

# **BUSINESS SERVICE ASSESSMENT**

**Provision for improved knowledge of the farmers about the soil nutrient contents for deciding the proper dose and application method of fertilizers and pesticides**

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*This DRAFT report, prepared by IDE and KATALYST with a view to feeding into the design of BDS market development interventions in the vegetable and pond fishery sectors, provides an overview of the sector and points to interesting avenues for further investigation (service channels, business case for delivery, links to competitiveness, etc.) and intervention design. This assessment report does not reflect KATALYST's current methodology and final conclusions on the sub-sector.*

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### 1. The Process

IDE and KATALYST's Rural Market Development analysis particularly on Vegetables Sub-sector conducted between June and September 2003 pinned down the major constraints besetting the sub-sector. For this analysis, 105 Vegetables and related SMEs were visited and interviewed. A total of 25 (See Box 1.) constraints have been identified, described and catalogued. With these constraints, the team sketched out three broad yet possible business services that can address or strengthen the sub-sector.

The team then filtered the services via a set of four criteria (potential impact that will take place, potential number of beneficiaries of the service, Seasonality and appropriateness for IDE and KATALYST). The objective of this filtering was to identify three initial services to focus on. The selected services were: (a) Provision for good quality vegetables seed available in the rural market (b) Provision for good quality fertilizers, pesticides and micronutrients available in the market (c) Provision for improved knowledge of the farmers about the soil nutrient contents for deciding the proper dose and application method of fertilizers and pesticides.

**Box 1: Number of Constraints**

<i>Type of Constraints</i>	<i>Number</i>
Input Supply	6
Product Dev. & Process Tech	9
Policy	2
Market Access	7
Operation Environment	0
Organization/Management	0
Finance	1

After a series of deliberations, the team planned to do the three-service assessment exercise one by one. This report will incorporate all the information gathered regarding the third service assessment

The team began by developing tools for assessing the demand (Farmers) and supply (GO, NGO, Private Sector) of improved knowledge on doze and application method of fertilizer, pesticide, and micronutrients considering the soil needs. To gain deeper understanding of the constraints facing service providers and users, the team preferred qualitative over quantitative data capture questions. A sampling frame consisting of twenty-four service providers and twenty service users was planned. The actual business service assessment was carried out on 17 and 18 September 2003.

The team consolidated its findings and formulated four underlying constraints, which hinder the smooth run of the service provision. Then it identified several interventions on which IDE and KATALYST can facilitate. The team also has a plan to arrange an FGD to validate the constraints related to the supply and demand of improved knowledge on soil nutrient contents and its requirements, b) propose initiatives to address these constraints and develop the markets for better service.

After the FGD, the team will take a closer look at each proposed intervention in greater detail and select some intervention areas that IDE and KATALYST may seriously

consider. To do this, the team will apply the following criteria: (a) extent of its impact (income, employment, etc.) on SMEs, (b) number of SMEs (both directly and indirectly) that will benefit, (c) cost-effectiveness of the intervention, (d) chances of the intervention yielding in sustainable results, (e) IDE and KATALYST's capacity (including availability of human and financial resources) to implement or manage the intervention, and (f) time needed to complete the intervention.

### **2. Description of the Service (Provision for improved knowledge of the farmers about the soil nutrient contents for deciding the proper dose and application method of fertilizers and pesticides)**

Soil fertility and productivity is gradually decreasing due to decay of organic matter, soil's physical and chemical degradation, decay of nutrients, unplanned use of chemical fertilizers and pesticides, use of adulterated and low quality fertilizer and unplanned agricultural management. The PH is always changing because of these reasons. So it is very important to analyze soil and determine its nutrient requirement before applying fertilizers. On the other hand for protecting and preventing crops from disease and pest attack farmers are required to apply various pesticides. Presently farmers use fertilizer according to their own knowledge and previous experience, pesticides and micronutrients according to the advice of sellers/dealers, Block Supervisors and lead farmers. The consequence is, farmers are not getting the right output and their production cost is increasing. So the right information about the dose selection and application method is very important for the overall growth of vegetable sub sector.

This service assessment report deals with the knowledge of the vegetable farmers about the soil nutrient contents, which is very important for deciding the doze of fertilizer, pesticides, insecticides and micronutrients. It also incorporates the knowledge level of the farmers about the application method of those.

