Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2017; 6(6): 1936-1938
Received: 12-09-2017
Accepted: 14-10-2017

DL Bagdi
Department of Plant Physiology, S.K.N. College of Agriculture, Jobner, Jaipur, Rajasthan, India

MK Sharma
Department of Horticulture, S.K.N. College of Agriculture, Jobner, Jaipur, Rajasthan, India

SL Sharma
Department of Entomology, S.K.N. College of Agriculture, Jobner, Jaipur, Rajasthan, India

GK Bagri
Department of Soil Science and Agricultural Chemistry, BHU, Varanasi, Uttar Pradesh, India

PS Shekhawat
Choudhary Parmaram Godara Agriculture College, Bhadra, Rajasthan, India

Correspondence
DL Bagdi
Department of Plant Physiology, S.K.N. College of Agriculture, Jobner, Jaipur, Rajasthan, India

Nutritional Survey of ber orchards in Jodhpur and Pali district of Rajasthan

DL Bagdi, MK Sharma, SL Sharma, GK Bagri and PS Shekhawat

Abstract
The ber orchards located at Jodhpur and Pali districts of Rajasthan were surveyed in 2015 to 2016. The soil and leaf samples were collected from Jodhpur and Pali district of Rajasthan. These samples were dried, grinded and analyzed for nutrient analysis. Results showed that the nitrogen, phosphorous, calcium, magnesium, content in soil and leaf samples were recorded higher in Pali district than Jodhpur whereas the potassium content was recorded more in Jodhpur ranked by Pali. The ber yield was also recorded more in Pali district as compared to Jalore Jodhpur, the possible reason of more yields in Pali district might be due to higher content of nitrogen, phosphorus, calcium and magnesium in soil as well as in leaf samples.

Keywords: Ber, yield, nitrogen, phosphorus, potassium, calcium, magnesium

Introduction
Indian Jujube or ber is a common fruit endogenous to India. Its fruits are palatable and delicious with high concentration of vitamin A, B and B complexes. Ber leaves contain 10-19 % crude protein with about 40% digestibility. The leaves are commonly used as a fodder for animals (Pareek, 1983) [5], compared to other agricultural and horticultural crops, Indian Jujube is known to grow successfully under a low erratic rainfall. Temperature extremes and saline soils with low fertility (Meena *et al*., 2003 [3]. The results were validated by estimating various nutritional parameters; macro nutrient analysis in soil and leaf samples collected from Sirohi, Nagaur and Jalore districts of Rajasthan.

Materials and Methods
The ber orchards located at Nagaur, Sirohi and Jalore districts of Rajasthan were surveyed in 2015 to 2016. The soil and leaf samples were collected from these orchards. The samples were collected from three places randomly in a ber orchard of each district. These samples were dried, grinded and analyzed for nutrient analysis by using standard analysis methods. The samples of soil and leaf were collected at the time of pre-anthesis stage. The mature leaves were taken for nutritional analysis work. The soil samples were collected from up to depth of 60 cm and mixed properly.

Plant and soil analysis
After collecting the soil samples were dried and grinded, sieved by 1mm pore size sieve and mixed homogenously. After plant sample collection, the fresh tissue decontaminated from dust and other foregn materials by adopting the following procedure. Three pastic container are taken in which 0.2% liquid detergent, N/10 Hcl solution and and deionized or distilled water solutions are added separately. The fresh tissues should be washed sequence in these three plastic containers. The samples are dried in an oven at 70^0C. The nitrogen content in soil and in leaf samples were estimated by using Kjel-Tek Nitrogen Analyser. The phosphorus was determined colorimetrically in soil and leaf samples following the methods of Olsen *et al*., 1954 [4] and Jachson, 1973 [3]. The potassium content were estimated by the method of Metson.1956 in soil samples whereas in plant samples by the method of Bhargava and Raghupati, 1993 [2] using flame photometer. Likewise, the concentration of Calsium and magnesium in soil and leaf samples were determined according to Richards, 1954 [6].

Results and Discussion
The data (Table 1) revealed that the maximum nitrogen and phosphorus content were recorded

Table 1: Soil sample analysis data of Ber orchards located at Pali and Jodhpur district of Rajasthan.

