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COMPARATIVE STUDIES ON SELECTED CHEMICAL PROPERTIES OF SOIL OF "ZIKRI" AREA OF JAMKHED TAHASIL OF AHEMEDNAGAR (MAHARASHTRA)

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ABSTRACT

A survey of chemical properties of soil of farmers of 'Zikri' an allied area of Jamkhed was carried in 2007-2008 & 2008-2009. Various parameters like pH, conductivity, salinity, organic carbon, available nitrogen, available phosphorous, available potassium, % of CaCO3, Na content, Boron concentration was analyzed.

The level of C, N, P, levels were found less than ICAR in many samples analyzed. Sodium level found within permissible limit, while the boron level found little more than permissible limit still it is not exerting toxicity because the crops cultivated are

Salt tolerant & little boron tolerant. On the basis of pH five soils samples found tending alkali in 2007-2008 & single sample found alkaline. Similarly the conductivity also found little more than ICAR values which suggest affecting poor seed germination.

Keywords: Zikri village , Chemical Properties,Soil**.**

INTRODUCUCTION

Repeated cropping and no application or limited application of fertilizers leads to reduce the macro and micronutrients from soil leading less crop yield. Analysis of soil helps to know which mineral elements are scare or satisfactory levels. To know the cause of less crop yield of farmers of Zikri 30 soil Samples in 07-08 & 35 Samples in 08-09 were analyzed for various parameters like pH, Conductivity, Salinity, macronutrient Status of 'C' N, P, K, Na, CaCo3, & micronutrient level of Boron in it.

Topography of Zikri

Zikri is small village of population 937 located 10 km near Jamkhed. Exact location is N-18 ^{o}, 13', 672'', E-75^{o}, 18', 013''The cropping pattern is two-belt method. The area under study comes under semiarid draught prone part of Maharashtra. .Mostly crops taken are Kharip Jawar, Bajara, Soya bean, Groundnut, Toor, black gram, green gram etc. Two-belt method is general cropping method. Crops Taken in Rabi Season are Rabi Jawar, Saffola, linseed, Groundnut etc. Earlier survey of farmers in 2006-2007 regarding crop yields made to think about soil analysis of the farmers. The marked area in the map was under study.

EXPERIMENTAL

Organic carbon was determined by W. & Black method[1]. Available nitrogen determined by Kjeldhald alkaline $KMnO_4$ digestion method. Phosphorous was determined by Olsen colorimetric method[2] using digital colorimeter of Elico Cl- 157. The Na & K content determined by Flame Photometer[3] Of Elico Company Eq-664A.Boron determination carried by hot water extraction Method[4] using curcumine-oxalic acid solution by plastic wares. pH, Electrical Conductivity was measured by pH meter Elico Li-120,Conductometer[5] & Tracer(a probe)of Lamote company, Taiwan.

RESULTS AND DISCUSSION

Several reports regarding soil analysis for improving soil fertility are found. Among those [6, 7, 8,9,10] are of interest. In present studies out of 30 Soil samples analyzed 4 were found tending alkali while other were neutral in2007-2008 and 1sample found alkaline out of 35 samples analyzed in 2008-2009. Maximum pH found in 2007-2008 was 8.8 while, 9.3 in 2008-2009(Fig.1).On the basis of electrical conductivity expressed in milli mhoos/cm 3 samples found poor seed germinating effect exceeding values more than 1 milli mhoos/cm in 2007-2008 . Similarly, three samples found tending poor seed germination in 2008-2009(Fig.2). Twelve samples found saline in 2007-2008 & seven in 2008-2009. Maximum salinity recorded was 0.073216% in both of years. The salinity data obtained by multiplying by 0.064 to EC in milli mhoos/cm(Fig.3) Only one sample found medium level of available nitrogen in 2007-2008 & six samples in 2008-2009. Remaining sample were containing low level of available nitrogen by ICAR out of 65 samples analyzed.250 to 500 Kg/ha supposed medium level and below 250 Kg/ha considered low level for grading(Fig.4)

