

()

*

(/ / : / / :)

/ . /
)
()
(

DTPA

)

(

/ /

/ /

/ /

() : :

pH

(Mn)

()

()

()

()

)

(

)

()

()

(

()

()

()

-

)

(

DTPA Mehlich-Bowling Mehlich-1

/ /

AB-DTPA

/ /

()

()

pH

pH

/ /

DTPA

(

)

()

DTPA

()

pH

()

/

/

()

(Pershing)
()

°C

% /

()

()

AA

()

()

(Tecator , 1030 Analyzer

(* / =)

()

)

)

(

DTPA

()

F

()

-

-

-

-

-

-

-

-

	()	((+))	()	PH
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/
/	/	/	/			/		/

$$\begin{array}{ccccccc}
 & & Y_2 & & & & \\
 \cdot & . & & & & & / \\
 \cdot & (&) & & C_I & & / & / \\
 & . & / & & C_I & & / & . \\
 & & & & & & & .
 \end{array}$$

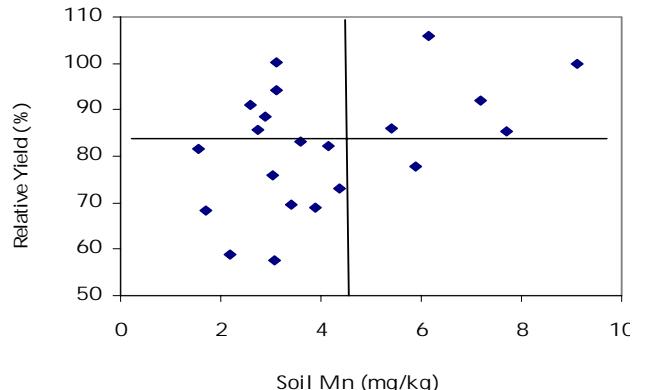
/ DTPA

$$\begin{array}{ccccc}
 & & Log(A-Y)=LogA-C_I b & & A \\
 & & DTPA & & Y \\
 & & / & & C_I \\
 & & . & & . \\
 & & & & .
 \end{array}$$

Log(100-Y₂)=Log 100-C_Ib

	...	:	
()	(C ₁)	()	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
/		/	
ns	*		**
		** *	
			: ns
		-	
()	()	()	()
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	ns		**
		**	
			: ns

()
()
()
DTPA



/ /
()
DTPA
()
)
(

()
DTPA
()
DTPA
/ pH
()
/ % /
()

/ /
() ()
() ()
()

REFERENCES

»

«

18. Boswell , F. C. , K. Ohki , M. B. Parker, L. M. Shuman , & D. O. Wilson. 1981. Methods and rates of applied manganese for soybean. *Agron. J.*, 73: 909-912.
19. Chapman, H.D. & P. F. Pratt.1961. Methods of analysis for soils, plants and waters. Univ. Calif. Div. Agric. Sci. P.56-61.
20. Cate , R. B. Jr. , & L. A. Nelson. 1965. A rapid method for correlation of soil test analysis with plant response data. North Carolina State Univ. Int. Soil Testing Serries Tech. Bull. No.1, North Carolina, USA.
21. Cox, F. R. 1968. Development of a yield response prediction and manganese soil test interpretation for soybean. *Agron. J.*, 60: 521-524.
22. Gettier, S., D. C. Martens, & S. J. Donohue. 1985. Soybean yield response prediction from soil test and tissue manganese levels. *Agron. J.*, 77: 63 –67.
23. Gholamalizadeh ,A., N. A. Karimian , A. Abtahi , M. T. Assad, & Y. Emam. 1995. Growth and manganese uptake by soybean in highly calcareous soils as affected by native and applied manganese and predicated by nine different extractants. *Commun. Soil Sci. & Plant Anal.*, 26: 1441-1454.
24. Karimian , N. A. & A. Ghanbari. 1990. Evaluation of different extractions for predication of plant response to applied P fertilizers in highly calcareous soils. *Abst. 10th World Fert. Congr. CIEC.P.25.*
25. Karimian , N. A. & A. Gholamalizadeh. 1998. Manganese retention by selected calcareous soils as related to soil properties. *Commun. Soil Sci. & Plant Anal.*, 29: 1061- 1070.
26. Lindsay, W. L. & F. R. Cox. 1985. Micronutrient soil testing for the tropics. In: P. L. G. Vlek (ed.) *Micronutrients in tropical food crop production*. Fert. Res., 7: 169-200.
27. Lindsay, W.L. & W. A. Norvell. 1978. Development of a DTPA soil test for zinc , iron , manganese and copper. *Soil Sci. Soc. Am. J.*, 42: 421 – 428.
28. Longnecker, N. E., N. E. Marcar, & R. D. Graham. 1991. Increased manganese content of barley seeds can increase grain yield in manganese – deficient condition. *Aus. J. Agri. Res.*, 42: 1065-1074.
29. Marschner, H. 1995. Mineral nutrition of higher plants. 2nd ed. Academic press. New York, USA. P. 279-290.
30. Mascagni, H. J., Jr., & F. R. Cox. 1984. Diagnosis and correction of manganese deficiency in corn. *Commun Soil Sci. & Plant Anal.*, 15: 1323-1333.
31. Mascagni, H. J., Jr., & F. R. Cox. 1985. Calibration of a manganese availability index for soybean soil test data. *Soil Sci. Soc. Am. J.*, 49: 382-386.
32. Melsted, S. W. & T. R. Peck. 1977. The Mitscherlich–Bray growth function. PP. 1-18. In: T. R. Peck *et al.* (ed.). *Soil testing: Correlating and interpreting the analytical results*. ASA Spec. Pub. 29. ASA, CSSA, and SSSA, Madison, WI.
33. Nielsen , D., G. H. Nielsen , A. H. Sinclair, & D. J. Linehan. 1992. Soil phosphorus status , pH , and manganese nutrition of wheat. *Plant & Soil*, 145: 45- 50.
34. Niewiadomski, H. 1990. Rapeseed (chemistry and technology). *Development in Food Science*, 23. PWN – Polish Scientific Publishers.
35. Rohman, P.C., & F. R. Cox. 1988. Evaluation of the modified Olsen extracting reagent for copper, zinc and manganese. *Commun. Soil Sci. & Plant Anal.*, 13: 1095-1113.

...

:

36. Sillanpaa, M. 1982. Micronutrients and the nutrient status of soils: A global study. FAO. Soils Bulletin , No. 48. Rome, Italy.P.5-16.
37. Shuman, L. M., F. C. Boswell, K. Ohki, M. B. Parker, & D. O. Wilson. 1980. Critical soil manganese deficiency levels for four extractants for soybean grown in sandy soil. Soil Sci. Soc. Am. J., 44: 1021-1025.
38. Welch, R. M., W. H. Allaway, W. A. House & J. Kubata. 1991. Geographic distribution of trace elements problems. *In:* Micronutrients in agriculture. 2nd ed. Eds: J. J. Mortvedt *et al.*, Soil Sci. Soc. Am., Madison, WI. P. 31-57.