# EVALUATION OF RESPONSE OF PEPPER TO BORON FERTILIZATION IN BORON DEFICIENT SOILS Dr. Beena V I\*, Dr. Raji Mol R P and Dr. Suresh Kumar

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## INTRODUCTION

- Boron (B) is one among the seventeen essential elements needed for proper growth and development of the plant.
- Plant absorb boron plant primarily in molecular form as boric acid  $(H_3BO_3)$ .
- Boron is responsible for the cell wall formation and stabilization, lignification and xylem differentiation.
- Boron plays a role in pollen germination and pollen tube growth.
- It facilitates the ion uptake by increasing the activities of plasma membrane bound *H*<sup>+</sup>-*ATPase* (ISSS, 2000).
   Though a micronutrient, its deficiency can considerably limit the crop yield.
   In Indian soils, B deficiency is next to zinc deficiency which accounts for around 33 per cent (FAI, 2002).

#### Table 1. Effect of B fertilization on available B status in soil

					Available B status in soil (mg kg <sup>-1</sup> )			
		MARAKKAL			MAYILADUMPARA			
]	Particulars	1 <sup>ST</sup> YEAR	2 <sup>ND</sup> YEAR	POOLED MEAN	1 <sup>ST</sup> YEAR	2 N <sup>D</sup> YEAR	POOLED MEAN	OVER ALL MEAN
	T1	0.30	0.58	0.44	0.40	0.22	0.31	0.37
	T2	0.32	0.64	0.48	0.41	0.38	0.39	0.43
	Т3	0.48	0.67	0.57	0.41	0.40	0.40	0.49
	T4	0.40	0.62	0.51	0.41	0.42	0.41	0.46
	T5	0.44	0.65	0.54	0.43	0.40	0.41	0.48
	T6	0.40	0.73	0.56	0.42	0.64	0.53	0.54
	MEAN	0.39	0.65	0.52	0.41	0.41	0.41	0.00
		PLACES	YEARS	PLACES *YEARS	TREATMENT	PLACES * TREATMENT	YEARS * TREATMENT	PLACES * YEARS * TREATMENT
	CD VALUE	0.02	0.02	0.03	0.04	0.06	0.06	0.08

Results

- To evaluate the effect of response of pepper to boron fertilization in boron deficient soil
- To study the B content in plant and soil as influenced by boron fertilization

Material and Methods					
Crop	Pepper				
Treatments	06				
Replications	05				
Period of investigation	2013-2016				
Location	Marakkal and Myladumpara				

#### Table 2. Effect of B fertilization on B content at prebloom

		B content in plant (mg kg <sup>-1</sup> ) at prebloom							
F	Particulars	MARAKK	AL		MAYILADUMPARA				
		1 <sup>ST</sup> YEAR	2 <sup>ND</sup> YEAR	POOLED MEAN	1 <sup>ST</sup> YEAR	2 <sup>ND</sup> YEAR	POOLED MEAN	OVER ALL MEAN	
	T1	24.40	27.88	26.14	18.22	26.12	22.17	24.15	
	T2	25.00	28.20	26.60	18.70	27.68	23.19	24.89	
	T3	26.80	28.78	27.70	19.06	27.50	23.28	25.53	
	T4	26.80	29.24	28.02	19.56	28.16	23.86	25.94	
	T5	27.00	30.34	28.67	20.12	29.32	24.72	26.69	
	T6	27.60	29.24	28.42	20.92	28.92	24.92	26.67	
	MEAN	26.26	28.94	27.6	19.43	27.95	23.69		
		PLACES	YEARS	PLACES *YEARS	TREATMENT	PLACES * TREATMENT	YEARS * TREATMENT	PLACES * YEARS * TREATMENT	
	CD VALUE	0.38	0.38	0.54	0.66	NS	NS	NS	

#### Table 3. Effect of B fertilization on pepper yield

	Yield (kg plant <sup>-1</sup> )	
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#### **Treatment Details**

Treatments	Boron (kg ha <sup>-1</sup> )
T <sub>1</sub>	0
T <sub>2</sub>	2.5
T <sub>3</sub>	5
$T_4$	10
T <sub>5</sub>	12.5

Particulars	1 <sup>ST</sup> YEAR	2 <sup>ND</sup> YEAR	POOLED MEAN	1 <sup>ST</sup> YEAR	2 <sup>ND</sup> YEAR	POOLED MEAN	OVER ALL MEAN
T1	0.16	3.52	1.83	1.52	1.06	1.29	1.56
T2	0.21	4.68	2.44	1.78	1.52	1.65	2.04
Т3	0.24	4.32	2.28	2.22	1.90	2.06	2.17
T4	0.31	4.12	2.21	2.16	2.44	2.30	2.25
T5	0.36	4.64	2.50	2.34	3.22	2.78	2.64
T6	0.39	5.80	3.09	2.58	2.50	2.54	2.81
MEAN	0.27	4.51	2.39	2.10	2.10	2.10	
	PLACES	YEARS	PLACES *YEARS	TREATMENT	PLACES * TREATMENT	YEARS * TREATMENT	PLACES * YEARS * TREATMENT
CD VALUE	0.17	0.17	0.24	0.29	0.41	0.41	0.58

### Summary

 $\checkmark$  With increase in B application pepper yield also increased.

 $\checkmark$  Available B status in the soil tend to increase with increase in B application

✓ Plant B content at prebloom stage significantly only in Marakkal soils

# Analytical Observations Soil available B

Plant B content

Yield

## FAI, 2002, Fertilizer Use and Crop Production. Fertilizer Statistics, Fertilizer Association of India. New Delhi, pp. 1-100.

References

ISSS, 2000, Fundamentals of Soil Science, Indian Society of Soil Science, New Delhi, p. 465.