Only seven samples found medium level of phosphorous in 2007-2008 while remaining were below level of ICAR. Similarly 10 samples found medium level of phosphorous, 2 samples found high level and rest of other found below low level of ICAR(Fig.5) The criteria used for grading was less than 10 ppm per hector considered low level, 10 to 25 ppm considered medium level & more than 25 ppm considered as high level. Available potassium found enough or more than enough in maximum soil analyzed .Only 10 samples shown low level of potassiumFig.(6) By the macro nutrient data of analyzed soils it seems that low level of nitrogen and phosphorous might be major cause of less crop yield. 13 samples out of 30 samples shown low level of carbon & other were moderate to enough in 2007-2008 indicating that nearly 43% soil had less carbon, obviously indicating low levels of available nitrogen and phosphorous in soil. 16 samples found moderate level one high level, 8 very high level & 10 low level carbon in 2008-2009 indicating 28 % low level of carbon in soil(Fig.7) For determination of % of $CaCO_3$ in soil rapid titration method was employed. Eight soil samples found medium calcareous in 2007-2008 out of 30 samples tested & seven samples found medium calcareous in 2008 -2009 while remaining were non calcareous when 4 to 10 % of CaCO3 found in soil classified as medium calcareous, when less than 4% non calcareous & greater than 10% soils were considered highly calcareous(Fig.8).Boron concentration more than 1 ppm in this area supposed high. Most of the values observed more than 1ppm(Fig.9)

Though the values found little more than permissible value, the crops cultivated are boron tolerant and salt tolerant therefore it has no toxic effect observed. Alkali soils are of two types. One is saline alkali soils & other non-saline alkali soils. In case of non-saline alkali soils, the pH generally observed more than 8.5 & EC less than 4 milli mhoos/cm. In case of non-saline alkali soils, the water-soluble salts are appreciably less when high concentration of sodium is present in soil. It leads to dispersion of organic matter[11]. Saline soils can be reclaimed by draining out the salts by making lits with little slope with trench[12]. Vermiwash, tillage, green manures, mulch, earthworms, vermin compost improves the sodic or alkali soils[13]. Leaching of salts is important for maintaining the salt affected soils, despite of it addition of gypsum and vermiwash can improve the soil properties for healthy crop growth[14].

CONCLUSION

In present studies out of 30 Soil samples analyzed 4 were tending alkali while other were neutral in 2007-2008 and 1sample was alkaline out of 35 samples analyzed in 2008-2009. Maximum pH found in 2007-2008 was 8.8 while, 9.3 in 2008-2009.The level of C, N, P, were found less than ICAR in many samples analyzed. Less content in C, N, P, in level might be responsible of less crop yield. Potassium level was quite satisfactory.

