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A COMPARATIVE STUDY ON BORON FERTILIZERS BRANDS AVAILABLE IN THE MARKETS OF CHUADANGA REGION

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ABSTRACT

Islam GMM, Iqbal SMA, Mollah MRA, Mamta H, Chowdhury MAA (2016) A comparative study on boron fertilizers brands available in the markets of Chuadanga region. *J. Soil Nature* 9(1), 13-17.

A study was conducted in Damurhuda upazila under Chuadanga district from July to December, 2014 with the objectives to collect information on names, numbers and comparative availability of different brand of Boron fertilizers in order to aid the assessment of nutrient status for quality of the brands. For this purpose, information was collected from 30 randomly selected fertilizer shops (10 BCIC fertilizer dealers and 20 retailers) through questionnaire interview. In the study total 42 brands (23 Solubor, 15 Boric acid and 4 Fertibor) of boron fertilizer marketed by 37 companies were found in Damurhuda upazila. "Bingo", "Solubor" and "Bor-Fa plus" of Solubor boron brands, "Mitrika boron" and "Alfa boron" of Boric acid brands and "Bor-Fa 15" of Fertibor (total six) brands were most available. "Bingo" of Solubor was the top most available. Seven percent of Boric acid mentioned no registration number. All three categories of boron fertilizer mentioned their MRP. There was a significant difference between highest and lowest MRP of imported Solubor and Boric acid as well as supplied type of Boric acid brands.

Key words: brand name, boron, fertilizer, chuadanga

INTRODUCTION

Fertilizer is considered one of the main inputs for increasing crop yields and farm profit. We cannot think our modern agriculture now a days without using chemical fertilizer as our soil resource is being degraded for intensive cultivation of HYV and hybrid variety of different crops. But it is matter of woe that adulteration of chemical fertilizer is being a great problem with time (Anonymous 2012). SRDI (2014) also reported that about forty percent urea and non-urea fertilizers available in Bangladesh's market is adulterated and contains highest level of heavy metal that can cause serious health hazards to the people and affect food production and soil fertility in the long run. Moreover, by applying such contaminated fertilizers, farmers are cheated and production suffers. Seventy nine percent Zinc Sulfate (Hepta hydrate) fertilizers are adulterated in Jessore region (Islam *et al.* 2015a). Till now at least 109 types of chemical and organic fertilizers are approved by the Government of Bangladesh. Among them twenty four types are open for all and rests are assigned to particular private and non-government organizations for importing and manufacturing (BARC 2006). BADC (2012) and BCIC (2013) reported that China, Qatar, Soudi Arabia and Deshi types of urea fertilizer, Cargil, Australia, China, Morocco and Deshi types of DAP, China, Tunisia, Morocco, Lebanon, Bulgeria and Deshi types of TSP and Canada and Belarush types of MOP are available in our domestic market. In case of micro nutrient fertilizers, three categories of Zinc fertilizer *viz.* Zinc Sulfate (hepta hydrate), Zinc Sulfate (mono hydrate) and Chelated Zinc and three categories of Boron fertilizer *viz.* Boric acid, Solubor and Fertibor are approved by the Govt. (DAE 2014). Many brand names of each of those categories are available in the market. More than 80 brands [41 Zinc sulfate (mono), 22 Zinc sulfate (hepta) and 17 Chelated zinc] of zinc fertilizer are available in Chuadanga region among which Grogin, Topaz, Zinc Sulfate, Mukta Plus, Zingsul, Hay Zinc + of Zinc sulfate (mono) brands, Topaz and Petro zinc of Zinc sulfate (hepta) brands and Brexil, Field Marshal, Topaz of Chelated zinc brands are most available (Islam *et al.* 2015b). It is necessary to know the comparative availability as well as the individual nutrient status for quality of different brands of three categories of Boron fertilizer in order to take all types of fertilizer enterprises (manufacturer, supplier and importer) under quality control scheme to ensure the supply of quality fertilizers. But there is no sufficient information about the definite number and name of brand of Boron fertilizers available in a particular area of the country. Therefore, present study was conducted to find out i) how many brand of Boron fertilizers are available in the markets of Chuadanga region in order to aid the assessment of individual quality status and demand level of each brand at retail market and ii) comparative availability of the brands of those fertilizers.

