University (BAU) and Bangladesh Rice Research Institute (BRRI). It is too early to see results, but the research project is up and running.

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UDP *Boro* 2013 Demonstration Results: Farmers' Response

Field demonstrations are one of the most powerful tools that can demonstrate the benefits of a technology and portray it in an

attractive manner in farmer fields. They are not only a method of technology dissemination but a teaching aid that stimulates farmers' enthusiasm as well.

In *Boro* 2013 season, IFDC's AAPI project conducted demonstrations to show the advantages of improved practices compared to traditional farmers' practices. The main objectives are to (i) demonstrate the impact of UDP technology on food security and income generation and (ii) motivate farmers to adopt UDP technology. To achieve these objectives, 400 *Boro* rice demonstrations were established with a number of recommended varieties in AAPI project areas.

Demonstration: Demonstration plots are 400 square meters (m²) in size with two treatments each 200 m². Both treatments have a basal dose of fertilizer (except nitrogen [N]) for the appropriate agro-ecological zones as recommended by the BRRI's 2007 Rice Production Manual and the Bangladesh Agriculture Research Council (BARC)'s 2005 Fertilizer Recommendation Guide. One treatment receives broadcast urea at the recommended dose and the other receives *Guti* urea (2.7 gram [g] = 169 kilogram [kg]/hectare [ha]). Both of the treatments are planted with the same variety with line to line and plant to plant distance of 20x20 centimeters (cm). Irrigation and other crop management practices are performed regularly by the farmers with the help

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Contact Persons:

Ishrat Jahan

Grahame D. Hunter

Address:

Dhaka Office:

Road No. 62,

House No. 4B, Apt-B2

Gulshan - 2, Dhaka -1212

Bangladesh

Tel: 880-2-9894288

880-2-8817391

Fax: 880-2-8826109

Website: www.aapi-ifdc.org

www.ifdc.org

Barisal Office:

"Zohora"

834 (New) Police Line

Road, Barisal

Tel: 0431-2176566

Jessore Office:

1351 Police Line Road

Talikhola, Puraton Kasba

Jessore

Tel: 0421-60986

AAPI Management:

Ishrat Jahan,

Project Coordinator;

Grahame D. Hunter,

Chief of Party;

Md. Mofizul Islam,

Sr. Agriculture Specialist;

Dr. Shaharuk Ahmed, Md.

Fozlul Hoque, Md. Iqbal

Hossain, Dr. Badirul Islam,

Agriculture Specialists;

Md. Shamsul Alam,

Abul Hossain Mollah,

Mahmood Hussain,

Dr. AKM Farhad

Training Specialists;

Dr. Md. Abdul Mazid Mia,

Mainul Ahsan, Soil Scientists;

Md. Nurul Islam,

Market/Business Develop-

ment Specialist;

Ram Proshad Ghosh,

Mechanical Engineer;

Dr. Abdul Wohab, Agriculture

Engineer; Sonia Kutubuddin,

Activity Coordinator, Rubina

Islam, Gender Specialist;

Syed Afzal Mahmood

Hossain, Senior Data

Management Specialist;

AFM Saleh Chowdhury,

Chief Accountant;

Bishnu Rup Chowdhury,

Administrative and

Procurement Officer

of AAPI field monitoring officers (FMOs) and Department of Agricultural Extension (DAE) sub-assistant agriculture officers (SAAOs). The crop is harvested when 80 percent of the grain is ripened. Two plots selected at random of size $5 \times 2 = 10 \text{ m}^2$ (250 hills) in each treatment are cut, yield data recorded, wet paddy weighed and moisture measured to compute per ha yields at 14 percent moisture level.

Results: Table 1 provides the crop-cut results by variety for the demonstrations and effects of N fertilizer applied as broadcast urea or UDP on the grain yield (kg/ha).

Table 1 indicates that the high-yielding variety (HYV) BRRI Dhan 29 produced the highest yield in Feed the Future (FTF) districts when using UDP (7,694 kg/ha), followed by the hybrid (7,592 kg/ha). BRRI Dhan 50 (6,823 kg/ha), BRRI Dhan 28 (6,768 kg/ha) and BINA Dhan 8 were the lowest yielding (6,508 kg/ha). A similar order of grain production was

also observed with broadcast urea. However, in the case of the Mymensingh and Sherpur (M&S) districts, the hybrid variety produced the highest yield when using UDP (8,170 kg/ha) followed by BRRI Dhan 29 (7,382 kg/ha) and BRRI Dhan 28 (6,426 kg/ha). Also a similar order of grain production was observed with broadcast urea. In terms of yield difference between UDP and broadcast urea, the maximum difference was observed with the hybrid in both FTF and M&S districts followed by BRRI Dhan 29 or BRRI Dhan 28 and the lowest difference in BINA Dhan 8.