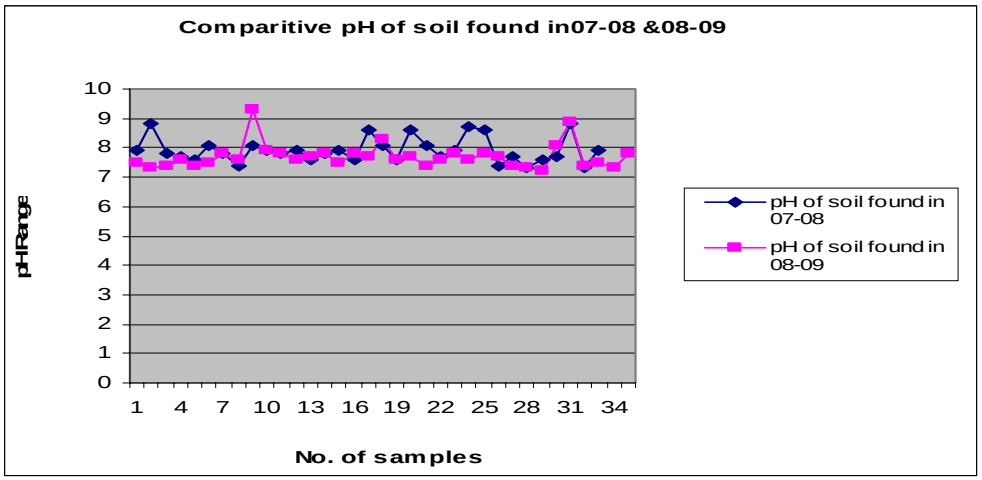

Fig.-1

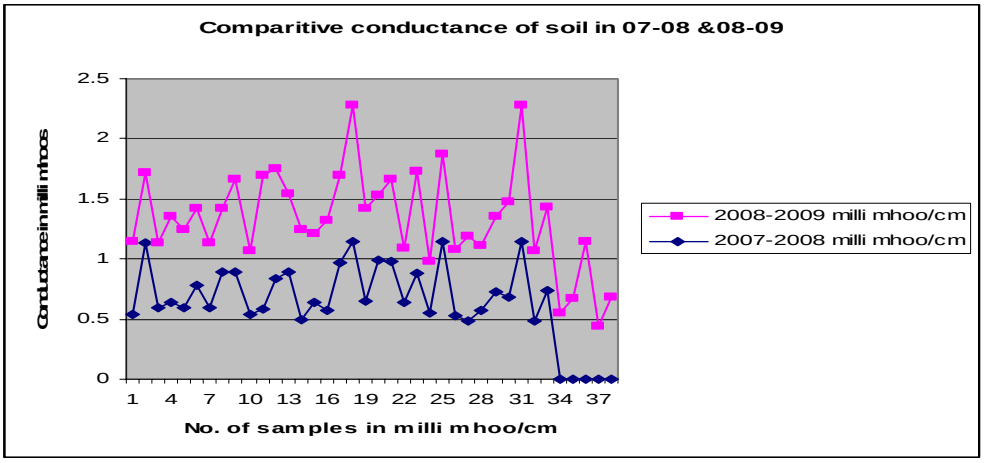

Fig.-2

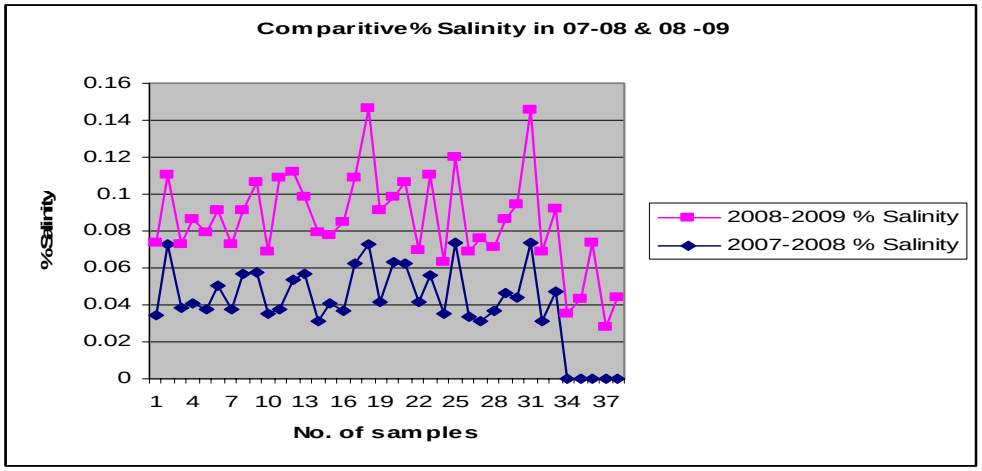

Fig.-3

