International Journal of Commerce and Business Management
e ISSN–0976–7940 Volume **11** | Issue 1 | April, 2018 | 24-28
DOI: 10.15740/HAS/IJCBM/11.1/24-28
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RESEARCH PAPER

Knowledge and awareness of farmers about sulpher as a micro-nutrient

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Received : *06.01.2018;* **Revised :** *04.03.2018;* **Accepted :** *18.03.2018*

ABSTRACT

The study knowledge and awareness of farmer about application and usage of sulphur as a micro-nutrient was undertaken to measure the farmers knowledge about sulphur application and usage as well as their awareness about the effect of sulphur on growth, yield and quantity. The study was carried out in Talala taluka of Gir Somath district at Gujarat comprising of 150 farmers. For selection of sample, multistage random sampling technique was used. Knowledge index, standard deviation and mean analysis were used for the study purpose. It was found that majority of the farmer had medium level of knowledge about application and usage of sulphur and were aware about the effect of sulphur on growth but less about the effect on yield and quality.

KEY WORDS : Application, Usage of sulphur, Knowledge index, Awareness of farmers

How to cite this paper : Akbari, Y.B., Trivedi, S.M. and Lakhlani, C.D. (2018). Knowledge and awareness of farmers about sulpher as a micro-nutrient. *Internat. J. Com. & Bus. Manage*, **11**(1) : 24-28, **DOI: 10.15740/HAS/IJCBM/11.1/24-28.**

Sulphur (S) is one of the mineral nutrients which are essential for the growth and development of all plants. It is increasingly being recognized as the fourth major plant nutrient after nitrogen (N), phosphorus (P) and potassium (K). In the plant sulphur is a component of three of the 21 amino acids which are the essential building blocks of proteins sulphur is also a component of key enzymes and vitamins in the plant and is necessary for the formation of chlorophyll. In legumes sulphur is necessary for the efficient fixation of nitrogen by the plant. This makes sulphur of fundamental importance in the establishment and maintenance of legume-based improved pastures. It is also essential for flowering and seed set in canola.

Plants which are deficient in sulphur show a pale green colouration of younger leaves. In severe cases of sulphur deficiency the entire plant can be stunted and pale green. Affected plants may be thin-stemmed and spindly; brassica and canola crops may develop a reddish colouration on the underside of leaves and on stems and flowers may be pale to greyish in colour.

Plant nutrient sulphur deficiencies have been growing for years and have reached the point in many parts of the world where they are beginning to severely limit crop production.Studies on different crops around the world show that there a decrease in yields and quality

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of crops when soil deficiency. S is one of the most limiting nutrients for agricultural production in many Asian countries creates S deficiency in soils due to continuous cropping and regular use of S free fertilizers in several agro-ecological zones. Continuous removal of S from soils by plant uptake has led to widespread S deficiency and soil S budget all over the world.Asia has the largest regional deficit around the word with India and china in the land.

Sulphur deficiencies in India are widespread and scattered. On an average, 41 per cent of Indian soils are deficient in S. Deficiency of sulphur in Indian soils is on increase. With the adoption of intensive farming, the farmers have shifted from organic to inorganic high analysis S-free fertilizers leading to more widespread and more intense S deficiencies in Indian soils. Sulphur deficiency directly or indirectly affects growth, yield and quality of crops. This study was focus on to measure farmers' knowledge about application and usage of Sulphur as a micro nutrient and their awareness about the effect of Sulphur on growth, yield and quality of crop.

Objectives of the study:

The study was carried out with following objectives:

– To measure farmers' knowledge about sulphur application and usage

– To understand farmers' awareness about the effect of sulphur on growth, yield and quality.

Perera *et al.* (2003) investigated the role of extension communication at farmer level in relation to knowledge and adoption of farming practices by the out grower farmers of Sri Lankan sugar industry. Primary data were collected from a stratified random sample of 60 farmers consisting of equal number of non-contract and contract farmers from Pelwatte Sugar Industry (PSI) area. The result shows that highest proportion of contract farmers had medium technical knowledge and adoption levels.

Raja *et al.* (2007) conducted a field experiment in sandy clay loam soils at Tamil Nadu Agricultural University, Coimbatore to study the importance of sulphur in realizing the better yield and quality *viz.*, crude protein and oil content and yield of sesame crop during summer season of 200. The study revealed that the quality parameters studied *viz.*, crude protein content and oil content and yield was increased with increasing S level.

Patel *et al.* (2010) conducted an experiment to study the effect of sulphur on yield and quality of green gram during the summer season of the year 2006. The results revealed that sulphur levels significantly influenced on quality parameters, growth and yield attributes.

Assis and Mohd (2011) conducted a research to investigate the knowledge of vegetable growers towards organic farming. A survey method through face-to-face interview by using structured questionnaire was used to collect data from a total of 31 vegetable growers in Kundasang, Sabah which was selected by using simple random sampling method. The findings of the study show that the knowledge of the respondents on organic farming especially pertaining to the use of chemical insecticides, herbicides and fertilizers is still need to be improved.

