

# Reviews

## *A SURVEY OF CUTOVER PEATS AND UNDERLYING MINERAL SOILS.* Bord na Mona. Cnoc Dioluin Group.

*Soil Survey Bulletin* No. 30. T. A. Barry, M. L. Carey and R. F. Hammond. A Joint Publication of Bord na Mona and Foras Taluntais, Dublin, 1973, pp. 144.

As the general public becomes more conscious of its physical environment the old question of "what to do with it when we are finished with it" is being asked in ever widening and higher circles. The question has particular relevance to the areas of bog now being exploited by Bord na Mona (the Irish Peat Development Authority). Moss peat and fuel are at present being produced mechanically on about 52,000 ha. When one considers that this area is bigger than the present total forest area in Northern Ireland the importance of its future utilisation can be better appreciated. It is expected that the present area will be completely cutover within the next 30 years. Research and survey work have been in progress since 1963 to investigate the land use potential of such cutover areas.

The present Report describes the mineral soils and residual peat left after cutting operations of the Cnoc Dioluin Sod Peat Group. This group, which comprises four separate bogs with a total area of 1,579 ha, lies in the Shannon valley on the Roscommon-Longford border. Most of the peat is used to fire the power generating station at Lanesborough.

Preliminary drainage of the bogs began in the early 1940s and cutting began some 6-9 years later. By 1967, some 620 ha (39%) had been cutover.

As with much of the central plain of Ireland the parent rock materials belong to the Carboniferous period. They are predominantly limestone but with some areas of sandstone. Much of the area is overlain by glacial boulder till which is derived primarily from Carboniferous limestone. Chemical and physical characteristics of this drift material are recorded in an appendix to the Report.

Mineral soil development in the area is dependent partly on parent material and partly on the length of time over which the soil forming processes have been acting on it. In all, seven soil types are defined and described in some detail in the Report. The types range from the well-developed grey-brown podsollic soil occurring on the higher ground within the area (and which apparently have never been peat covered) to the shell marls and calcareous muds which were developed under lacustrine conditions and which, even after cutting

operations, have between 1 and 2 m of fen peat overlying them. Apart from the upper horizons of the more developed soils the pH of the soils is generally high but the content of major plant nutrient is low.

The section dealing with the description of the peat remaining after cutting operations begins with a description (taken mainly from T. A. Barry's paper which appeared in Vol. 26 (2) of this journal in 1969) of the main peat types found in the raised bogs of the Central Plain. The typical effects of sod-peat removal on peat profiles in different topographical situations is then illustrated. What must be realised—and is well emphasised in the Report—is that only one peat type (the “older *Sphagnum-Eriophorum* peat”) is normally used for the production of sod-peat. The “younger *Sphagnum* peat” originally on the bog surface is scraped off and deposited on top of the older, deeper layers which form the surface of the area of peat cutover during the previous operation. The future potential of the cutover peat will therefore be influenced by the depth and physical and chemical properties of (a) the upper stripped material (the redistributed peat), (b) the remaining undisturbed peat, and (c) the sub-peatian mineral soil. Together these factors are used to designate the so-called “natural regions” of the bogs. As pointed out in the glossary in the Report the term “semi-natural region” would be more appropriate. Five such “regions” are recognised in the Report and these will be the units on which future utilisation of the cutover is based.

One aspect in which the bogs of the Cnoc Dioluin Group differ from those previously surveyed is that approximately 70% of the area is underlain by reed-swamp peat with a high pH and high total N and Ca contents. Previous surveys of two bogs in Co. Offaly and Co. Kildare showed proportions of only 20% and 12% respectively.

Section 4 of the Report deals with the terminology and classification of the often confusing term “sapropel”. Although organic in origin this material is quite different from the peat overlying it. Sapropel is an organic sediment of algal or planktonic origin which was deposited under water. In the glossary of the Report it is defined as “a sub-peatian, non-calcareous, organic mud relatively rich in sulphur and a number of metals”. It also has a very high ash content (38.1%). This characteristic could usefully have been included in the definition and the term “sediment” or “deposit” might have been preferable to ‘mud’ since the latter is more widely used in the mineral soil context.

In two of the four bogs in the Group there is a good correlation between the “natural regions” of the cutover peat and the under-

lying mineral soils but in the other two bogs there is no such consistent relationship. This is explained by differences in the geological histories of the bogs; the simpler the history the better the correlation. This point is well illustrated by maps of mineral soil distribution and accompanying transparent overlaps delineating the "natural regions" of the cutover peats. Since the "natural region" is defined, in part, by reference to the underlying mineral soil this inconsistency in the relationship between peat type and mineral soil makes inter-bog comparison of natural regions somewhat difficult.

In the context of future land use the underlying mineral soils are relevant in the near future only in natural regions in which the undisturbed peat was shallow and little remains after cutting operations. At Cnoc Dioluin the only region like this occupies the higher ground in the bogs and is underlain by a soil "with affinities with the grey-brown podsollic soil . . . a common cultivable soil of farmland". In the other four natural regions it is estimated that it will be between 50 and 125 years after cutting stops before the underlying mineral soils will come within 30 cm of the surface of the peat. During this period the characteristics of the remaining peat rather than the mineral soil will affect utilisation.

One aspect of the greatest importance and future utilisation of the cutover peat is its permeability to water. Fortunately, the least permeable peat—"the older *Sphagnum-Eriophorum*"—is the one most often removed during cutting operations. The permeability of the various types of fen peat, particularly those with a considerable quantity of wood remains, is relatively good. However, not much is known about the permeability of the redistributed "younger *Sphagnum* peat" which will form the initial working surface for future use. Even if the redistributed peat is mechanically mixed with the lower peats it will still have an important influence on the characteristics of the upper layers.

The last 44 pages of the Report present details of the chemical (including trace element) and physical analyses of the peats and mineral materials discussed in the text. There are 13 plates illustrating the soils and peats and some of the machinery used in sod-peat production. These latter are extremely helpful to any reader not familiar with this process. Much of the details of the survey is included in the 3 appendices, 4 tables and 24 figures in the Report.

Of necessity, a report of this type includes a mass of detailed information which is of interest only to the specialist. However, the authors have wisely included in the text only information necessary for its full understanding and the Report is recommended to all

foresters—and others—who have a present or future interest in the utilisation of these cutover Midland peats.

As long ago as 1962 N. O'Carroll stated in a paper in this journal: "In time large areas of cutover bog will become available for use either for forestry or agriculture. Should the decision be in favour of afforestation, the problems presented will be totally different from those presented by the afforestation of blanket bog," The present Report indicates just how big the differences will be but it favours neither the farmer nor the forester, although the reader gets the impression that present thinking is more towards agricultural use. The final decision on future use will anyway probably be a political one but the merit of a Report such as this is that it provides the factual data on which the final decision can be based.

D. A. DICKSON