MATERIALS AND METHODS

The present study was carried out at Damurhuda upazila under chuadanga district in Bangladesh during the period from July to December, 2014 to collect the information on the availability of different brand name of Boron fertilizers. For this purpose investigations were conducted in three points *viz.* Damurhuda sadar, Darsana and Karpasdanga bazar that were considered as main market of the upazila and where dealerships of BCIC (Bangladesh Chemical Industries Corporation) were distributed. There were ten BCIC fertilizer dealers in the upazila among which four were at Damurhuda sadar and three were at both Darsana and Karpasdanga bazar. For that reason, information was collected from different fertilizer shops situated on those market points and surrounding the points. All BCIC fertilizer dealers were included in the study. Twice of BCIC dealer from each

point were considered as the number of retailer shops. Thus 20 retailers with 10 BCIC dealers and total 30 fertilizer shops were taken under the study. Among the retailers, eight were randomly selected from Damurhuda sadar and six from both Darsana and Karpasdanga point. Information on the number and name of brands of each category of Boron fertilizer were recorded from each of thirty shops by individual interview. Manufacturer's or supplier's name, Government registration number, maximum retail price (MRP) and date of expiry (DOE) of each brand were also recorded during interview. Data were collected through questionnaire interview. The questionnaire prepared in Bengali was designed with both closed and open form of questions. The collected data were coded, summarized and proceed for analysis. Qualitative data were converted into quantitative forms by means of suitable scoring technique whenever necessary. Tabulations and cross tabulations were done on the basis of categorization developed by the researcher. Tabular technique was applied for the analysis of data by using simple statistical tools like averages and percentages. Selected 30 shops were assumed as 30 attendance for each brand. One mark (score point) was given for each attendance in a shop against a brand and total score point (TSP) was calculated with the aggregate of the score points for the individual (i.e. TSP 2 means the brand was present in 2 shops out of 30 shops). TSP of a brand represented its degree of presence which was treated as its availability. Then they were tabulated gradually highest to lowest depending on their TSP. Finally they were classified into following three classes depending on the availability.

Table 1. Availability class and their range of total score points (TSP) of different category of Boron fertilizer

Availability Class	Range of total score point (TSP) Obtained		
	Solubor	Boric Acid	Fertibor
Most available: Class-I	>3	3	4
Moderately available: Class-II	2-3	2	2
Less available: Class-III	<2	<2	<2

RESULTS AND DISCUSSION

Brand name and availability

Total 42 brands (23 of Solubor, 15 of Boric Acid and 4 of Fertibor) were found in the market of Damurhuda upazila which were manufactured or marketed by 37 individual companies. The Brand names of different categories of boron fertilizer including their availability class were shown in Table 2. In case of Solubor, 3 brands included class-I among which only the "Bingo" obtained the total score point (TSP) 6 and another two "Solubor" and "Bor-Fa plus" obtained 4 points. This indicated that above mentioned three brands of Solubor were most available in the market among which the brand Bingo (Registration number: IMP-1824; marketed by Syngenta, Bangladesh Ltd.) was the top most available brand. Five brands included class-II among which brands "Librel Boron" obtained 3 points and another four brands Mim boron, MAP solubor, Proboron and Limi S boron obtained 2 points. These 5 brands were moderately available in the market. The rest 15 brands under class-III (Bumper, Tara, Plant bor saline, Power boron, Valent, Krishok bondhu, Mumsol, Desh boron, Keen Solubor, Ankur Solubor, Vital, Key boron, Pure, Sharno boron, Borax) obtained 1 score point that were considered as less available.