### **3. Related Sub-sector Constraints**

Lack of knowledge of the farmers about the right application/doze of fertilizers, pesticides and micro-nutrients leads to high investment and less profit.

### **4. Market Information (Supply and Demand of the Service)**

#### **4.1. The Information Supplier**

#### **Box 4: The Objectives of the Focus Group Discussion**

- ✓ Validate the constraints related to the supply and demand of improved knowledge on soil nutrient contents and its requirements
- ✓ Propose initiatives to address these constraints and develop the markets for better service

## **Vegetables: Dose and Application Method**

GO, NGO, Private Sectors (sellers/Dealers, Marketing Officers) and lead farmers are providing information to the farmers regarding the dose and application methods of fertilizers, pesticides and micronutrients. The service is either free or embedded. GO and NGOs are providing soil-testing facility in very limited capacity. Soil Research Department Institute (SRDI), a Government Institute, provides the service at the rate of thirty taka (subsidized). But they have to send the sample to Rajshahi and it takes three months. RDRS and Grameen Krishi Foundation (GKF) also provide the service but GKF provides through the SRDI. BRAC has soil testing capacity to provide their beneficiaries. CARE Bangladesh is making awareness campaign among their beneficiary levels about the soil-testing necessity but is not providing any testing service.

### **4.2. Market Size and Penetration**

In greater Rangpur it has been found that almost 80% people are involved in vegetable cultivation. But if we consider the commercial production about 60% of total population are producing vegetables in greater Rangpur. Again among the districts in greater Rangpur there are concentration of different vegetables in different districts. More specifically tomato production is dominant in Nilfamari, bitter gourd and pointed gourd in Rangpur, cabbage and cauliflower in Lalmonirhat. In Gaibandha and Kurigram all the vegetables of our concern are being produced in general. But the prescription for determining dose and application method is required everywhere regardless the place and the type of vegetables. Among all the service providers, dealers/sellers have the highest interaction with the farmers. It should be noted here that local sellers keep fertilizers, pesticides and micronutrients all together.

### **4.3 The Demand-Side: The Farmers**

The farmers need to go for fertilizers, pesticides and micronutrients and therefore need to know about their dose and application method. The easiest access that they get is to the sellers from whom they buy and take the advices as embedded service. Then they have the access to the lead farmers, then Block Supervisors and the NGOs.

#### **4.3.1. Satisfaction**

Satisfaction level about the information regarding doze and application method is very poor among the farmers. Although they have the highest access and interaction with the fertilizer/pesticide sellers, they have the least satisfaction about their knowledge. Farmers complain that the sellers prescribe wrong or low quality pesticides and micronutrients for making more profits. About the block supervisor farmers have different type of complaint, their service and prescription is comparatively better but they are not available. The NGOs that are working in greater Ranpur in this issue have a good reputation among the farmers, but they are only confined to their beneficiaries.

#### **4.3.2. Awareness**

## Vegetables: Dose and Application Method

Farmers are aware about the necessity of use of fertilizers, pesticides and micronutrients but it is true and unfortunate that they are not that much aware about the necessity of knowing their dose and application method. They use fertilizer considering their land sizes and crop types and mostly in trial and error basis. For pesticides and micronutrients they mainly depend on the dealers/sellers and ask them about the dose and application method. Although BS have better acceptance among the farmers level, only a little portion (1%-2%) go to the BS if situation arises. Overall awareness level about the requirement of knowing proper doze and application method is very poor. Table 1 shows the use of different fertilizers, micronutrients and pesticides by the farmers for tomato cultivation. It also delineates the standards of using those inputs.

**Table: 1**

	Present Practice Per Decimal				Standard Practice Per Decimal			
Fertilizer	Urea	TSP	MOP	Sulpher	Urea	TSP	MOP	Sulpher
	800 gm- 1 kg, 1- twice	1 kg- 1.5 kg, once	500gm – 800gm, once	250gm- 300gm, once	2kg 200 gm 3 times	1kg 800gm, once	1 kg, once	600gm once
Micro- Nutrient	Boron	Zink	Vitamin		Boron	Zink		
	10gm, 2-3 times	5- 10gm, once	10 ml, 3 times		5gm, once			
Pesticide	Dustban	Magic						
	10 ml, twice	10-12 ml, 1-2 times						

### 4.3.3 Usage and Transactions:

Less than 1% Farmers are now taking the soil testing facility from the providers mentioned earlier. The payment is after getting the testing report i.e. after three months. Other than soil testing facility all other information and services are basically free or embedded.

