

Grass Variety Testing



Testing for both UK National Listing and Scottish Recommended List.



Trial site, Aberdeen



Trial site at Boghall, Edinburgh

National List Testing



UK wide – testing of grass and clover varieties to ensure that any new varieties offer an improvement in quality.

Two sites in Scotland :
Aberdeen
Edinburgh site maintained
by SASA



Recommended List



To ensure that varieties achieving National List Status are actually suitable for Scottish conditions.

Further 3 year testing at Aberdeen, Ayr and Edinburgh (now SASA).

Along with 2 years cold tolerance testing at Clashnoir in Banffshire at 300 metres altitude



The Scottish Grass Levy Scheme



FARM
ADVISORY
SERVICE

Established in 1990

- Aim: To support the Scottish Recommended list of Grass and Clover Varieties
- How: Through a Voluntary Levy on Grass Seed Sales (Currently 3.2p/kg)
- Operated by: Seed Merchants participating in The Grass Levy Scheme
- 93% of seed sold in Scotland attracts levy
- .
- Only participating Merchants have ready access to the latest, detailed information on Varieties on the Recommended List
- SRUC also publishes a Technical Note listing all 1st Choice Varieties



Technical Note TN663



June 2014 • Elec



**FARM
ADVISORY
SERVICE**

Recommended grass and clover varieties 2014-2015

Summary

The varieties listed overleaf are recommended for use in Scotland

First choice varieties are highlighted by capitals

Recently introduced first choice varieties are provisional ratings, pending further trials currently in progress

The agricultural industry in Scotland is co-operating in a scheme to ensure the continuation of the SRUC Recommended List of grass and clover varieties. The scheme, with the support of NFUS, AIC, SSTA and BSPB, involves a contribution for every Kilogram of herbage seed sold.

Merchants participating in the scheme have exclusive access to the detailed SRUC information on herbage varieties. Participating merchants display the special SRUC logo opposite on seed bags, invoices etc.

Within each grass species, varieties are listed in order of heading date, i.e. 50% ear emergence. This is the date when ears are seen on 50% of the fertile stems. These dates, relative to 1st May, give the Relative Ear Emergence (REE). Thus, in an average year, the early perennial ryegrass variety AberTorch (T) (REE 20) heads on the 20th May, while the late variety Foxtro (REE 49) heads on 18th June, almost four weeks later. The actual heading dates vary according to season and altitude but the relative order of heading remains fairly constant. Perennial ryegrass varieties have the widest range of heading dates and are divided into three maturity groups - early, intermediate and late. The range within each group can be 12 days or more. Timothy varieties similarly are in three groups, cocksfoot has two groups, early and late, while Italian and hybrid ryegrasses are now each considered as one group. Within each species there is a close relationship between heading date and important characteristics such as seasonality of growth, herbage quality and persistency. The REE value is shown for the earliest and latest variety within each blocked grouping.

White clovers are listed in order of leaf size. The small leaved are



prostrate types, persistent and suited to continuous grazing, while large leaved are more erect and better suited to cutting or rotational grazing. The leaf size, relative to Grasslands Huia, is shown for the smallest and largest within each group. Red clovers are listed alphabetically within two flowering groups, early and late.

Tetraploid varieties are indicated by (T) after the name.

For more detailed information on variety attributes and performance, and their use in seed mixtures, contact your local SAC Consulting adviser or grassland specialist, or a participating merchant.

*SRUC 2014, West Mains Road, Edinburgh EH9 3JG. SAC Consulting is a division of SRUC. SRUC is a charity registered in Scotland, No. SC003712

CONSULTING



The European Agricultural Fund
for Rural Development
Europe investing in rural areas



Scottish Government
Riaghaltas na h-Alba
gov.scot

Grassland and Soil Quality



The crop and vegetation will have an effect on:-

- Soil stability - prevention of erosion
- Fertility
- Stabilising soil structure
- Enhancing soil fauna e.g. earthworms
- How does grassland compare with other land uses. And how do various management systems compare

Grassland and Soil Quality



- Often concerned about effect of soil quality on grass growth :-
pH ; Nutrient Reserves ; Compaction etc.
- Want to turn things around and look at what grassland can do for soil quality.

Increasingly this may become a factor in the perception of the role agriculture plays in land/environmental management.

Soil Erosion

- It is evident that grass cover will assist in preventing soil erosion as opposed to fallow soil. Surface runoff, but also downward percolation can remove soil particles.
- Vegetative cover will reduce surface flow rate.
- Root mass will stabilise soil particles



Soil Carbon

- It is now realised that soils play a major role in storing carbon.