Islam (2012) conducted a field experiments at two different locations (Barani Agricultural Research Institute Chakwal and farm field Talagang, district Chakwal) for two crop growing seasons in northern rain fed Punjab, Pakistan to assess the yield and micronutrient uptake of chickpea. The treatments were four combinations of two levels of sulfur (15 and 30 kg/ha) from two sources (gypsum and ammonium sulfate) and a no-sulfur control. Application of sulfur resulted in a significant increase in seed yield upto 17 per cent over control. Sulfur application resulted in a significant increase in micronutrient uptake by plant.

Kumar *et al.* (2012) carried out a study on the knowledge of sericulturists on adoption of organic farming practices in Chickballapur district of Karnataka. The study revealed that majority (44.16%) of the sericulturists had low knowledge about organic farming practices followed by medium (35.83%) and high (20.00%) knowledge, respectively.

Surendra and Katiyar (2013) studied the influence of Sulphur and zinc on mung bean for two consecutive summer seasons *i.e.* 2008- 09 and 2009-10. The experiment with four levels of Sulphur (0, 20, 40 and 60 kg S ha^{-1}) and four levels of zinc (0, 5, 7.5 and 10 kg Zn ha^{-1}) was laid down in Randomized Block Design with three replications. The results revealed that application of 40 kg S ha^{-1} and 10 kg Zn ha^{-1} significantly increased the plant height, number of branches $plant^{-1}$, number of nodules $plant^{-1}$, number of pods $plant^{-1}$, number of seeds pod^{-1}, seed yield, protein content (%) and test weight was non-significant.

Hadiya and Deshmukh (2014) measured the knowledge level of respondents about recommended practices of groundnut. The study was conducted under

ex-post facto research design. 4 talukas were randomly selected, from each selected taluka three villages were selected randomly. Thus, 12 villages were selected. Total 120 respondents, 10 respondents from each selected village, were selected by using multistage random sampling technique. Results show that majority (65.00%) of the respondents had medium level of knowledge about the recommended crop production technology of castor as intercrop with groundnut.

Jawahar *et al*. (2003) conducted a field experiment at Annamalai University Experimental Farm, Annamalai Nagar to evaluate the effect of sources and levels of Sulphur on growth and yield of rice fallow black gram. The results showed that sources and levels of sulphur significantly influenced on growth and yield of black gram.

Magarvadiya and Patel (2014) conducted a study in Tharad, Vav and Bhabhar Talukas of Banaskantha District of Gujarat State with 120 farmers from twelve villages having more area under arid and semiarid condition. It was concluded that almost farmers had medium to low level of knowledge regarding bio fertilizers and not a single farmers possessed high level of knowledge regarding bio fertilizers.

METHODOLOGY

The study was confined to Talala taluka at Gir Somnath district of Gujarat state. The total area of the Talala taluka is 15 sq. km. As per 2011 census, the population of Talala taluka is 1,35,731. Total 21519 farmers are living in Talala taluka. Multistage sampling technique was adopted for the selection of sample. At the first stage Talala taluka was selected randomly and at the second stage, 15 village were selected randomly from the total 46 village of Talala taluka and 10 farmers were selected from each village. Thus, total 150 farmers were selected for the study purpose.The study was carried out during the year 2016. The primary data was collected through the personal interview of farmers using well-structured questionnaires.

For measuring farmers' knowledge about application and usage of sulphur, the teacher made knowledge test was used. The knowledge was measured by asking the questions regarding recommended practices of application and usage of sulphur such as 1) Do you know sulphur is an essential component of proteins? 2) Do you know sulphur affect other nutrient uptake utilization? 3) Do you know sulphur affect the feed quality of crop? 4) Do you know deficiency of sulphur cause yellowing of the crop? 5) Do you know sulphur act as a fungicide? 6) Do you know sulphur act as reservoir of organic matter in soil? 7) Do you know application of sulphur increase the oil contained? 8) Do you apply sulphur with other fertilizer? 9) Do you undertake soil testing practices? 10) Do you know your soil having sulphur deficiency or not? 11) Do you apply sulphur @ 3 kg/ acre in groundnut, sesame or other crops? 12). When you applied sulphur - At basal, after 30 days of sowing, after 45 days sow. Then, with the help of mean and standard deviation, the respondent were categorized about knowledge level of the sulphur application and usage. A unit score was given to positive and zero to negative response. The total score obtained by individual respondents for all the statement was calculated and following formula was used:

$$K_i = \frac{X_1+X_2.....+X_n}{N} x100$$

where,

K_i = Knowledge index

$X_1+X_2.....+X_n$ = Total number of correct answers *i.e.* total score

N = Total number of items in the test.

The maximum and minimum score limits was obtained by the following formula.

To study the farmers' awareness about the effect of Sulphur on growth, yield and quality tabular, graphical analysis and simple percentage methods were used. The parameters included for the study were (1) Growth (Increase in branches, Increase in pods, Increase in nodules) (2) Yield (Increase in pods, Increase in seeds) and (3) Quality (Increase in protein content).

