DISCUSSION
5. DISCUSSION

The pH of soil and water in sample plot 1 were found to be slightly alkaline, but in sample plot 3 was slightly acidic nature. The decrease in pH may be attributed to the presence of low levels of calcium, magnesium and sodium ions in the soils. For the optimum good growth of mulberry, soil pH range 6.5-6.9 is ideal. High pH can be brought down by adding suitable quantity of gypsum and low pH can be increased by adding suitable quantity of lime.

Electrical conductivity of soil and sewage water in sample plot 3 is found to be highest when compared to the bore well water. The variation in EC may be due to varied concentrations of total soluble salt. The sample plot 1 was also found to be relatively high when compared to sample plot 2. The increase may be due to increased level of nitrogen. The ISI 2296 (1982) limit for irrigation water is 2.25 m/mhos/cm⁻¹.

The sample plot 3 conducted highest OC% when compared to sample plot 1 and 2. OC% of 0.50 is considered as low, 0.50-0.75 is considered medium and levels above 0.75 is considered high. Carbon along with the hydrogen and oxygen forms carbohydrates in the plant body. This may be one of the reasons for increased sugar concentration of mulberry leaves grown at sample plot 1 and 3.

The sample plot 3 water consists of high amount of Nitrate – Nitrogen compared to sample plot 1 and 2. The sample plot 3 soil shows
extremely high amount of Nitrate -nitrogen. This may be due to application of fertilizer. If the Nitrogen level is high for longer duration then the electrical conductivity will be increased was proved by Sanjay Sharma, (1995). The sample plot 3 is irrigated by using sewage water for longer duration which increases EC level when compared to the other sampling plots. Nitrate Nitrogen prescribed limit for irrigation water according to ISI 1986 is less than 5mg/lit.

Phosphorous level is found to be low in both in soil and water of sample plot 1 and is increased gradually in sample plot 2. Water and soil of sample plot 3 found to contain highest amount phosphorous. Since the sewage water consists of around 2% phosphorous. The irrigation of sewage water increases phosphorous level in sample plot 3.

Mulberry requires Potassium of around 25-33mg/g dry matter. In Sample plot 3 consists high amount of potassium both in soil and water compared to that of sample plot 1 and 2. When compared to the available potassium in the soil, very less quality of potassium present in mulberry leaves. Excess quantity of potassium in mulberry can not competently effect the use of water and other nutrients from soil and are less tolerant to environmental stress like drought, excess water, wind high and low temperature.

In sample plot 3 both soil and water consists of high amount of calcium. In the soil of sample plot 3 magnesium content was high compared to sample plot 1 and 2. But in the sample plot 3 sewage water consists of extremely high amount of magnesium compared to 1 and 2. This may be due
to application of fertilizers. Total hardness of water in sample plot 3 irrigated with sewage water had high. This is due to high amount of salts (carbonates and bicarbonates) dissolved in it. The sample plot 3 water consists of high amount of sulphate compared to plot 1 and 2.

The chloride content in the water of Sample plot 3 is higher than sample plot 1 and 2. The dissolved oxygen of water in sample plot 3 was high, because of presence of micro organisms in sewage water. The sample plot 3 of water consists of high amount of free carbon dioxide which is also due to presence of more micro organisms.

In sample plot 3 irrigated with sewage water consists of high amount of carbonates and bicarbonates which leads to increase the total hardness of water.


In the moisture loss% there was no significant variations in all three varieties. Moisture loss % varies between 60-70 % in V-1, 66-72 % in Anantha and 69-73 % in S-36. Moisture loss % is higher in tender leaves compared to medium and coarser leaves in all varieties. In sample plot 2 irrigated with bore well and sewage water mulberry leaves have relatively low moisture loss % compared to sample plot 1 and 3. Over all moisture loss 5 was lesser in all the sample plots in V-1 than Anantha and S-36.
carbohydrate/sugar concentration was higher in tender leaves than medium and coarser leaves in all three varieties. Organic carbon along with the hydrogen and oxygen forms carbohydrates in the plant body. This may be one of the reasons for increased sugar concentration in mulberry leaves in sample plot 3. Overall sugar concentration was higher in V-1 than Anantha and S-36.