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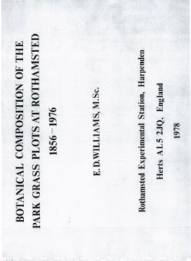
Botanical Composition of the Park Grass Plots at Rothamsted 1856-1976


BOTANICAL COMPOSITION OF THE
PARK GRASS PLOTS AT ROTHAMSTED
1856 1976

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1978

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3. Comparison of the Botanical Compositin of Plots 3, 7 and 14 in 1975 and 1976

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3. COMPARISON OF THE BOTANICAL COMPOSITION OF PLOTS 3, 7 AND 14 IN 1975 AND 1976

(Tables 42, 43, 44 and 45)

The present botanical composition of these plots has already been discussed when successional changes were presented and the very different weather conditions preceding the 1975 and 1976 harvests have also been emphasised.

There was nevertheless good agreement between the results for the two seasons especially for the major components on the plots. For example, on the unlimed half of Plot 3 (Unmanured), *Festuca rubra* contributed 32-33% in both seasons and *Agrostis* on the unlimed half of Plot 7 (PKNaMg) was 29 and 31% in 1975 and 1976 respectively. Also on the unlimed half of 14 (N_2*PKNaMg) *Arrhenatherum* and *Alopecurus* were co-dominant but on the limed half *Arrhenatherum* was dominant in both 1975 and 1976. The unlimed half of Plot 7 consisted of 30% *Arrhenatherum* in 1975 and although only partial analysis was done in 1976 (Table 44) about three-quarters of the grass fraction (40%) appeared to consist of *Arrhenatherum* in that year.

There were also some differences between seasons. The most significant of these was the increase in % other species on the limed half (L) of Plot 3 and the large increase in % legumes on the limed half of Plot 7 in 1976 compared with 1975. The increase in other species on 3L in 1976 was mainly at the expense of the grasses but the increase in legumes on 7L was accompanied by a decrease in other species so evidently the drought induced different reactions in different communities. Particular species e.g. *Hypochaeris* and *Leontodon* were much encouraged in 1976; *Dactylis* and *Lolium* also appeared more abundant than usual and *Arrhenatherum* was more plentiful on 14L in 1976 than in 1975.

DISCUSSION AND CONCLUSIONS

CHANGES WITH TIME

As pointed out in the Introduction the present analyses were initiated to quantify the changes in botanical composition on those sub-plots which had received new or increased rates of lime under the new liming scheme. The analyses were then extended to include plots with unchanged treatment to assess whether and how much they had changed since the previous hay analyses during 1948 and 1949. At the same time it became clear that a better appraisal of the present-day flora would be achieved by considering it not only in relation to changes in the immediate past but also in relation to the main changes on the plots throughout the duration of the experiment. The scope of the work was, therefore, widened from a presentation of the results of the 1973-1976 analyses to include also a review of past results. However, because of the large amount of accumulated data the results section dealt only with those changes which were deemed large enough or to have continued for long enough to be obviously 'significant'. It is likely that other changes have occurred especially in minor components which the method of analysis was not sensitive enough to detect. Plot yields have changed (usually decreased) slowly with time but except in the early (1862-77) and late (1973-76) analyses the amounts of species per unit area of land were not calculated; in view of the yield changes it is possible that over a period of time the changes in the amount of species might be somewhat greater or smaller than the percentage figures suggest. Although percentage composition can be compared throughout, because of the change

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