

Emergence Periods of Hydroseedings

Regarding hydroseedings very often the question is when the seed will come up and/or when the client can expect to have a closed vegetation cover. For that, some technical information:

1. Choice of the seed

The germination phases, which means the time a grass seed needs to develop a first blade or root, with optimal watering and at least 8° C soil temperature, is different for each seed. Some examples for this:

Agrostis capillaris	bent grass, brown top	18 to 21 days
Festuca ovina	sheep fescue	10 to 14 days
Festuca rubra	red fescue	10 to 15 days
Lolium perenne	perennial ryegrass	05 to 06 days
Poa pratensis	meadow fescue	21 to 35 days

Grass seeds have to be distinguished into fast sprouters (e. g. Lolium) and slow sprouters (e. g. Poa).

In order to predict the real germination durability, the optimal germination period (as above) has to be completed with times of soil temperatures under 8° C as well as with times of dryness on the soil surface. As these times are not known during the seeding, the forecast of the germination durability has to be done regarding empirical results, which are not valid for extreme weather situations. If you consider that on slopes which have to be regarded as dry only dryness resistant types have a chance and that these types belong mostly to slowly growing sorts and if you consider how often - on the surface - a small but extreme dryness happens, due to sun and wind and that for example in autumn and spring the soil temperatures are below 8° C , it is easy to explain that with hydroseedings, it may take up to several months until a germination happens. During extremely hot summers, which can be observed again and again, it might take up to 6 months until the germination is finished.

2. The influence of the micro-climate on the germination durability

The water supply of the seeds applied on the slopes is very much dependent on the precipitation and its annual distribution. Dependent on the rainfall, the temperature (on southern slopes, the soil temperatures achieves up to 70° C, with differences in the daily temperature up to 45° C) and the water supply; caused by sun and wind, there are immense swayings in the imbibition of the grass seed. But a constant water supply of the seed is one main prerequisite for the germination and later on for the development of the plants. Additionally, due to the steepness, one big part of the precipitation runs away on the surface and gets lost for the water supply of the seed.

3. The influence of the soil physics on the germination durability

On coarse-grained subsoils (e. g. rubble, sandy, gravel) the water-absorbing capacity is extremely high but in contrast the water-holding capacity is extremely low. That is why even during strong rainfall nearly no water remains on the surface of the soil to keep the seed humid. Already after a few hours the soil surface is dry again, due to sun irradiation and wind effects. It is not helpful for the seed if the deeper layers of the soil are humid. Even the water which is only a few millimetres under the surface of the soil is not available for the water supply of the seed.

On fine-grain to cohesive virgin soil slopes the water-storage capacity is smaller the more the surface is dried out and the higher the rainfall per time unit is. Very often, such virgin soil surfaces are hardened over a long time and dried out by wind- and sun influence that the roots of the sprouts can hardly get into the virgin. Additionally, on cohesive slopes with plain and steep surfaces, it is very difficult to fix the seed for a longer period of time. One prerequisite for a successful greening is an effective fixation of the seed on the surface for a long time to be greened with suitable materials.

4. Seed fixation, seed anchoring

To ensure that the seed remains on the surface until the coming up of the plants, different soil stabilizers and erosion protective fibres are used with which the seed can be fixed on the surface. The soil stabilizers effect - throughout the fixation of the seed - a germination deceleration, which may last up to 2 weeks.

In extremely different cases, an additional installation of erosion protective mats (mostly made of jute fibres) must be considered.

Please read the **Technical Information "Erosion Protection And Seed Fixation"** as well.

5. Results

These evidents lead to the following results:

Virgin soil slopes are mostly very dry locations, which is especially valid for southern and wind exposed places. Seed mixtures used have to consist of dryness resistant sorts. As dryness resistant sorts normally are also long time germinators, the result of long periods of dryness after the seeding may be emergence periods of several months. The possibly long phases between the seeding and the coming up of the seed request a lot of work regarding erosion protection in the shape of different stabilizers and erosion protective fibres, partially intensified by erosion protective mats (e. g. made of jute with a netting of approx. 2 cm), to keep the applied material consisting of seed, fertilizer and soil amelioration substances on the partially plain surfaces.