Sr. No.	Categories	Range
1.	Low level of knowledge	< Mean - S.D.
2.	Medium level of knowledge	Mean ± S.D.
3.	High level of knowledge	> Mean + S.D.

ANALYSIS AND DISCUSSION

As the study of farmer's knowledge was concerned, 70 per cent of the farmers having the knowledge while 30 per cent having no knowledge about Sulphur. 36.19 per cent of the farmers got the information through retailers, 24.76 per cent from advertising, 18.1 per cent from fellow farmers, 15.24 per cent through

company demonstration and 5.71 per cent through company representatives. 70 per cent of the farmers were using while 30 per cent were not using sulphur in their farm.

From the Table 2, it is clear that 62.86 per cent of the respondents were from medium level knowledge group with respect to recommend application and usage of sulphur. 19.05 per cent and 18.10 per cent of respondents were in low and high knowledge group, respectively.

Table 3 shows that 58.09 per cent of farmers were aware about the effect of sulphur on growth, 40.96 per cent on yield and 44.76 per cent on quality. It reveals that farmers are more aware about the effect of sulphur on growth but less aware about the effect on yield and quality.

Conclusion:

It was clearly observed in this study that majority of the farmers from Talala know about sulphur products. Very few farmers got the information about sulphur products from the representatives of the company. It also shows that majority of the farmers use sulphur. However, majority of the farmer had medium level of

Table 1: Farmers' knowledge about sulphur in Talala taluka

Particular	No. of respondent	Per cent
Knowledge about sulphur products		
Yes	105	70
No	45	30
Total	150	100
Source of information about sulphur products		
From fellow farmers	19	18.1
Company representative's	6	5.71
Retailers	38	36.19
Company demonstrations	16	15.24
Advertisements	26	24.76
Total	105	100
Use of sulphur by farmers		
Yes	105	70
No	45	30
Total	150	100

Table 2 : Knowledge of farmers regarding application and usage of sulphur (n = 105)

Knowledge level	Knowledge score	Frequency	Percentage
Low	Below 17.68	20	19.05
Medium	17.68 to 56.77	66	62.86
High	Above 56.77	19	18.10
Total	-	105	100

Mean = 37.22 S.D = 19.55

Table 3 : Awareness of farmers about the effect of Sulphur on growth, yield andquality (n=105)

Particular	Criteria	No. of respondent	Per cent	Average (%)
Growth	Increase the plant height	71	67.62	58.09
	Increase in branches	57	54.28	
	Increase in nodules	55	52.38	
Yield	Increase in pods	37	35.24	40.96
	Increase in seeds	49	46.67	
Quality	Increase in protein content	47	44.76	44.76

knowledge about application and usage of sulphur. Whereas, other farmer had low and high level of knowledge. Majority of respondents were aware about the effect of dulphur on growth but less about the effect on yield and quality.

REFERENCES

Assis, K. and Mohd, I. (2011). Knowledge, attitude and practices of farmers towards organic farming. *Internat. J. Econ. & Res.*, **2**(3): 1-6.

Hadiya, B. and Deshmukh, G. (2014). Psychological characters and knowledge with respect to recommended crop production technology of castor as intercrop with groundnut. *Adv. Res. J. Crop Improv.,* **5**(2): 21 8 - 222.

Islam, M. (2012). The effect of different rates and forms of sulfur on seed yield and micronutrient uptake by chickpea. *Plant Soil Environ.,* **58** (9): 399-404.

Jawahar, S., Vaiyapuri, V., Suseendran, K., Kalaiyarasan, C. and Chandrasekharan, M.V. Srirama (2003). Effect of sources and levels of sulphur on growth and yield of rice fallow blackgram (*Vigna mungo*). *Internat. Res. J.*, **3** (3) : 1-7.

Kumar, P., Naika, R., Prasad, M., Bhaskar, R. and Narayanaswamy, B. (2012). Knowledge of sericulturists on organic farming practices in Chickballapur district. *J. Agric. & Veterinary Sci.*, **1** (3) : 1-4.

Magarvadiya, D. and Patel, V. (2014). Knowledge and attitude of farmers regarding bio fertilizers. *Gujarat J. Extn. Edu.*, **25**(2): 149-151.

Patel, M., Patel, J., Patel, J. and Patel, H. (2010). Effect of levels and sources of sulphuron seed yield and quality of summer green gram. *Internat. J. Agric. Sci.*, **6**(1): 169-171.

Perera, M. and Sivayoganathan, C. and Wijeratne, M. (2003). Technical knowledge and adoption of farming practices to farmer level extension communication of out grower farmers of sir Lankan sugar industry. *Sugarcane Research Institute*, **3**(5): 121-129.

Raja, A., Hattab, K., Gurusamy, L., Vembu, G. and Suganya, S. (2007). Sulphur application ongrowth and yield and quality of sesame varieties. *Internat. J. Agric. Res.*, **2** (7) : 255-606.

Surendar, R. and Katiyar, S. (2013). Effect of sulphur and zinc on the seed yield and protein content of summer mungbean under arid climate. *Internat. J. Sci. & Climate,* **3** (4): 563-566.