Parameters	Year of survey	Districts surveyed					
		Jodhpur			Pali		
		Soil samples					
		Location I	Location II	Location III	Location I	Location II	Location III
N (Kg/ha)	2015	121	117	109	156	148	196
	2016	99	73	99	146	156	209
	Mean	110	95	104	151	152	202.5
P_2O_5 (Kg/ha)	2015	13.8	10.6	12.9	20.2	14.7	21.6
	2016	12.4	10.8	11.8	19.4	16.4	21.5
	Mean	13.1	10.7	12.35	19.8	15.55	21.55
K_2O (Kg/ha)	2015	287	254	303	268	206	227
	2016	351	320	335	306	328	332
	Mean	319	287	319	287	267	279.5
Ca (mg/Kg)	2015	1600	530	1240	1020	900	2190
	2016	480	333	440	546	506	1893
	Mean	1040	431	840	783	703	2041
Mg (mg/kg)	2015	170	146	152	183	128	201
	2016	89	85	122	105	138	162
	Mean	129	115	137	144	133	181.5
Yield (Kg/tree)	2015	25	18	20	30	25	40
	2016	25	20	20	30	25	35
	Mean	25	19	20	30	25	37.5

in soil samples of Pali district (38.87% more than Jodhpur). The calcium and magnesium content were also seen more in the soil samples of Sirohi district (34.4% and 16.4% more Jodhpur district). Whereas the potassium content was recorded more in soil samples of Jodhpur district (9.89% more than Pali).

The maximum nitrogen and phosphorus content were also recorded in leaf samples of Pali district (10.85 and 26.79% more than Jodhpur). The calcium and magnesium content were also seen more in the leaf samples of Pali district (8.11 and 6.81% more than Jodhpur district). Whereas the potassium content was recorded more in leaf samples of Jodhpur district (23.74% more than Pali).

Table 2: Leaf sample analysis data of Ber orchards located at Pali and Jodhpur district of Rajasthan

Parameters	Year of survey	Districs surveyed					
		Jodhpur			Pali		
		Soil Samples					
		Location I	Location II	Location III	Location I	Location II	Location III
N (Kg/ha)	2015	1.82	1.62	1.22	1.65	1.6	1.85
	2016	1.82	1.68	1.25	1.91	1.82	1.69
	Mean	1.82	1.65	1.235	1.78	1.71	1.77
P_2O_5 (Kg/ha)	2015	0.18	0.16	0.13	0.19	0.25	0.22
	2016	0.172	0.15	0.119	0.209	0.231	0.176
	Mean	0.176	0.16	0.124	0.19	0.24	0.198
K_2O (Kg/ha)	2015	1.9	1.6	1.5	1.14	1.29	1.4
	2016	1.91	1.65	1.47	1.14	1.24	1.44
	Mean	1.905	1.63	1.485	1.14	1.265	1.42
Ca (mg/Kg)	2015	0.8	0.74	0.71	0.69	0.79	0.91
	2016	0.66	0.71	0.8	0.69	0.81	0.92
	Mean	0.73	0.73	0.755	0.69	0.8	0.915
Mg (mg/kg)	2015	0.5	0.43	0.42	0.45	0.49	0.52
	2016	0.39	0.41	0.48	0.43	0.45	0.48
	Mean	0.445	0.42	0.45	0.44	0.47	0.5

The ber yield was recorded higher in Pali district of Rajasthan (30.81% more than Jodhpur).The possible reason of more ber yield in Sirohi may be due to higher content of nitrogen, phosphorus, calcium and magnesium in soil as well as in leaf samples.

Reference

1. Bhargava BS, Raghupati HB. In methods of analysis of soils, plants, water and fertilizers. H.L.S. Tandon (Ed) F.D.C.O. 1993, New Delhi, 41.
2. Jacksom ML. Soil chemical analysis. Prentice Hall of India Pvt. Ltd., New Delhi. Kotur S, C, 1990. J. Indian

Soc. Soil Sci, 1973.
3. Meena SK, Gupta NK, Gupta S, Khandelwal SK, Sastry EVD. Effect of sodium chloride salinity on the growth and gas exchange of young *Ziziphus* seedling root stocks. J. Hort. Sci. Biotech. 2003, 78:454-457.
4. Olsen SR, Col SCW, Wantable PS, Dean LA. Estimation of available phosphorus in soils by extraction with sodium bicarbonate USDA. Circ, 1954; 939:18.
5. Pareek OP. Ber-ICAR Publications, Indian Council of Agricultural Research, New Delhi, 1983.
6. Richards LA. Diagnosis and improvement of saline and alkaline soils, USDA Hand Book No. 60. Oxford and IBH Publishing Co., New Delhi, 1954.