Turf grass in Australia is based on a ‘breeder testing’ system. The applicant, in conjunction with a nominated ‘qualified person’, establishes, conducts and reports on a comparative growing trial to demonstrate that the new (candidate) variety is distinct, uniform and stable, hence the term a ‘DUS trial’. Under PBR regulations introduced in 1996, establishments designated as centralised test centres (CTCs) may be officially authorised by IP Australia (the Federal Government agency responsible for administering PBR) to conduct comparative growing trials on behalf of a wider group of breeders.

The turfgrass CTC located at the Queensland Department of Primary Industries and Fisheries (QDPI&F) Redlands Research Station near Brisbane focuses predominantly on warm-season species. A second CTC associated with the Pastoral and Veterinary Institute at Hamilton in Victoria does conduct growing trials on cool-season grasses (perennial ryegrass, tall fescue, etc), but essentially works only with cultivars for pasture use.

PBR assessments started in 2000 at Redlands. Under the CTC model, this service has significantly increased the efficiency of the PBR process for turfgrass breeders within Australia. To date, the QDPI&F have processed 25 turfgrass cultivars under the CTC model – 30 per cent of all turfgrass registrations in Australia from 2000 to 2008 (Table 1).

A major benefit of a CTC is that it enables a larger number of candidate varieties to be selected in a single comprehensive DUS trial with a larger number of comparators or varieties of common knowledge. To this end, Redlands Research Station boasts a living library of turfgrasses – an in-ground collection of 138 warm-season turfgrasses grown in unreplicated observational plots measuring 3 x 2.5 metres.

A CTC also provides greater scientific rigour and instrumentation. Independent field or glasshouse tests are conducted, if necessary, with the benefit of specialised facilities and equipment. Field trials enable the qualified person to observe and record morphological and developmental characteristics of the candidate variety against (generally) multiple comparator varieties grown as spaced plants and as swards.

Most of the descriptive data required for PBR registration are generated through spaced plant trials, which allow inherent plant traits to be more fully demonstrated. Cross-breeding seeded varieties (pre-2000) are grown in a minimum of three replicates for later statistical analysis of the data.

For spaced plants, the minimum set of descriptors that should be measured is usually 10. These descriptors include assessing growth, plant development (lateral spread, growth habit, days to flower), internode lengths and diameters on stolons and flowering tillers, leaf length, width and shape characteristics on stolons and tillers, and inflorescence (seed head) characteristics. For sward experiments, the minimum set of descriptors may also include measurements of the unknown plant height and inflorescence density, as well as inflorescence, stem and leaf measurements.

A replicated field trial enables a qualified person to establish the individuality of the new (candidate) cultivar and to generate the documentation needed for a PBR application. The field trial provides an opportunity for QDPI&F researchers to measure and record up to 27 turfgrass characteristics (Table 2) for each variety being tested.

These descriptors, along with ground and air temperatures and differences in the incidence of pests and disease, contribute to developing a better understanding of the cultivar and how best to manage it. The extensive list of descriptors measured provides comprehensive DUS data, which also strengthens the legal right of the plant breeder should it have a future dispute arise.

Morphological characteristics, especially those least affected by environmental factors are preferred. Performance attributes can also be included as distinguishing characteristics provided they are clear and consistent. Clear repeatable varietal differences must be demonstrated.

Since 2000 the Queensland Department of Primary Industries & Fisheries Redlands Research Station has been a centralised test centre for conducting Plant Breeders Rights assessments. Here senior scientist for turf Matt Roche provides a background on the facility’s PBR works and how it is playing an integral role in the future development of the Australian turf industry.