

Settlement of lean grass by hydroseeding

One grassing aim for hydroseedings may be the settlement of lean grass. One of the remarkable features of lean grass is a certain nutrient deficiency of the soil. If they are situated away from ground water and free of overflowings, these lean grasses are often called "dry grasses" or "half-dry grasses", whereby the groundness of the soil plays an important role in relation to the plant density. On the surface, dry grass appears as incomplete whereas its roots dig through the soil intensively. Therefore, it is a sufficient erosion protection for slopes.

The biggest contrasts in the composition of lean grasses are caused by the calcium content of the soil which is very often also coupled with the clay content. It must be differentiated between the class of calcium lean grass and the class of silicate- and sand lean grass. Due to the low-growing vegetation, lean grass has to stand extreme differences of temperature, atmospheric humidity and wind speed. The small climate is - compared to higher growing plants - more extreme.

The originally small distribution of lean grass plants in Germany (rocks, stone heaps, dunes, dried bank areas, gravel banks of large rivers, drying regions in marshy areas) has been extended by man (forestry clearing, grazing), but becomes smaller again today because of the intensive use of land. This trend is counteracted by the installation of raw soil slopes, away from ground-water e. g. in the road construction. But this is only valid as long as these areas are not covered with arable soil.

Regarding the erosion protective effect of lean grass stocks on slopes, it can be mentioned that one remarkable feature of most of the existing plants there is a high migratory speed so that upcoming gaps in the stocks (caused by yearly changing climate extremes) are closed fastly within the following years by natural vegetation.

Already in early spring, the plants of the lean grass start greening the soil which is still humid from the winter. But the green of dry lean grass rarely appears "fresh", it goes always a little bit to a yellow, brown and grey colour. In the summer season the blossom gets weaker, and many leafs dry out. In the "rest green" on the leaf bases, the plants survive. In autumn here and there a new blossoming and growing starts. In winter, the hole growing dies to start growing again in early spring.

The nutritive content of lean grass

Lean grass always shows a lack of nitrogen and phosphor. Therefore, many plants transfer their nutritive stocks to the leaf bases ("rest green ") as for example *Bromus erectus* or transfer them into the roots as for example *Brachypodium pinnatum*. Due to this action, the plants are able to sprout even after long dry periods. Additionally, the plants of lean grass have an extensive root system who's bio masses are much higher then the one on top of the soil. The bio masses supports the above mentioned nutritive transfer, the ability of the vegetation covering to survive long-time dry periods.

The plants of lean grass are of course able to survive with little nutritive resources, but they need a minimum of nutritive reserves in the soil to be able to survive.

For hydroseedings on raw soil areas (sand, scree, gravel, rock, mineral-mixture) a basic fertilization on the basis of organic slow release fertilizers (**HYDROSEED**) must be done, to fulfil the minimal needs of the plants for nutrients. In many cases, this basic supply cannot be covered by the sterile and humus-free raw soils.

The water content of lean grass

The most important fact which influences lean grass is the water-supply and connected with this the groundness and the corning of the soil. The dependency from the water supply is reflected in the word "dry grass", but this expression should not be misunderstood - the locations should not be regarded as constantly out of water. If this would be the truth, most of the high-growing plants would not be able to develop there. In reality the soils of dry grass are most of the time as humid as normal grass soils, mostly in early spring and in late autumn as well as in summer after rainfall, lasting for days. Critical are only the rainless periods emerging in warm seasons, which might last between a few days and several weeks in middle Europe. During these dry periods the water resources of flat grounding and sunny soils exhaust very fast. Such lacking periods happen during many years at dry grass locations. You do not have to think of years of drought as 1970, 1973, 1975, 1976 and 1989 which became catastrophes even for other plant societies. Even after extreme times of drought dry grass and half-dry grass regenerate quite fast. The plants of such locations are well adapted to changing water supplies.

Summarizing the following can be stated regarding grassings on raw soil slopes which are in danger of drying out:

1. A consolidation of slopes by a settlement of a dry grass society is possible.
2. The types chosen should go along with the local conditions.
The soil reaction or rather the calcium content has to be paid attention to.
The German RSM 7.2.2 (seeds for dry areas) can be regarded as a suitable seed mixture.
3. The soil amelioration - executed only once - must have the aim to be a long-lasting but only slowly flowing nutritive source and must support the developing sprouts mostly in their root growth.