Table 2. Brand names of different categories of Boron fertilizers including their availability class

Category of Boron Fertilizer	Availability Class	TSP	Name of brands	Number of brand
Solubor	Class-I	6	Bingo	01
		4	Solubor, Bor-Fa plus	02
	Class-II	3	Librel Boron	01
		2	Mim boron, MAP solubor, Proboron, Limi S boron	04
	Class-III	1	Bumper, Tara, Plant bor saline, Power boron, Valent, Krishok bondhu, Mumsol, Desh boron, Keen Solubor, Ankur Solubor, Vital, Key boron, Pure, Sharno boron, Borax	15
Boric Acid	Class-I	3	Mitrika boron, Alfa boron	02
	Class-II	2	Fresh boron, Petro Boron, Ankur boron	03
	Class-III	1	Super Boron, Nafko Boron, Sino Boric, Master Boron, S.B. Boric Acid, China borax, Mac boron, Limi Boric Acid, Desh borax, Mosko boron	10
Fertibor	Class-I	4	Bor-Fa 15	01
	Class-II	2	Tara Fertibor	01
	Class-III	1	Bumper, Partex Fertibor	02
Total				42

In case of Boric Acid, 2 brands were included class-I among which both “Mitrika boron” and “Alfa boron” obtained 3 points. This indicated that these 2 brands were the most available. Subsequently, “Fresh boron”, “Petro Boron” and “Ankur boron” under class-II was moderately available for obtaining 2 points. Another 10 brands (Super Boron, Nafko Boron, Sino Boric, Master Boron, S.B. Boric Acid, China borax, Mac boron, Limi Boric Acid, Desh borax, Mosko boron) under class-III were considered as less available brands. Furthermore, in case of Fertibor, “Bor-Fa 15” under class-I obtained 4 points and considered as most available. “Tara Fertibor” under class-II were moderately available and rest 2 brands (Bumper, Partex Fertibor) obtaining 1 score point might be considered as less available brands of Fertibor fertilizer. Therefore, six brands (3 of Solubor, 2 of Boric Acid and 1 of Fertibor) were most available, nine brands were moderately available and rest twenty seven brands were less available in the market of Damurhuda upazila. So their quality should be analyzed with great importance.

Maximum retail price (MRP)

Maximum retail price (MRP) of imported Solubor fertilizer varied from Tk.140 (Borax; IMP-662) to 700 (Tara; IMP-4364) Kg⁻¹. All three categories of boron fertilizer mentioned their MRP. Different brands of Boric acid ranged from Tk.100 (Mac boron) to 312 (Sino boric) Kg⁻¹ in their MRP among which imported, supplied and manufactured fertilizer varied from Tk.100 (Mac boron; IMP-1215) to 312, 135 (Master boron; S-3520) to 310 (Fresh boron; S-1136) and 240 (Desh borax; M-212) to 310 (China borax; M-1136) Kg⁻¹ respectively. In case of Fertibor, all 4 fertilizers were imported item with same registration number (IMP-1539). Their MRP varied from Tk.240 (Bumper and Tara) to 260 (Bor-Fa 15) Kg⁻¹ fertilizer.

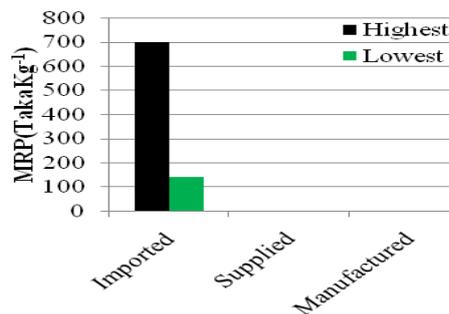


Fig.1: Highest and lowest MRP of Solubor.

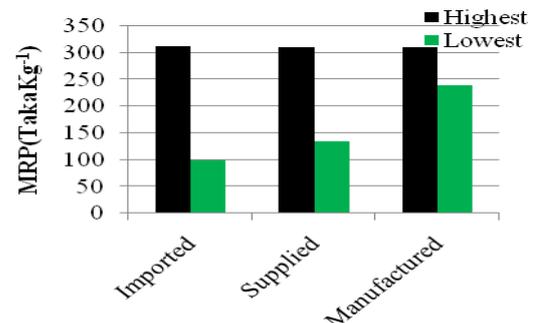


Fig.2: Highest and lowest MRP of Boric Acid.