The demonstration data was also used to look at the influence of N fertilizer application parameters on the amount of fertilizer used, cost of fertilizer and grain yield under different urea application methods. The data from demo plots in Table 2 exhibited significant gains in terms of savings of N fertilizer (126 kg/ha), cost of fertilizer (Taka [Tk.] 2,190/ha) and grain yield (866 kg/ha).

Table 1. Effect of N-Fertilizer Applied as Broadcast Urea or UDP on the Grain Yield (kg/ha) of Different Rice Varieties Grown in Boro 2013 Demo Plots

Varieties	No. of Demos	Yield (kg/ha)				Yield Difference	
		UDP (<i>Guti Urea</i>)		Broadcast Urea		(kg/ha)	(%)
		Average	CV	Average	CV		
Feed the Future (FTF)							
BRRI Dhan 28	161	6,768	9.69	5,938	10.76	830	14
BRRI Dhan 29	81	7,694	7.90	6,869	8.64	825	12
BRRI Dhan 50	19	6,823	9.02	6,039	9.72	784	13
BRRI Dhan 47	11	6,534	12.29	5,857	12.23	677	12
Hybrid	19	7,592	10.82	6,455	10.48	1,137	18
Bina-8	8	6,508	9.38	5,876	11.17	632	11
Mymensingh and Sherpur (M&S)							
BRRI Dhan 28	55	6,426	9.28	5,558	12.47	868	16
BRRI Dhan 29	27	7,382	12.67	6,338	13.12	1,044	16
Hybrid	14	8,170	7.71	7,074	9.61	1,096	15

Source: AAPI Crop Cuts from Demonstration Plots, Boro 2013.

CV=Coefficient of Variation

Table 2. The Influence of N Fertilizer Application Method on Fertilizer Used, Cost of Fertilizer and Grain Yield of Rice, *Boro* 2013

Items	Fertilizer Used (Average)	Fertilizer Cost (Average)	Yield (Average)
	(kg/ha)	(Tk/ha)	(kg/ha)
<i>Guti</i> Urea	169	3,713	7,029
Prilled Urea	295	5,903	6,163
Difference	126	2,190	866
CV	0.25	0.24	12.39
LSD (0.05)	0.08	1.63	113.82

Source: AAPI Crop Cuts from 397 Demonstration Plots, *Boro* 2013

Note: Price of fertilizer: Prilled urea 20.00 Tk/kg;
Guti urea: 22.00 Tk/kg

Farmers' Response: Most of the demo farmers showed positive attitudes towards the UDP technology. Their responses are as follows:

- UDP technology helps to increase production (both grain and straw) by increasing effective tiller, grain quality, grain weight and decreasing sterility.
- It helps to reduce the cost of urea.
- One time application is enough that reduces the risk for non-availability of urea during peak period.
- Less pest and disease and weed infestation thereby reduces production cost.
- Storage of *Guti* urea and handling are problematic.
- Deep placement of *Guti* urea and line sowing of seedlings increase initial cost of labor.
- Supply of *Guti* urea should be accessible and delivered on time to farmers like prilled urea.

Finally, they also pointed out that currently there is no scope to consider a farmer as an isolated entity. Their activities, production and profit have assumed a dynamic character in terms of market systems and socio-political issues. Today's farmers want to know in clear detail about a technology, its problems and opportunities that would pave the way to better livelihoods.

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Back to the Village: the Story of a Woman Farmer

Momtaz Begum, a 37-year-old mother-of-two, is making household and business decisions with greater confidence and self esteem after being involved in IFDC's AAPI project. She grew up in Hiron village, Hiron union, Kotalipara *upazila* of Gopalganj district, where her father introduced her to farming. During this time, she completed eight years of school education and was about 15 when she married Iskandar Ali Sheikh of Khulna town. She lived with her husband as a housewife in Khulna town for about eight years. Her frequent visits to her father's home village were occasions for her to learn lessons and gain new ideas about farming, creating in her a strong desire to return to the village and start farming.