- In UK :

| Land use | Carbon sequestered kg/ha/yr |
|-----------|-----------------------------|
| Grassland | 240 (+/- 200) |
| Forestry | 110 (+/- 4) |
| Arable | Loses 140 (+/- 100) |

- Accumulating carbon is accumulating soil organic matter

Soil carbon

- A summary of 74 international studies :-

| Change in land use | Change in soil carbon |
|-------------------------------|-----------------------|
| Native forest to grassland | + 8% |
| Arable to grassland | +19% |
| Grassland to deciduous forest | 0 |
| Grassland to conifer forest | -15% |
| Grassland to arable | -59% |

soil carbon

Choice of grasses has effect on accumulation of carbon/soil organic matter-

- For instance **tall fescue** is deeper rooting than **perennial ryegrass**.
- Greater density of rooting will tend to cause accumulation of carbon

For instance, (*Wageningen Trials*):-

Diploid cultivars of perennial Ryegrass produce a greater root mass than tetraploid:-

| PR Ploidy | Rootmass : 0 to 24 cm depth kg DM/ha |
|----------------|--|
| Diploid (4) | 3624 |
| Tetraploid (4) | 2949 |

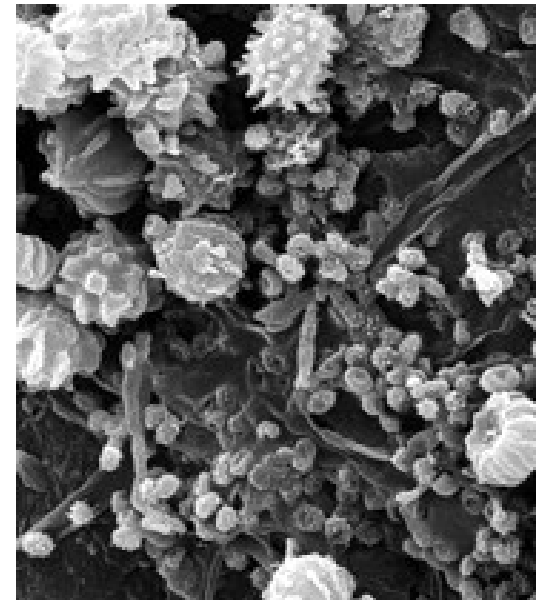
Soil Fertility



- Most of the soil's nutrient reserves (particularly nitrogen) are held in the soil organic matter component.
- Permanent grassland is particularly productive with regard to the mass of root production.
- Under permanent grassland the amount of nitrogen is normally between 2.5% N and 3.0 % N.
- This equates to between 40,000 and 50,000 kg/ha of N in soil.
- Management practices influence stability/mobility of the nutrients

Soil Fauna

- There is an increasing move towards using the amount of faunal activity in soil as a monitor of overall health--- bacteria, fungi, earthworms, insect larvae etc.
- Activity is dependent on organic matter content, pH, temperature
- Grassland tends to have a high level of microbial activity.



Soil fauna

- Grassland type may have an effect :-
- Trial established (*Wageningen University*) Spring 2004

| December 2005 | Root biomass g/m2 0 -10 cm | Earthworm Number/m2 (0 to 20cm depth) | Earthworm Burrows/m2 (10 cm depth) |
|------------------|-------------------------------------|--|---|
| Grass only | 218 | 326 | 67 |
| Grass /clover | 193 | 359 | 138 |
| Clover only | 73 | 480 | 225 |



Overall impact



- Encouraging earthworm activity has implications for soil aeration and hydraulic conductivity

This emphasises the fact that soil physical properties; nutrient levels and soil biology all interact with each other; and they are all affected by the vegetation or crop.



As far as soil quality is concerned the grassland story is very positive

Balnellan Grass results May 2019



**FARM
ADVISORY
SERVICE**

| | Slurry treated | Digestate treated | No treatment |
|--------------------|----------------|-------------------|--------------|
| Ash % | 7.3 | 7.6 | 6.9 |
| Dry matter % | 20.3 | 20.4 | 21.0 |
| Crude Protein % | 14.2 | 16.8 | 20.2 |
| Fibre % | 25.3 | 25.2 | 26.9 |
| Sugar % | 18.7 | 16.9 | 11.5 |
| D value % | 72.7 | 72.8 | 71.1 |
| Metab Energy MJ/kg | 11.5 | 11.5 | 11.2 |

Balnellan Grass results May 2019



| | Slurry treated | Digestate treated | No treatment |
|-----|----------------|-------------------|--------------|
| P % | 0.36 | 0.39 | 0.42 |
| K | 2.54 | 2.56 | 2.29 |
| S | 0.17 | 0.18 | 0.15 |
| Mg | 0.11 | 0.12 | 0.12 |
| Ca | 0.40 | 0.45 | 0.41 |
| Na | 0.02 | 0.02 | 0.02 |

Balnellan Grass results May 2019



**FARM
ADVISORY
SERVICE**

| | Slurry treated | Digestate treated | No treatment |
|----------|----------------|-------------------|--------------|
| Mn mg/kg | 41.8 | 38.4 | 35.0 |
| Co | 0.02 | 0.04 | 0.06 |
| Mo | 1.15 | 2.31 | 1.89 |
| Fe | 41.0 | 46.2 | 43.2 |
| B | 4.4 | 4.9 | 5.6 |
| Cu | 6.6 | 6.8 | 5.9 |
| Zn | 19.7 | 20.8 | 19.7 |

Thank You

