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## 1. Introduction

- National variety evaluation schemes in Ireland rank varieties primarily on yield and persistency.
- Improved nutritive composition of varieties is an increasing priority, so may need to be assessed routinely.
- The objective was to quantify the variation in chemical composition and yield of intermediate vs. late heading varieties and of diploid vs. tetraploid varieties in national evaluation trials.

## 2. Materials and Methods

- Samples were obtained for 12 perennial ryegrass varieties grown at a single site in each of 3 years. The varieties differed in:
  - Maturity (intermediate (6 varieties), late (6 varieties))
  - Ploidy (diploid (5 varieties), tetraploid (7 varieties))
- Each variety was harvested 6 times during a growing season, assessed for yield using a Haldrup harvester, and a sample dried and milled (1mm sieve) for composition analysis.
- Varieties were analysed using near infra-red reflectance spectroscopy for dry matter digestibility (DMD) and water soluble carbohydrates (WSC).

## 3. Results

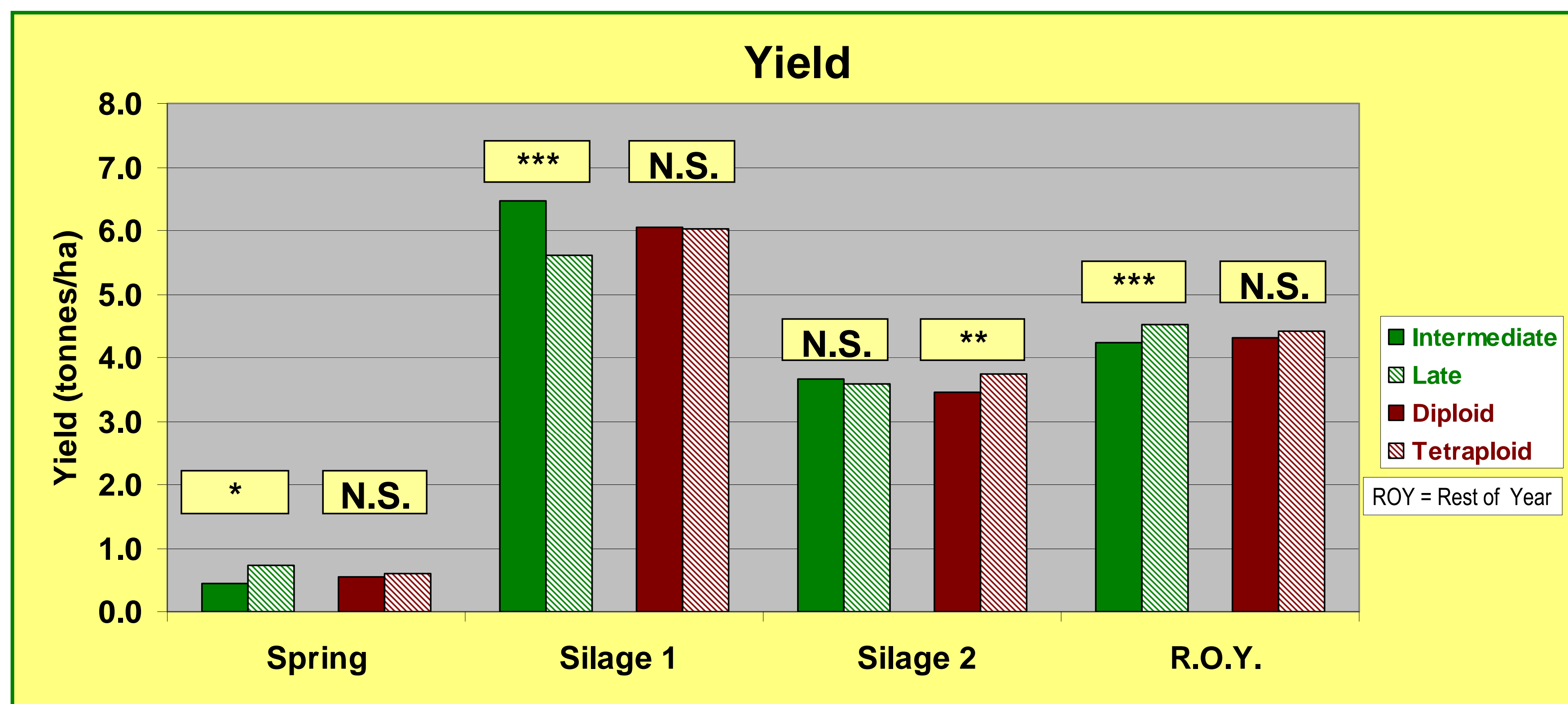


Figure 1 (left) : Differences due to maturity and ploidy in yield at 4 different growth periods of *Lolium perenne*

- Distinct seasonal growth pattern with highest yield at 'Silage 1'.
- Late varieties higher yielding on average at the start and end of growing season. Intermediate varieties achieved higher yields at 'Silage 1' with no difference between the two groups at 'Silage 2'.
- Ploidy only had an effect at 'Silage 2' with tetraploids yielding more than diploids.