There was a wide difference between highest and lowest MRP of imported Solubor (Fig. 1). The highest price was 400% more than the lowest one. Lower MRP of same type of product might result adulteration. In case of Boric Acid, a mentionable difference was observed between the highest and the lowest MRP of imported (the highest was 212% more than the lowest) as well as supplied type (the highest was 130% more than the lowest). But least difference (the highest was 30% more than the lowest) between them was found in manufactured type (Fig. 2). Further, no mentionable difference (less than 1%) was observed in the highest and the lowest MRP of Fertibor boron fertilizer (Fig. 3). According to Government specification of fertilizer, Solubor, Boric acid and Fertibor fertilizer must have minimum 20, 17 and 15 percent total boron (B) respectively (FRG 2012). The comparative average MRP of different types (imported, supplied and manufactured) of Solubor, Boric acid and Fertibor fertilizer were depicted in fig. 4. In case of Solubor committed to have 20% B, average MRP was 442 taka Kg⁻¹. On the other hand, in case of Boric acid committed to have 17% B, MRP of imported, supplied and manufactured type were 242, 203 and 275 taka Kg⁻¹ respectively. But that price of Fertibor was 248 taka Kg⁻¹. Such higher price of Solubor boron perhaps might be for its distinction. Therefore, their chemical analysis for quality is very important to see the actual scenario.

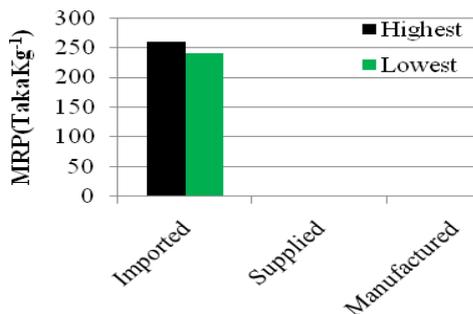


Fig.3: Highest and lowest MRP of Fertibor

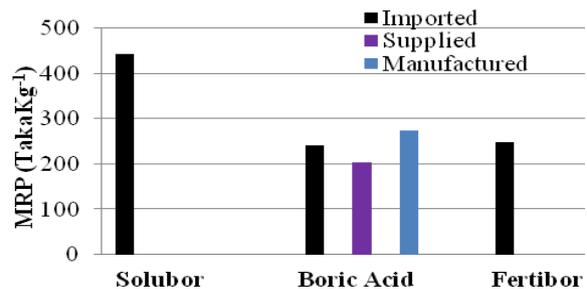


Fig 4. Comparative MRP of different types of Solubor, Boric Acid and Fertibor

Registration features

Total 42 brands of boron fertilizer were found in the upazila. Three types of registration number were observed against the brands mentioned on their packets. They were namely “IMP”, “S” and “M” type. According to DAE (Department of Agriculture Extension) report IMP means imported from aboard, S means supplied by purchasing from importer or manufacturer and M means manufactured locally in their own factory. Seven percent (1 sample out of 15) of Boric acid mentioned no registration number (Table 3). All the brands of Solubor and Fertibor mentioned their registration numbers. Solubor and Fertibor brands were 100% imported type (Table 3). But in case of Boric acid brand, 60%, 20% and 13% were imported, supplied and manufactured types respectively. All Fertibor brands bore the same imported type registration number (IMP-1539) which were imported from aboard by Union Fertilizer, New DOHS, Mohakhali, Dhaka (DAE 2014) but marketed by four different companies. The brands without any registration number might be adulterated. So category wise quality analysis of boron fertilizer is necessary.

