

**The effect of tetraploid and
diploid swards sown with and
without clover on the productivity
of spring milk production systems
- Clonakilty Experiment 2014**

Clonakilty Ag College Farm - 2014

- ❑ 44 hectares (ha; out of total of 84 ha) will be used for the experiment
- ❑ 5 herds of cows
 - 4 experimental herds
 - 1 general herd (30 - 40 cows)
- ❑ 40 ha of non experimental area used for general herd, heifers and calves
- ❑ General herd use for college purposes, proficiencies etc.

Objective

- Assess the biological efficiency from tetraploid and diploid swards sown with and without clover over a full grazing season
 - Milk production
 - Total grass dry matter production
 - Sward quality

Experiment

- ❑ 4 treatments
 - Tetraploid sward
 - Diploid sward
 - Tetraploid + clover sward
 - Diploid + clover sward
- ❑ 30 cows per treatment with each treatment stocked at 2.75 cows/ha (10.9 ha per treatment)
- ❑ Separate farmlet of 20 paddocks for each treatment

Experiment cont.

- 4 tetraploid cultivars (sown @ 15 kg/acre + 2 kg clover)
 - Aston Energy
 - Kintyre
 - Dunluce
 - Twymax

- 4 diploid cultivars (sown @ 12 kg/acre + 2 kg clover)
 - Tyrella
 - Drumbo
 - Aberchoice
 - Glenveagh

Experiment cont.

- 3 breeds of cow
 - Holstein Friesian
 - Jersey X Holstein Friesian
 - 3-way cross (Jersey X Holstein Friesian X Norwegian Red)

- 10 cows of each breed will be in each of the 4 treatments
 - Two 3rd lactation of each breed
 - Four 2nd lactation of each breed
 - Four 1st lactation of each breed

- 40 cows of each breed in the experiment

Grazing Management Decision Rules

- ❑ Target pre-grazing yield: 1250 - 1500 kg DM/ha
- ❑ Target post-grazing sward height: 4 cm
- ❑ All treatments (with and without cover) moved together and remained in the same block as much as possible
- ❑ Similar rotation lengths
- ❑ Target - 300 kg concentrate per cow in each treatment
- ❑ Feed deficit across all treatments: concentrate used to supplement
- ❑ Feed deficit within a treatment: forage made within treatment used to supplement
- ❑ 250 kg N/ha across all treatments

Results - Milk production 2013

| | Tetraploid | Diploid | Tetraploid + Clover | Diploid + Clover |
|-------------------------------------|-------------|-------------|------------------------|---------------------|
| Daily milk yield (kg) | 15.7 | 15.5 | 16.6 | 16.4 |
| Daily milk solids yield (kg) | 1.30 | 1.25 | 1.34 | 1.35 |
| Daily fat (g/kg) | 45.2 | 43.8 | 43.0 | 44.5 |
| Daily protein (g/kg) | 37.6 | 37.5 | 37.9 | 38.0 |
| Daily lactose (g/kg) | 45.9 | 46.0 | 45.9 | 45.8 |
| Total milk yield (kg) | 3521 | 3468 | 3719 | 3682 |
| Total milk solids yield (kg) | 292 | 280 | 301 | 303 |
| Total fat yield (kg) | 159 | 151 | 159 | 163 |
| Total protein yield (kg) | 133 | 130 | 141 | 140 |
| Total lactose yield (kg) | 162 | 159 | 171 | 168 |

Results - Milk production 2013

| | HF | JEX | 3-way | S.E. |
|------------------------------|------|------|-------|-------|
| Daily milk yield (kg) | 16.4 | 15.9 | 15.8 | 0.24 |
| Daily milk solids yield (kg) | 1.29 | 1.33 | 1.32 | 0.021 |
| Fat (%) | 41.4 | 45.1 | 45.8 | 0.63 |
| Protein (%) | 37.1 | 38.2 | 38.0 | 0.26 |
| Lactose (%) | 45.8 | 46.0 | 45.8 | 0.12 |
| | | | | |
| Total milk yield (kg) | 3678 | 3566 | 3547 | 54.2 |
| Total milk solids yield (kg) | 288 | 298 | 296 | 4.8 |
| Fat yield (kg) | 151 | 162 | 161 | 2.9 |
| Protein yield (kg) | 137 | 136 | 135 | 2.2 |
| Lactose yield (kg) | 169 | 164 | 163 | 2.5 |

Results - Herbage Analysis 2013

| | Tetraploid | Diploid | Tetraploid + Clover | Diploid + Clover |
|------------------------------|------------|---------|---------------------|------------------|
| Pre-grazing height (cm) | 10.9 | 11.0 | 11.0 | 11.1 |
| Pre-grazing yield (kg DM/ha) | 1829 | 1939 | 1822 | 1937 |
| Density (kg DM/cm) | 268 | 283 | 265 | 284 |
| Post-grazing height (cm) | 4.30 | 4.47 | 4.34 | 4.41 |
| Herbage utilised (%) | 96 | 93 | 95 | 94 |
| Herbage removed (kg DM/ha) | 1787 | 1817 | 1730 | 1832 |

Results - Grass DM Production 2013

| | Tetraploid | Diploid | Tetraploid + Clover | Diploid + Clover |
|---|-------------------|----------------|--------------------------------|-----------------------------|
| Grazing DM (kg/ha) | 10,111 | 10,186 | 10,383 | 10,317 |
| Silage DM (kg/ha) | 4,291 | 4,062 | 4,572 | 4,637 |
| Total DM (kg/ha) | 14,402 | 14,247 | 14,954 | 14,954 |
| | | | | |
| Conserved silage (kg DM/cow) | 876 | 878 | 972 | 949 |

Cultivar Performance - 2013

