



KENYA SOIL SURVEY PROJECT  
S141/I/JK/NNN - 29/3/73

PRELIMINARY REPORT ON THE SOILS  
OF THE RAMISI SUGAR ESTATES.

1. At the time of the survey the Ramisi Sugar Estates consisted of six sections known as Gazi, Famoni, Koromojo, Kanana, Kiwambale and Mrima.
2. The semi-detailed survey on a total of approximately 4,800 hectares was carried out to determine the suitability and distribution of soils for Sugarcane cultivation. The results of the field and laboratory examinations indicate that a great variety of soils exist in the Estates; often over short distances.
3. Sixty eight soil units have been delineated. These include deep, well drained soils, shallow and rocky soils, soils with low moisture holding capacity, salty and alkaline soils. The soils are widely varied in texture. They have in terms of texture been divided into 24 groups. This latter grouping if considered in relation to the three drainage situations is intended to bring out clearly the management problems that may be presented by the soils.
4. Most soils in the Project area are fairly deep and are suitable for cultivation. Soils 5D, 7D and 16D are however shallow and rocky. The presence of rocks and gravels significantly reduces the nutrient and moisture holding capacity. Mechanised cultivation may also be impossible on rocky soils. These soils are therefore considered unsuitable for sugarcane cultivation.
5. Alkali (high sodium) soils in the Ramisi Sugar Estates are soils 26b, 27b, 30b, 32b, 36b, 40b, 41b and 42b. These soils are liable to seal up on wetting to give poor drainage conditions. They should be best avoided unless reclaimed.
6. Soils which are both alkali and saline (high salt content) are soils 26c, 28c, 29c, 34c, 37c, 38c, <sup>30b</sup>40c and 41c. These soils contain too high levels of sodium and salt for sugarcane growth. They are best avoided as even reclamation may be difficult. Soils 2a, 14a, 23a, 25a, 26a, 27a, 30a, 31a and 40a are salty. The salts in these soils appear associated with the groundwater. The soils should be avoided as the flushing out of the salts may be difficult.
7. Other problems that appear to be associated with these soils are nutrient deficiencies, low water retention (soils 15 to 21, 26 to 27b and 30 to 31a)

seasonal high water level (soils 22 to 32b) and impeded drainage (soils 33 to 43). Sugarcane scales were also found to be one of the problems in some ~~estates~~ particularly Famoni and Gazi Estates.

8. It is suggested that fertilizers be used to correct the nutrient deficiencies concerning mainly phosphorus, nitrogen and potassium. It is further suggested that there should be trials to assess the merits of different types of fertilizers (including single superphosphate, calcium Ammonium Nitrate and muriate of Potash) on different soils before any attempt is made to determine optimum rates of application.
9. The improvement of the water holding capacity of the soils will depend on increasing the organic matter content by either green manure or direct manure application. Retention of the trash in the field may also be a means of increasing the organic matter content.
10. Adequate drainage system must be installed in the areas of soils with impeded drainage (soils 33 to 43). The control of the natural and seasonal high water table may be difficult in practice unless pumping is resorted to. However so long as the water does not stand on the surface too long, the fluctuating water table may be more beneficial than harmful particularly in the low water retention soils.
11. The numerous small depressions found in many parts of the Estates especially Gazi could be got rid off by raising the floor by dozing in a limited quantity of soil and cutting down the rim on the side towards which the water could drain naturally.
12. To attain high yields of sugarcane already being grown in the area it is highly desirable that controlled and costed experiments be conducted. Relevant to sugarcane is the need to know what varieties to grow, the effect of fertilizers, the spacing, the water requirement, the cultivation and weeding practices.

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