

PASTURES and PLOIDY

Pasture plants can vary in chromosome number – being either diploid or tetraploid – and is another way to classify cultivars.

Tetraploid cultivars have had their chromosome number doubled by plant breeding techniques. Much of this manipulation has been concentrated on ryegrass, with red clover being another species with differing ploidy options. They differ from diploids in some major features. Compared to a diploid, the plants are larger with bigger cells and higher water content. They have a larger seed, thus sowing rates need to be increased. Tetraploids are generally preferred to diploids by grazing animals (*van Bogaert, 1975*).

In pastures of similar digestibility levels, tetraploid ryegrass cultivars have often, but not always, been shown to increase animal intake by 3-5%, with at least a similar improvement in animal production. Using tetraploids can also improve stocking rate by up to 8%, provided the tetraploid cultivars perform similarly to diploids agronomically.

Generally, this tetraploid advantage is more pronounced in perennial ryegrass diploid-tetraploid comparisons. In short rotation ryegrasses the difference is minimised because the quality is already higher. The value of tetraploids is realised over the summer months, when quality of pastures naturally declines. Regions where ryegrass production is minimal over these months may not gain the full advantage of using a tetraploid ryegrass.

Tetraploid ryegrasses require more careful management, because increased palatability can result in overgrazing relative to diploid types. They may also require higher fertility and adequate moisture to express their advantage.



Seed size comparison of a diploid perennial ryegrass (top) to a tetraploid perennial ryegrass.