Figure 2 (right) : Effect of maturity and ploidy on water soluble carbohydrate content at 4 different growth periods of *Lolium perenne*

- Highest WSC content was in 'Spring'.
- Late varieties on average had higher WSC content at start and end of growing season.
- Tetraploid varieties on average had higher WSC than diploid varieties at 'Spring' and 'Silage 1'.

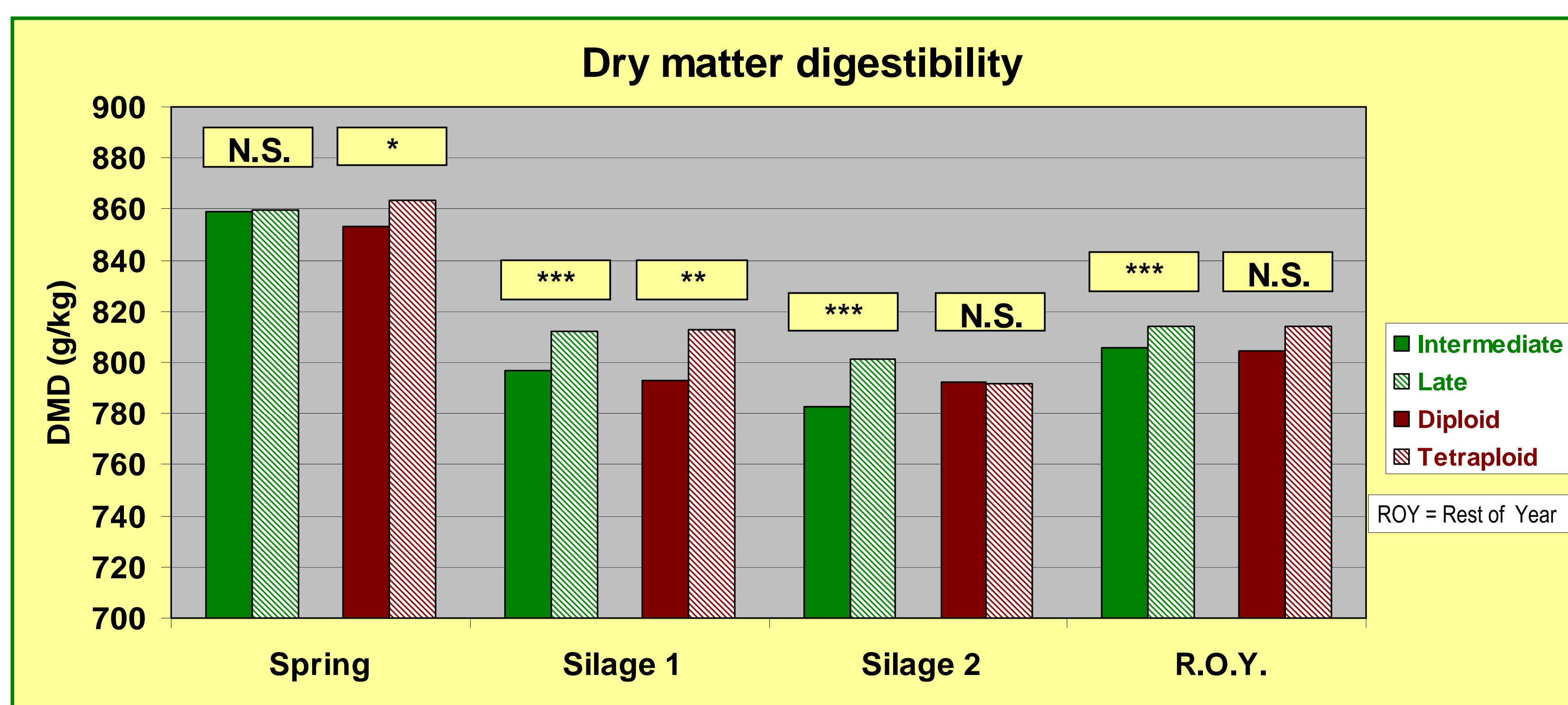
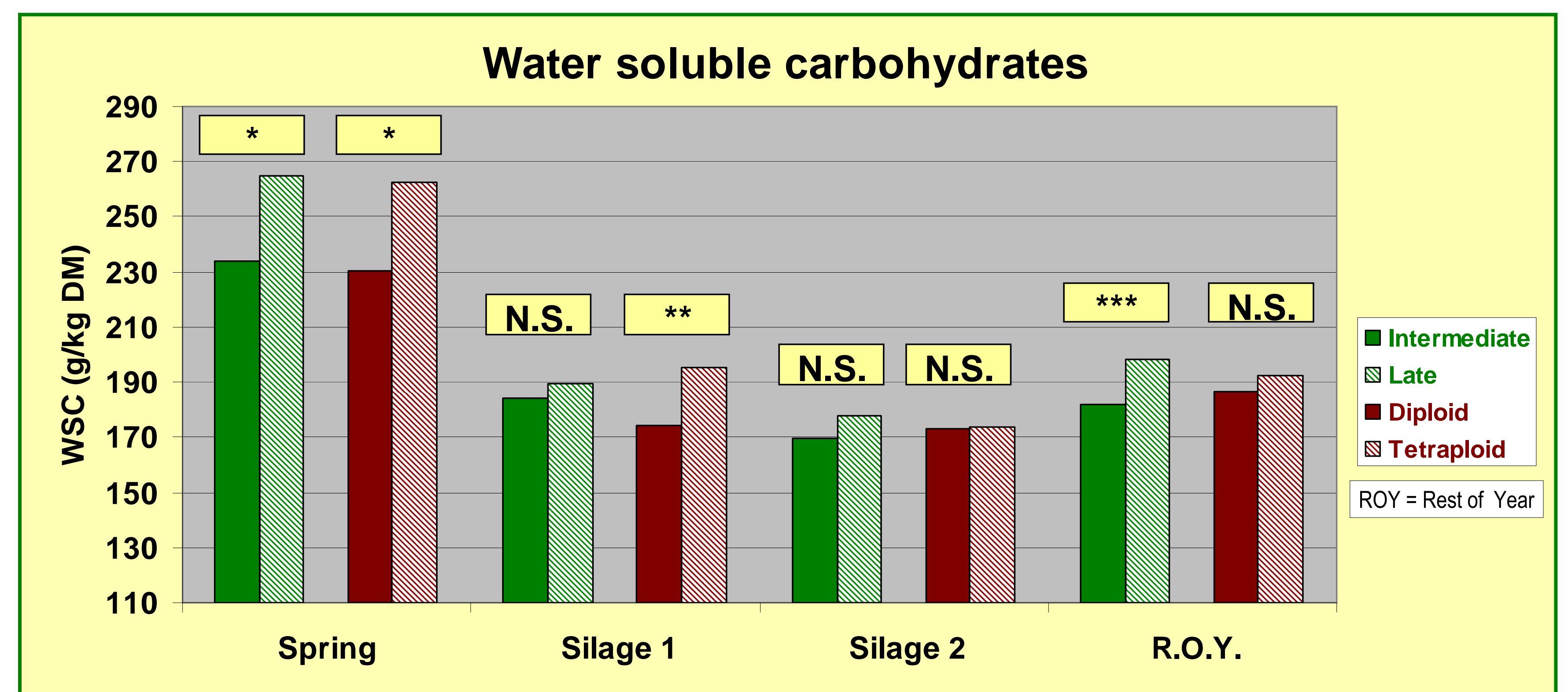


Figure 3 (left) : Effect of maturity and ploidy on dry matter digestibility at 4 different growth periods of *Lolium perenne*

- Highest DMD in spring when new growth had the lowest proportion of stem.
- Late varieties on average had higher DMD than intermediate varieties (except 'Spring').
- Tetraploid varieties on average had higher DMD than diploid varieties in 'Spring' and 'Silage 1'

## 4. Conclusion

- The three examined variables gave different relationships between maturities and ploidies
- Measurement of yield alone did not give a complete assessment of true forage value
- When yield and composition are assessed, guidance on variety choice becomes
  - ✓ more specific to enterprise requirements
  - X more complex for the end user