Table 3. Relative proportion of different types of registration number in Solubor, Boric acid and Fertibor

Category of Boron fertilizer	Relative proportion of registration type (%)			
	Imported (IMP) type	Supplied (S) type	Manufactured (M) type	Registration less
Solubor	100	0	0	0
Boric acid	60	20	13	7
Fertibor	100	0	0	0

Company characteristics

Thirty seven companies marketed forty two brands of boron fertilizer. In each category, every company marketed only one brand (e.g. Twenty three companies marketed Twenty three individual Solubor brands). In case of Boric acid, additional thirteen companies were found over 37 Solubor companies. Further, additional one company was found over thirty six companies in case of Fertibor. All four companies *viz.* ACI Agro Ltd., Intefa Agro Industries Ltd., Rahimafroz CIC Agro Ltd. and Partex Agrochemicals Ltd. used only one registration number (IMP-1539) to market their own brand. All the companies were of several types depending on their address. Ninety two percent companies were of Dhaka based and eight percent were of out of Dhaka based ownership. Among the companies, 86% marketed only one category of boron fertilizer (48% companies provided only Solubor, 35% companies provided only Boric acid and 3% companies provided only Fertibor). On the other hand, 13% companies marketed two categories (Solubor and Boric acid 5% or Solubor and Fertibor 8%) and no company marketed three categories of boron fertilizer.

CONCLUSION

Total forty two boron fertilizer brands manufactured or marketed by thirty seven individual companies were found in the market of Damurhuda upazila among which 6 brands (3 of Solubor, 2 of Boric acid and 1 of Fertibor) were most available, 9 were moderately and 27 were less available. According to Fertilizer (management) Act-2006 of Government of Bangladesh, the product without registration number and MRP on their packet is not allowed to market. But this study found 7% of Boric acid fertilizer brands were no registration number in the market. Four companies used the same registration number (IMP-1539). In that case, these companies were in a wrong practice in their business. The brands name of fertilizer companies used without any registration number might be adulterated. Remarkable variation was observed among the MRP of the brands of each category. On the other hand, average MRP of Solubor was too much higher than Boric acid and Fertibor. Beside this, a wide difference (400%) was conspicuously observed in the highest and the lowest MRP of Solubor. Lower MRP of same type of product might cause adulteration also. So quantitative analysis of all categories of boron fertilizer is very much important to see the actual scenario. However, the study suggests that (a) illegal company should be taken under regulation and (b) further study is needed to assess the individual quality status of all the brands of three categories of boron fertilizer obtained in this study.

REFERENCES

- Anonymous (2012) Annual Report of 2011-2012. Soil Resource Development Institute. Min. Agric., GoB. Farmgate, Dhaka.
- BADC (Bangladesh Agricultural Development Corporation) (2012) Fertilizer Imported by Bangladesh Agricultural Development Corporation. Min. Agric., GoB. Dilkusha, Dhaka.
- BARC (Bangladesh Agricultural Research Council) (2006) List of Fertilizer and Fertilizer commodities: 1995-2006. Min. Agric., Govt. Peoples Repub. Bangladesh. pp. 36-74.
- BCIC (Bangladesh Chemical Industries Corporation) (2013) Report on Imported Fertilizers. Ministry of Industry and Commerce, GoB. Motijheel, Dhaka.

DAE (Department of Agriculture Extension) (2014) List of Import registration certificate holder. Dept. Agric, Extn., Farmgate, Dhaka. pp. 23-74.

FRG (Fertilizer Recommendation Guide) (2012) Bangladesh Agricultural Research Council. Farmgate, Dhaka-1215. p. 274.

Islam GMM, Hossain M, Iqbal SMA, Mollah MRA (2015a) Assessment of quality status of Zinc Sulfate (Hepta hydrate) fertilizers available in the markets of Jessore Sadar Upazila. *J. Environ. Sci. & Natural Resources*, 8(1), 69-71.

Islam GMM, Iqbal SMA, Mollah MRA, Hossain SS, Ali Chowdhury MA (2015b) A Study on Different Brands of Zinc Fertilizers Available in the Markets of Chuadanga Region. *J. Environ. Sci. & Natural Resources*, 8(2), 103-107.

SRDI (Soil Resource Development Institute) (2014) Annual Report of 2012-2013. Soil Resource Development Institute. Farmgate, Dhaka.