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ORDINE DEI DOTTORI  
AGRONOMI E  
DOTTORI FORESTALI DI PADOVA



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**The importance of varieties selection for turfgrass establishment**

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# The importance of varieties selection for turfgrass establishment

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## There are following trends and problems in contemporary turfgrass industry:

1. Diverse demands on turfgrass quality (*low input* x excellent quality „upon any terms“)
2. Limited water availability (use of recycled water, *Festuca arundinacea*, *Koeleria macranta*, C4 grasses, amended rootzones)
3. Increasing population in cities = higher wear of park and sport turfgrasses
4. Ecologization – ban of pesticides and mineral fertilizers (public turfgrasses and golf courses in Scandinavia, Netherland, and also in USA), Carbon footprint (low cutting frequency – dwarf turf varieties, plant growth regulators)
5. Problem with biomass disposal – clipping recycling, slow growing dwarf cultivars and species
6. Climate change – more frequent weather extremes (drought, heavy rains, high temperatures, frosts...)
7. Shading and short lifetime of turfgrasses at football stadiums

## Breeding of new turfgrass varieties

The germplasm is crossed, tested, selected and multiplied over many generations. It usually takes 10 to 20 years before new variety is released and registered. When a breeding company consider that a new genotype has a chance of being accepted, it will be submitted to official testing. Most European countries require only DUS tests for registration (Distinctness, Uniformity and Stability). Each new variety have to be different from previous varieties, it must be uniform (what is problem with populations – lose their plasticity) and stable during multiplying. The number of turfgrass varieties is enormous and it is not easy to choose the best one for your condition.

## Number of grass cultivars registered in the list of OECD in 2013:

Species	Number of cultivars
<i>Agrostis canina</i>	8
<i>A. capillaris</i>	52
<i>A. stolonifera</i>	57
<i>Festuca (Lolium) arundinacea</i>	493
<i>Festuca rubra</i>	517
<i>Lolium perenne</i>	1539
<i>Poa pratensis</i>	301

Because of turfgrass varieties characteristics are not evaluated during DUS tests it is important for end users and seed merchant to know what is the quality of each cultivar. Turfgrass testing is expansive and demanding process and only few organizations conduct it.

### **Systems of testing of turfgrass cultivars**

**USA:** NTEP (National Turfgrass Evaluation Program - [www.ntep.org](http://www.ntep.org))

20 – 30 different locations for individual turf species under different environmental conditions. Turfgrass visual ratings: scale 1 to 9; 9 = outstanding turf, best rating; 1 = dead, poorest turf, 6 = acceptable turfgrass quality

Characteristics evaluated: turfgrass quality (visual merit), leaf texture (width), spring greenup, seedling vigour/establishment rate, living ground cover (spring – summer – fall), drought tolerance, frost tolerance / winter kill, disease / insects,

**Europe:** VCU trials (Value for Cultivation and Use)

-STRI Bingley (UK) (Sports Turf Research Institute, [www.stri.co.uk](http://www.stri.co.uk))

different approaches for testing:

- low mowing (4-7mm), bents, chewing and slender creeping red fescue
- lawns, summer sports (10-15mm), perennial ryegrass, smooth stalked meadow grass, all types and species of fineleaved fescues and bents
- sports use (30mm +wear), PRG a smooth stalked meadow grass
- various grasses – special demands

RSM in Germany (Regel-Saatgut-Mischungen Rasen, [www.fll.de](http://www.fll.de))

- 4-5 experimental sites, suitability of tested cultivar for ornamental, recreational, sports and landscape turfgrasses
- index 3 to 9. Cultivars with lower evaluation are not included in the RSM list (updated every year)
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Scandinavia ([www.scanturf.org/Turfgrass.asp](http://www.scanturf.org/Turfgrass.asp))

voluntary system of turf testing for Denmark, Sweden, Finland and Norway, replaced former national testing. Trials are conducted according to uniform records.

France ([www.geves.fr](http://www.geves.fr))

VCU trials are mandatory for turf cultivars registration

Netherlands - **Plantum NL**

trials are organised by breeding companies

In minor extent are the trials performed also in Switzerland, Austria and Slovakia

## **Turfgrass mixtures**

Most of the turfgrass seed is sold as mixtures. There are three very different markets in Europe:

### 1. Hobby market

Home lawns, park and municipality turfgrasses; low mixture prices are largely requested, sold mostly in supermarkets, cheaper species and varieties are used. Germinability is often at the minimum requested level, higher weed seeds and impurities proportion.

### 2. Professional market

Sports mixtures (football, golf, tennis, baseball, cricket...); ornamental, park and municipality turfgrasses. High quality requested regardless the price of the mixture (esp. sod quality). Large pack, high quality cultivars are used (RSM, STRI) in tested proportion.

### 3. Landscape turfgrasses

Land reclamation, road embankments etc.; very low level of management (no *fertilizers, pesticides, cultural practices...*). The highest emphasis for low price, forage cultivars are mostly used.

## **Blends of varieties within the same species**

Due to requirement for a high uniformity, the varieties lose their adaptability. A good blend should always contain at least two, preferably more, varieties of each species/subspecies.

- All varieties must be recommended for the area of use and the climatic zone.
- Blend varieties similar in colour and leaf width.
- Blend varieties from different breeders / seed companies.