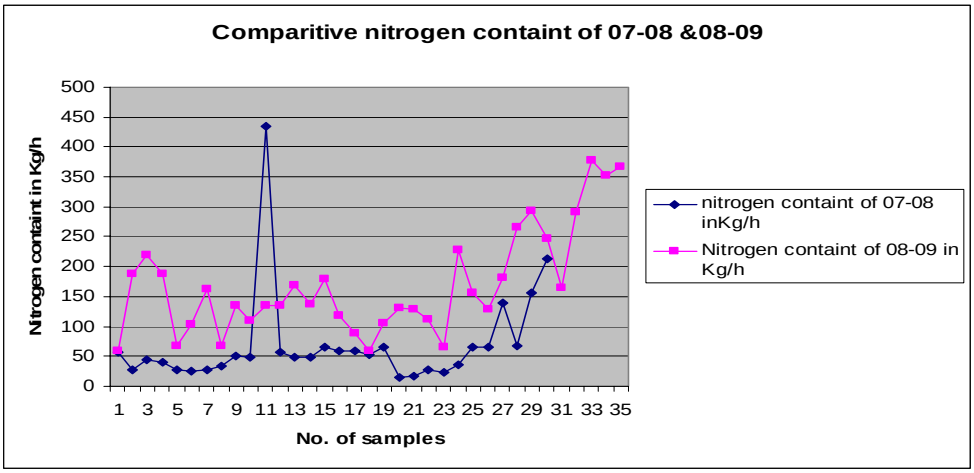

Fig.-4

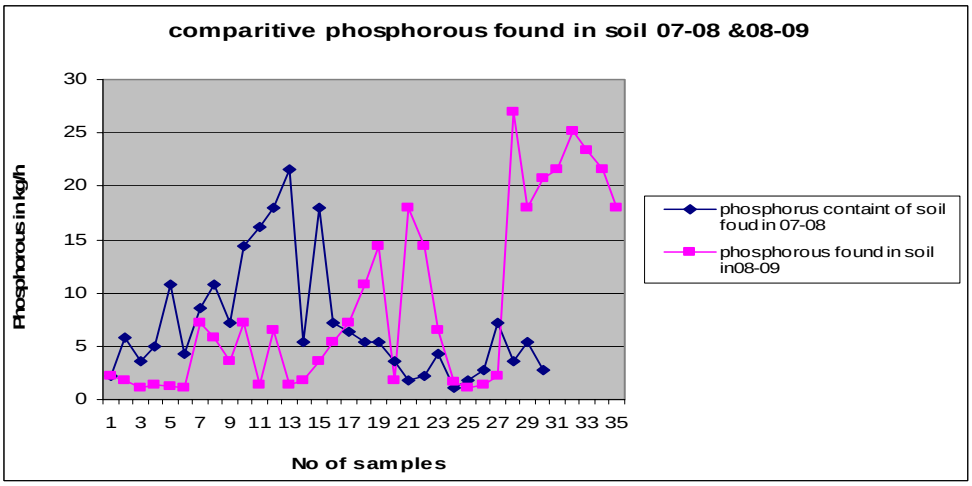

Fig.-5

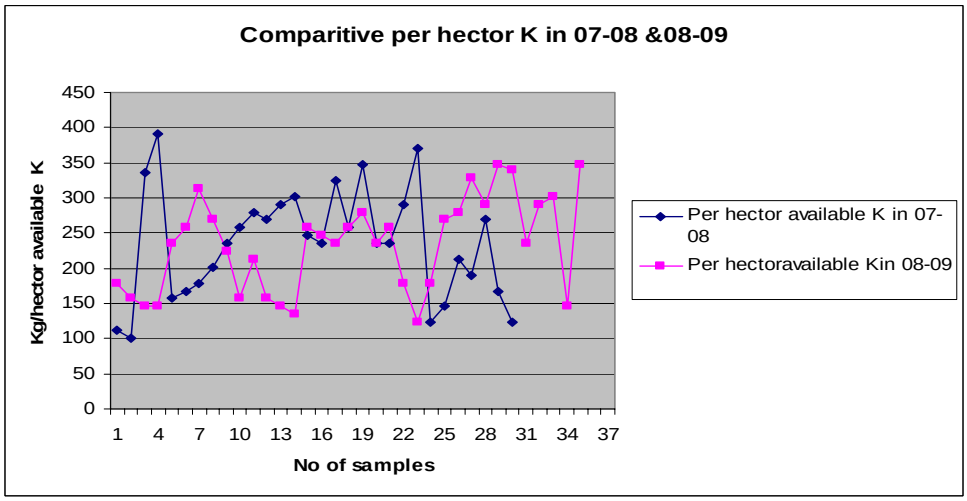

Fig.-6

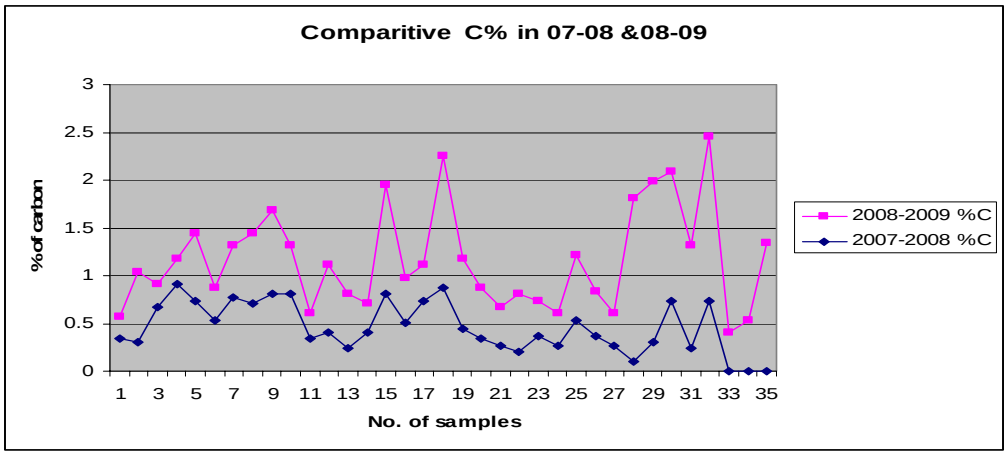