### 4.4 The Supply-Side: The Information Suppliers

As mentioned earlier soil-testing facility is very limited and only a few farmers are taking the service. Presently, GOB-Soil Resources Development Institute (SRDI), DAE agricultural development projects e.g. SFFP, ASIRP, NGOs (GKF, RDRS) is providing soil-testing services. SRDI provides soil-testing services through its few-fixed soil-testing lab. and two mobile soil testing van (Padma and Megna). SRDI soil- testing laboratories are mostly stationed at district levels, where farmers have limited access. Presently most farmers are determining the doze by trial and error method or through the help of

## Vegetables: Dose and Application Method

dealers/sellers, lead farmers, Block Supervisors etc. Through the NGOs the beneficiaries are having these information.

### 4.4.1 Seasonality

Tomato, Cauliflower and Cabbage are normally grown in winter season (December-March). Bitter gourd is grown almost round the year. So this information service is required almost the whole year.

### 4.4.2 Relationships and Transaction

The farmers are used to go to the sellers for fertilizers/pesticides. It is found that in an average a farmer needs to go to such a dealer/seller for four times during a season for a particular crop. Generally during the purchase the sellers tell the farmers about the pesticides and micronutrients' features and their doze and application methods. For fertilizer the farmers usually don't ask the seller anything about its doze and application method. The Block Supervisors visit the farmers' fields five days in a week and the service is free. They also arrange demonstration plot visit for the farmers and train them there. The service from NGOs is only confined to their beneficiaries.

**Soil testing:** Govt. institution i.e. SRDI announce in the farmers' level earlier and collect samples through DAE Block Supervisors once in a year. In case of other service providers either they take samples from the farmers or farmers bring samples to them.

### 4.4.3 Users, Trends and Marketing

Not only the vegetable farmers take the doze and application method knowledge service, rather all the farmers do this. Since soil-testing facility is limited and the awareness about its necessity at farmers' level is very poor, farmers are not taking the service a lot. Present practice among the farmers is actually to apply fertilizers according to their own knowledge, pesticides and micronutrients according to the sellers/dealers advice. Even farmers are not practicing according the sellers' advice always saying that they know less and practice by their own trial and error method.

### 4.4.4 Capacity

**Soil tests:** The response from demand level is not that much, so the existing service providers are still in under utilization situation.

**Oral Services:** Number of Block Supervisor in the country is presently about 8000 and the number has been decreased in the last decade. This number is not at all satisfactory for providing service properly. Their technical knowledge is better than any other in this service provision arena. Dealers/sellers of fertilizers/pesticides/micronutrients lack in knowledge about the products they are selling. BCIC dealers do have some training but the sub-dealers from whom the farmers buy don't have any training. These sub-dealers

## **Vegetables: Dose and Application Method**

and root level sellers actually reach the farmers along with other products of our concern i.e. pesticides, micronutrients. Farmers take advices from lead farmers, but those lead farmers, though they know better, are also not that much knowledgeable and they always look for better information which is very scarce.

### **4.4.5: Future Improvement**

The present practice of the farmers is more or less being in dark, without knowing the requirement of the land they are using fertilizers and micronutrients and thus they cannot maximize their profit. If the awareness about soil-testing advantages could be established among the farmers, they would feel interest to take the service, which is to some extent found in the service assessment study. The pesticide sellers could be trained to identify diseases and pests and thus prescribe. Along with the farmers are needed to become aware about using pesticides, micronutrients according to the prescription, selecting right products etc.

