Determination of organic content

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TYPES OF ORGANIC MATTER

- The total organic matter in soil can be divided into two main groups.
- Soil organic matter= Undecomposed material(I) + Decomposition products (II +III)
- Group I- It consist dead materials,undestroyed debris, waste products of vegetable and animal origin ,including living and dead micro-organism. The chemical substances I include cellulose, pectin and other carbohydrate liguin, protein, fats, waxes , resine,etc which are mostely colorless or faintly coloured. They are decomposed by the action of water air and micro-organism.

Group II-known as non-humus constituent of humus extract.simple amino acids,alcohols, aldehydes,and organic bases

- Group-III-dark colored , amorphous substance of non –humous , humic acid

Direct method for determination of organic matter- extraction with Alkali

- Soil is treated with ammonia or alkali hydroxide and the content of humus is dtermined by either colorimetry or gravimetric method.

- reagents-
- 1N potassium dichromate- dissolve 49.04 gm of reagent grade of K2Cr2O7 in water and dilute to 1 liter.
- 0.5 N ferrous sulphate- dissolve 140 gh of reagrnt grade FeSO4.7H2O in water and add 40 ml of concentrate H2SO4, cool and dilute to 1 liter. Standerised the reagents by titrating it with 10 ml of N potassiudichromate
- Barium Diphenylaminesulphonate- prepare a 0.16 percent acquos solution.

- O- phenantroline ferrous complex-prepare 0.025 M sol. Of phenantroline ferrous complex indicator.
- Sulphuric acid; - not less than 96 percent.
- Phosphoric acid: 85 percent
- Procedure-
- Take weighed amount of soil with organic matter in a flask, and add 10 ml of potassium dichromate.
- Add 20 ml of conc. Sulphuric acid, swirl vigorously by hand for 1 minute and let the flask on a sheet of asbestos for about 30 min.then add 200 ml. of water, 10 ml of phosphoric acid and 0.5 ml of barium diphenylaminosulphate indicator.

- Titration
- Add the ferrous sulphate solution untill the solution is purle , then add the ferrous sulphate in a small amount untill the color turns to green .
- Add 0.5 ml of N potassium dichromate to restore an excess of dichromate and complete the titration by adding ferrous sulphate to drop by drop to a little green point. If more than 8 ml of the available potassium dichromate is reduced , the determination should be repeated with the less soil.

- Percentage of organic matter in soil sample=

  (mililiter of 1N K2Cr2O7 reduced) x 0.69

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  weight of sample(gm)

- **REFERRENCES**-Method of soil analysis for soil fertility investigation
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- Samira A. Ben Mussa et al, "Determination of Available Nitrate,Phosphate and sulphate in Soil Sample", international journal of Pharm Tech Research, vol-1,No.3,pp598-604, july-sep 2009
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