Fig.-7

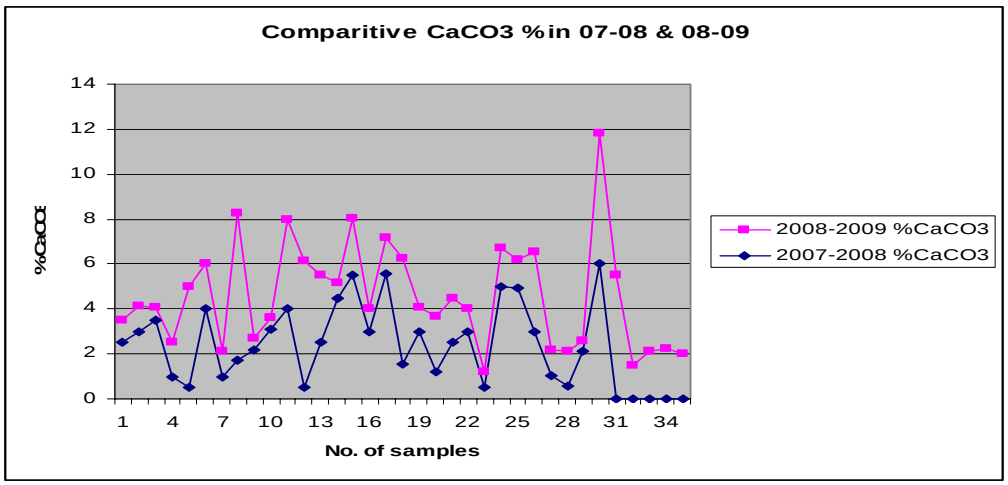

Fig.-8

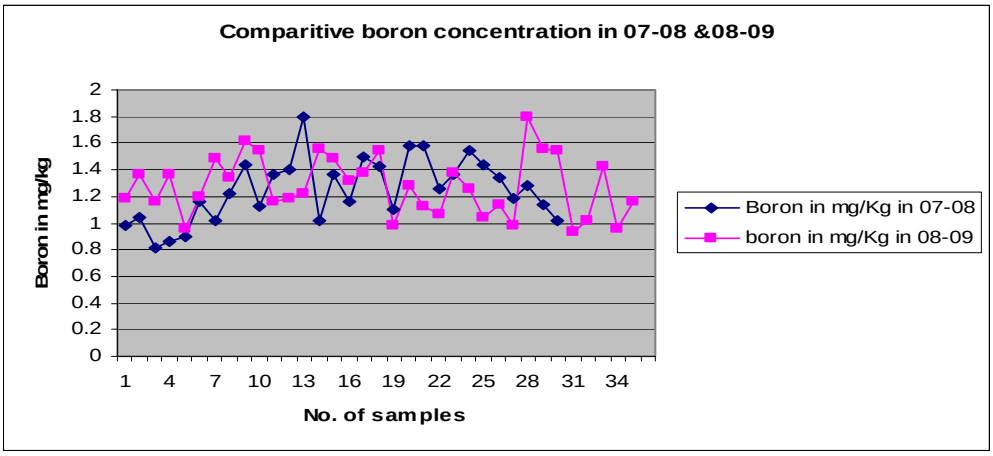

Fig.-9

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