## **5. Constraints and Opportunities**

With the Business Service Assessment survey, the IDE and KATALYST team identified four main constraints that deprive the farmers from having better knowledge about doze and application method of fertilizers/pesticides/micronutrients. These have to be presented, discussed and validated by the FGD participants. The validation process will be consisted of four steps: (a) validation of business service constraint, (b) validation of constraints to the provision of the business service, (c) parameters for the formulation of interventions, and (d) formulation of interventions (e.g., what the participants and the IDE and KATALYST can do to resolve the constraint). The four constraints are:

1. Lack of knowledge of the farmers about the soil nutrient contents, its requirements (doze) leads them use fertilizers according to their assumption which turns into in appropriate use of fertilizers and thus less profit.
2. Fertilizer, pesticides, micro nutrient sellers lack in proper knowledge for prescribing these, which causes farmers use inappropriate quality and thus leads to lower profit.
3. Insufficient number of block supervisors (BS) of DAE makes the farmers dependent on less knowledgeable sellers, which ultimately affects their production.
4. Lack of access of the farmers to know about the soil nutrient contents, its requirement (doze) leads their use of fertilizer according to their assumption.

## **6. Providers of Improved knowledge and soil-testing facility to Target by IDE and KATALYST**

## **7. Potential Impact on the rural market**

By improving the knowledge and awareness about the benefit of right doze and application of fertilizers, micronutrients and pesticides and ensuring the availability of soil testing facility, the vegetable sub-sector is expected to (a) achieve higher quality vegetables, (b) increase yield and income, and (c) overall growth of the sub-sector.

### 8. Illustrative Interventions

After the service assessment still we are on process for arranging a FGD to validate what we have found in the field. But from our field experience and our team meeting we have summed up the following potential interventions where IDE and KATALYST facilitation may be needed:

#### *Business Service Assessment*

**Service: Provision for improved knowledge of the farmers about the soil nutrient contents for deciding the proper doze and application method of fertilizers and pesticides.**

**Constraint 1: Lack of knowledge of the farmers about the soil nutrient contents, its requirements (doze) leads them use fertilizers according to their assumption which turns into in appropriate use of fertilizers and thus less profit.**

#### **Proposed Facilitation Activities:**

- Arrange awareness campaign and community meeting at the farmers and dealers/retailers' level
- Provide training for the lead farmers and dealers/retailers
- Identify interested farmers, dealers/retailers who can disseminate the knowledge

**Constraint 2: Fertilizer, pesticides, micro nutrient sellers lack in proper knowledge for prescribing these, which causes farmers use inappropriate quality and thus leads to lower profit.**

#### **Proposed Facilitation Activities:**

- Arrange training for the retailers/dealers
- Supply literature to the retailers/dealers to increase their knowledge
- Identify dealers/retailers who can be trained and who can disseminate knowledge to others

#### **Box 5: IDE and KATALYST's Interventions Selection Criteria**

- ✓ Extent of its impact (income, employment, etc.) on SMEs,
- ✓ Number of SMEs (both directly and indirectly) that will benefit
- ✓ Cost-effectiveness of the intervention
- ✓ Chances of the intervention yielding in sustainable results
- ✓ IDE and KATALYST's capacity (including availability of human and financial resources) to implement or manage the intervention
- ✓ Time needed to complete the intervention.

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- Promote linkages between the companies and retailers through dealers and distributor
- Involve BFA, BPA to implement the proposed facilitation activities

**Constraint 3: Insufficient number of block supervisors (BS) of DAE makes the farmers dependent on less knowledgeable sellers, which ultimately affects their production negatively.**

### **Proposed Facilitation Activities:**

- Enhance the knowledge of the dealers/retailers/ lead farmers through training
- Arrange farmer's meeting by the dealers/retailers and companies to enhance their knowledge
- Promote linkages between the farmers and dealers/retailers and companies

**Constraint 4: Lack of access of the farmers to know about the soil nutrient contents, its requirement (doze) leads their use of fertilizer according to their assumption.**

### **Proposed Facilitation Activities:**

- Establish linkages between the farmers and existing soil-testing facility providers (SRDI, BRAC, Private Sector)
- Identify interested entrepreneurs for soil testing business and link them with soil testing equipment suppliers
- Establish soil testing facilities at farmers level
- Arrange awareness campaign through mass media, farmers' meeting, developing and distributing printed materials, school program.
- Promote and capacitate

## **9. Conclusions**

The team has identified possible interventions that could be verified in the validation workshop. These are: awareness campaign on soil-testing (demonstration, using mass media) for the farmers, developing soil-testing service providers at the reach of the farmers, capacity building of pesticides sellers/lead farmers by the pesticides companies and Govt. institutions and establish linkages with farmers.