UDP and Rice production in Nigeria: The experience so far

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UDP Technology... Agenda

- What is UDP technology?
- What are USG?
- How to apply briquettes?
- Benefits of briquettes
- Challenges
- Building Demand
- Enabling Supply
- Moving Forward
What is UDP technology?

Urea Deep Placement (UDP) is the practice of placing briquetted urea 5-7cm deep in puddled transplanted rice fields, at spacing of 40 cms.
What are USGs?

- Urea Super Granules (USGs) are applied once a growing season— a week after transplanting rice seedlings.
- One USG is applied geometrically between 4 rice stands.
- They are oval compacted pellets produced by briquetting granular urea using briquetting machines to 1.8 gram or 2.7 grams.
- Notore Chemical industries is currently producing and marketing 2.7g in 10 kg bags.
- USG releases N slowly and is placed out of the reach of weeds’ roots.
The briquette product

Urea Briquettes

NPK Briquettes
Urea + Diammonium phosphate + Muriate of Potash
How do farmers apply UDP technology?
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How do farmers apply UDP technology?
Comparison of N Balance in Rice Fields

Urea Split Application
- In Soil: 33%
- In Straw: 9%
- In Grain: 23%
- Unaccounted: 35%

Urea Deep Placement
- In Soil: 31%
- In Straw: 23%
- In Grain: 42%
- Unaccounted: 4%
Comparison of Urea Applications

2 Out of 3 Bags of Urea lost by Broadcast

1 Out of 3 Bags of Urea lost using USG
What are the benefits of UDP technology?

- Increases efficiency of N use in rice by placing it in the soil—reducing N loss through gaseous emissions and/or floodwater run-off. In broadcast application of urea, 40% of N fertilizers volatizes into the atmosphere.

- Nitrogen use efficiency under irrigated rice increases by 40%.

- Reduces weed competition as fertilizer is placed near rice plants’ roots.

- Irrigated rice crop yields increase up to 20-30% (Niger State 2012).
UDP Benefits Rice Sector Stakeholders

For farmers:
• Decrease in production cost
• Increase in yield
• Increase in profit

For entrepreneurs:
• New area of business & profit
• Opportunity to contribute to national development

For the national economy:
• Increase in rural employment opportunities
• Increase in rice production

For the environment:
• Reduces Nitrogen runoff and volatization
What are the challenges of UDP technology adoption in Nigeria?

- Limited Supply and Demand of USG
- UDP Best Practices are not well-known to rice farmers
- Many farmers complain that USG application is labor-intensive
- Farmers incorrectly apply USGs to other crops and/or do not practice rice cultivation and field management best practices, limiting USG’s yield effect.
Since April 2012...

The FMARD (via NPFS), Notore and MARKETS II/IFDC began collaborating on expanding the Supply and Demand of Urea Super Granules in targeted Nigerian rice producing regions.
Building Demand: UDP Technology Transfer Centers (TTCs)

Badegi, Niger 2013

Wurno, Sokoto 2013
2012 Dry Season Yields with Transplanted Rice

<table>
<thead>
<tr>
<th>Region</th>
<th>UDP (Mt/ha)*</th>
<th>Farmers' Practice (Mt/ha)*</th>
<th>Difference (Mt/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gombe</td>
<td>6.79</td>
<td>4.18</td>
<td>2.61</td>
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<tr>
<td>Kebbi</td>
<td>7.74</td>
<td>5.71</td>
<td>2.03</td>
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<tr>
<td>Niger</td>
<td>6.68</td>
<td>3.26 3.42</td>
<td>3.26 3.42</td>
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<tr>
<td>Average</td>
<td>7.07</td>
<td>4.38</td>
<td>2.69</td>
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Cost-Benefit Analysis from 2012 UDP Demonstrations

- Production Costs: Farmer's Practice (311,813) vs. UDP (299,150)
- Harvest Revenue: Farmer's Practice (267,847) vs. UDP (447,051)
- Overall Profit: Farmer's Practice (447,051) vs. UDP (147,900)

Profit Calculations:
- Overall Profit: Farmer's Practice - Production Costs = (447,051 - 311,813) = 135,238
- Overall Profit: UDP - Production Costs = (447,051 - 299,150) = 147,900

Naira
Since 2012, MARKETS II/ IFDC...

• 13 Technology Transfer Centers (TTCs) managed by rice farmers and state ADP officers;
• Trained more than 6,000 farmers (including Notore staff) on UDP technology best practices;
• Developed training curriculums to improve dissemination of USG benefits to farmers for coming seasons;
• Partnered with Notore, the FMARD (via NPFS), and state ADPs on supplying USG to pilot rice growing markets.
SUPPLY AND DEMAND OF USG IN NORTHERN NIGERIA

Legend
- 2012/2013 Dry Season Agro Dealer Locations for Briquetted Urea
- 2012/2013 UDP Rice TTCs and Tomatoes Field Trials
- 2011/2012 Dry Season Rice TTCs
- 2012/2013 Dry Season Rice TTCs

Scale: 210 105 0 Kilometers
Building Supply: Notore’s Commercial Production of USG
Briquetted urea supplied to the market since April 2012
Since April 2012, Notore...

- Developed a production line for briquetting urea, packaging and shipping it to select retailers;
- Developed supply channels of USG to targeted rice grower regions in Nigeria;
- Stocked 230 Mt of USG in 10kg bags (23,000 unit sales);
- Developed agro dealer demonstration plots after attending the MARKETS II trainings at TTCs.
Moving Forward

- Continue working with old and new partners to expand briquetted fertilizer supply while continuing to develop and expand market demand
- Explore briquetted fertilizer application rates on other crops (soya, maize, tomatoes, sorghum)
- Develop briquetting NPK capacities
- Develop mechanized applicator to facilitate labor of briquetted fertilizer application
- Explore innovative ways to expand Extension training
Thank you