SOILS AND AGRICULTURAL POTENTIAL OF THE MARKHAM VALLEY

Some comments on the recent survey

By R.S. Holloway*

The Land Utilization Branch of the Department of Primary Industry recently undertook a survey of the soils and agricultural potential of the Markham Valley. The area studied covered 120 000 hectares on the northern side of the Markham River extending from the Erap River (48 km from Lae) to the Ramu River (177 km from Lae).

The approach taken in the survey was to study in detail the natural resources of the valley, and from this determine the potential of the land for a range of agricultural activities.

Field work commenced in July, 1970 and was largely completed by the end of 1971. Other investigations continued beyond this time and these have now been finalized. A detailed written report has been prepared: *DASF Research Bulletin* No. 14.

Soil survey was the most time-consuming exercise of the resource investigations. About twelve thousand soil profiles were examined and classified in the field, and results were used to construct a soils map. This was done by grouping soils having similar characteristics, and using the patterns that could be seen on aerial photographs as a basis for delineating soil unit boundaries on the map. Investigations into geology and geomorphology, hydrology, vegetation and current land use, and a detailed analysis of climatic conditions were also undertaken to provide the necessary background knowledge of physical resources used in the assessment of agricultural potential.

Suitability ratings for agriculture were determined by examining 27 factors. Results were expressed on separate maps for each of four agricultural activity groups, namely: arable crops, tree crops, improved pastures and irrigated rice.

The relative importance of the various factors as limitations to agriculture depends mainly on location in the valley and the type of enterprise being considered. In general terms however, it can be stated that the major limitations are: seasonal wetness of the medium and fine textured soils; alkalinity associated with high levels of soil carbonates; seasonal dryness mainly of the coarser textured soils; and graveliness.

Land and crop management factors as a group are of over-riding significance to the attainment and maintenance of agricultural productivity.

One of the most significant findings of the survey has been that the suitability of the Markham Valley for most agricultural enterprises depends strongly on the degree of investment in land improvement measures. The two maps given here of the area between the Leron and Rumu Rivers show an example of the large amount of land which can be added to the arable area by land improvement measures.

Improvement measures include:

drainage, overflow protection, reduction of bicarbonate hazards;
use of fertilizers;
protective management of crops (weed, pest and disease control);
protective management of land (maintenance of organic matter, erosion prevention, use of rotations).

Drainage is the most important single component of the land improvement measures mentioned above. A large proportion of the nongravelly soils are seasonally wet and are thus not suitable for cropping over extended periods of every year. In the Erap to Lerom area this condition is associated with strongly alkaline soils, and sensitive crops (such as rice) cannot be grown with any certainty of success. A map has been prepared which indicates in general terms the requirements for drainage in different areas of the valley if full agricultural potential is ever to be realized.

Results of climatic analyses have been used to determine optimum sowing dates for different crops at various locations in the valley. All available rainfall records were processed by computer, and results were used to calculate the time of the year when the

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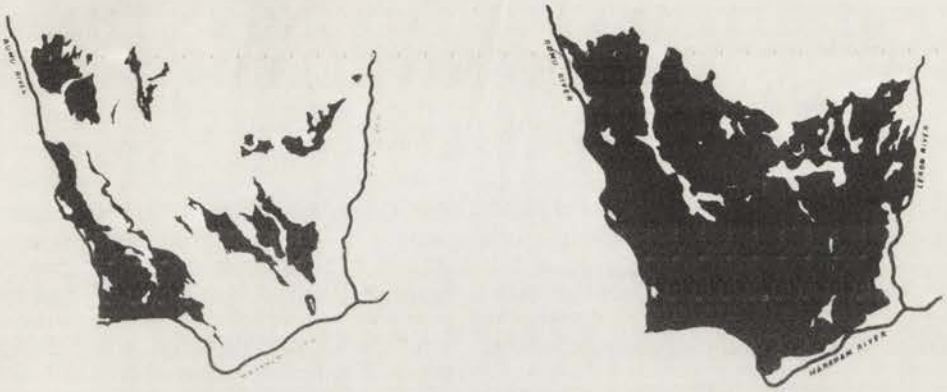

These two maps show the increase in arable land possible in the area between the Erap and Rumu Rivers with improvement measures. Map A shows the area of arable land before improvement, and Map B shows the area after improvement, including drainage.

chances are greatest for the occurrence of both ideal soil moisture conditions during crop growth, and satisfactory weather conditions at harvest time.

The survey will also provide a framework for thinking about the problems and prospects for land drainage, removal of soil chemical limitations, and irrigation. Some results will be useful in the planning of future agronomic research; some enable an appreciation of the problems that arise as a result of certain farm management practices; and others suggest the types of management practices that might be appropriate to different soils and locations in the valley, and at different times of the year.

Over the course of this survey it has become clear that the attention given over the long term to land management and crop or grazing management will be of utmost importance in determining whether or not the Markham Valley land will be maintained as a productive agricultural resource. Detailed economic, social, agronomic and engineering investigations will be necessary to determine the degree of investment in land improvement measures which would enable the most efficient but realistic use of these land resources for the benefit of the country in future years.

For further information about the Markham Valley survey, write to—

The Chief Land Utilization Officer,
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PROHIBITION OF TEA IMPORTS

The Minister for Defence, Foreign Affairs and Trade, Sir Maori Kiki, has announced his intention of placing a total prohibition on imports of tea in small packets and containers as from 1 September this year.

Sir Maori Kiki said it was his intention to totally prohibit the importation of tea in containers less than 10 kg net weight.

This action has been taken in the interest of greater self-reliance—primarily to transfer the packaging profit to local industry and to provide additional local employment.

Sir Maori Kiki's office also said that is has become clear that the Papua New Guinea tea industry can produce a satisfactory product and that it had found it possible to compete at price levels set by imported tea.

Sir Maori Kiki said that a series of products and packaged goods now being imported would be progressively examined to see if similar action would be desirable.