Eventually, with the consent of her husband, she decided to leave Khulna to raise her children in the village and invest in farming. Because of her farming background, her husband agreed to support her, financing a lease of two bighas of land (1 bigha=52 decimal in Gopalganj). She hired tractors to plow the fields, went to the markets to purchase the best seeds, enlisted her land with the irrigation water supplier and did everything required for a farmer. She took the advice of the DAE/SAAO and used local improved varieties of rice seeds for *Aman* and high-yielding varieties of rice seeds during the *Boro* 2011 season, employing laborers to broadcast urea on her *Boro* crop. Momtaz's eagerness to learn new skills and her willingness to work hard paid off from the beginning. The yield she received was satisfactory: about 20 maunds per bigha (1 maund=40 kg). Sadly, her father died, so she began supervising the farming of her father's two bighas of land.

The SAAO of her father's village under Majhbari block, Mr. Santosh Ghorami, advised the local farmers and Momtaz of how to correctly transplant aged seedlings in the fields and convinced the irrigation managers to supply irrigation at the correct time. From then on, Momtaz's rice fields in her leased plots and her father's plots obtained a higher yield of 25 to 26 maunds/bigha. Gradually, in the next few years she leased three more bighas of land.



Momtaz Begum in front of her father's house during interview.

Before *Boro* 2011, the AAPI project staff approached Momtaz through Mr. Ghorami and asked her to establish a UDP technology demonstration on one of her plots in Majhbari block. After receiving training on demonstration plot establishment and management, Momtaz established the demonstration plot and also applied *Guti* urea to an additional 40 decimals of land on her own initiative. Momtaz was overjoyed by the 40 maunds/bigha yield she received.

In *Boro* 2012, she brought all five bighas of her land and her father's two bighas of land under *Guti* urea. In all of the plots, she received yields of 40-45 maunds/bigha. The return obtained from the higher yields gave her husband confidence to leave his job as a baker in Khulna and start a small business in the village.

This year, in *Boro* 2013, seven bighas of land under Momtaz's supervision yielded 45-50 maunds/bigha on average. Her neighbors and relatives visited her plots to see the extraordinary output, and she is confident that many farmers will be encouraged to use *Guti* urea in the next season. After paying harvest and post-harvest laborers and paying for her irrigation scheme, Momtaz has kept her share of the paddy. Her plan is to sell when the price increases. Momtaz and her husband have started building a new brick house for their family. The construction of the house is progressing slowly, because the family adds another phase to the house as they can afford. Momtaz is sure that very soon the new house will be finished. She is thankful for UDP technology and to IFDC and the AAPI project for helping her improve her family's quality of life.

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Activity Achievements in July 2013

From June 25 to July 24, 2013, AAPI successfully completed activities as shown in the following Table.

Indicator	Unit	Season Target	Achievement in July 2013	Season Total	% of Target
<i>Aus</i> season					
UDP coverage	ha	215,848	29,343	159,650	74%
Farmer training	Batch	965	5	885	92%
Field demonstration	No.	245	29	230	94%
Motivational meeting with old farmers	Batch	83	40	691	784%
Sale of briquette machines	No.	45	5	7	16%
Small business management training	Batch	2	1	5	250%
<i>Aman</i>					
UDP coverage	Ha	686,134	12,922	12,922	2%
Extension staff training	No.	28	15	15	54%
Farmers training	Batch	1,495	254	254	17%
Extension staff meeting	No.	12	3	3	25%
Orientation training	No.	24	15	15	63%
Field demonstration	No.	348	33	33	9%
Trials	No.	10	1	1	10%
Motivation field trips	Batch	5	1	1	20%
Motivational meeting with old farmers	Batch	584	177	177	30%
Training of briquette producers on production	Batch	22	6	6	27%

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AAPI Events in August 2013

In the month of August 2013, AAPI is concentrating its activities for *Aus* and *Aman* paddy. In this month, the following activities will be carried out.

- 896 batches of training for rice and vegetable farmers (UDP and NPK)
- 7 batches of extension staff training
- 297 field demonstration established
- 23 field trial (rice) established
- 4 small business management training programs
- 9 batches of briquette producers training
- 616 motivational meetings with old farmers
- 542 *Aus* crop cut (demo, trial, farmer plots)
- 21 stakeholders workshop
- 14 extension staff meeting

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