THE EFFECT OF THE DRAINAGE DEPTH ON MOISTURE CONDITIONS IN MODERATELY MINERALISED PEAT SOIL

Key words: agro-environmental draining standard, extensive meadow utilisation, regulated outflow

**Summary**

The study was focussed on the effect of the draining depth, at variable intensity of ground water input and climatic conditions in Poland, on the prolongation of excessive, sufficient and insufficient moisture content in the rhizosphere of moderately mineralised soil under extensively used 2-cut meadow. Practical problem consisted in looking for "the best" draining depth which would guarantee the longest period of sufficient soil moisture.

As a result of performed studies with the use of calibrated and verified simulation mathematical model it was found that:

1. Draining depth and the intensity of ground feeding with water exerted significant effect on the prolongation of excessive, sufficient and insufficient moisture in the soil rhizosphere. The effect was to a small degree differentiated by variable climatic conditions in Poland.
2. There is such a draining depth, termed agro-environmental draining standard, at which the most beneficial moisture of the soil rhizosphere is obtained. The latter means the highest mean of annual sums of the periods of sufficient soil moisture. The standard is equal to:
   - minimum draining standard $z_1$ - in the case of soil feeding from rainfall,
   - mean value of the minimum $z_1$ and the mean draining standard $z_2$ - in the case of ground water feeding with a constant intensity of $q = 1 \text{ mm} \cdot \text{d}^{-1}$,
   - mean draining standard $z_2$ - in the case of ground water feeding with a constant intensity of $q = 2 \text{ mm} \cdot \text{d}^{-1}$.
3. The lack of drainage of the studied soil is acceptable only in the case of soil feeding from rain-fall. The effects are the better the drier is the year - particularly its wintertime. The worst (unacceptable) effects i.e. high frequency of long periods of excessive moisture can be obtained in soils fed from mixed ground and rainfall sources.
4. Uncontrolled (spontaneous) draining is a good method of regulation of water and air relations in soils fed from mixed ground and rainfall sources. In soils fed exclusively from the rainfall such a way of reclamation might be favourable only in wet years and after snowy winters.

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