



Ballyhaise College dairy research

Teagasc Ballyhaise College Dairy Unit has been conducting grazing systems research since 2005, writes **Donal Patton**

The research has investigated areas such as extended grazing on heavy soils, high milking platform stocking rates, various feed supplementation strategies and altering calving pattern to suit the grass growth curve.

The focus has always been on developing highly profitable grazing systems, which can be implemented by farmers in the region.

Currently, the Ballyhaise herd consists of 140 high EBI cows, a 52ha milking platform (MP) and 5.6ha out block for silage production.

We rear all replacements and some dairy beef animals on a separate 'enterprise' within the college.

The herd are all calved compactly in spring and dried off over the winter months.

In recent years, the effects of food production systems on the environment have come more into focus, in particular the reliance on chemical Nitrogen (N) within intensive dairy grazing systems.

Current experiment

The current experiment in Ballyhaise started in 2021 and was designed to investigate the transition from perennial ryegrass (PR) swards (reliant on high levels of chemical N) to perennial ryegrass white clover (PRWC) swards receiving much lower levels of N.

At the beginning of 2021 there was no clover in any of the swards in Ballyhaise College and half of the experimental area was assigned to a PR system and half was assigned to

a PRWC system.

From the outset the plan was to transition half the farm to WC swards, within three years, and to measure the effects of doing so on sward and animal performance.

To achieve this accelerated transition, high levels of reseeding and over-sowing were used in each year from 2021-2023.

We saw large reductions in sward production in the establishment year across both sward types (Table 1). However, by year two pasture productivity recovered for both sward types. High levels of clover content in the PRWC swards allowed us to reduce nitrogen applied by 150kg N/ha.

We observed that fully reseeded swards resulted in higher clover content than over-sowing, but had a bigger negative impact on sward production in the year of establishment.

Over-sowing may play a useful role in clover establishment on farms where a large proportion of swards



Teagasc Ballyhaise dairy research has focused on developing profitable grazing systems for farmers in the region.

Table 1. The effect of sward change (SC) transition from old permanent pasture (PR-old) to newly established swards (perennial ryegrass (PR-new) and perennial ryegrass white clover (WC-new)) and clover over-sown (WC-over) swards on total pasture production and chemical fertiliser application during the three-year transition period

Sward system	PR	PRWC		
Sward change	PR-old	PR-new	WC-new	WC-over
Pasture production (kg DM/ha)				
Establishment year	14,182	8,925	8,561	11,330
Year 2		14,064	14,723	12,848
Year 3		14,891	15,642	15,218
Chemical N application (kg N/ha)				
Establishment year	229	200	84	124
Year 2		245	94	103
Year 3		246	93	131

Table 2. The effect of transition of each sward system (SS; perennial ryegrass (PR) and perennial ryegrass white clover (PRWC)) on milk production performance

Sward system	PR	PRWC
Milk yield (l/cow)	5,092	5,197
Fat plus protein yield (kg/cow)	461	473
Milk composition (%)		
Fat	5.11	5.12
Protein	3.70	3.71
Lactose	4.75	4.74
Whole Farm SR (cows / ha)	2.5	2.5
Milking Platform SR (cows / ha)	2.7	2.7
Concentrate (kg DM / cow)	840	848
Silage (Kg DM / cow)	1,677	1,626
Winter Feed Self-sufficiency (%)	55	56

Teagasc Ballyhaise Open Day, 24 July

The open day will start at 11am. There will be presentations on the current trial; future of genetics in the dairy herd; building financial resilience into your dairy system; clover incorporation and more.

After lunch there will be an indoor forum looking at various routes into dairy farming and two young couples from the region will detail their own experience of getting their foot on the dairy farming ladder.

There will also be lots of free information available on a wide range of subjects including environmental, animal health, education and training and more.

Conclusions

This study demonstrates the successful establishment of WC under reduced chemical N fertiliser applications in the Border, Midland, Western (BMW) region.

PRWC reseeded swards under reduced rates of chemical N delivered similar quantities of pasture production compared to PR reseeds receiving high rates of chemical N application.

The study also highlighted the effect of high levels of sward renewal on the provision of sufficient winter feed for the herd. Therefore, commercial farms must proceed with caution when planning the rate and extent of transitioning to white clover swards.

are relatively newly established (on the farms of recent new entrants for example), or where high milking platform SR prohibits high levels of reseeding.

Transitioning to WC systems resulted in modest increases in both milk yield (5,197 and 5,092 kg) and milk fat plus protein yield (473 and 461 kg/cow) for PRWC swards when compared to PR only swards.

Significant differences

There were no significant differences observed for milk composition (fat, protein and lactose) between the two sward types during the transition (Table 2).

While the high levels of sward re-

newal accelerated transition from PR to WC swards, this had a major impact on the overall feed budget on the farm.

This was a direct result of reduced pasture production in the year of establishment across a significant proportion of the area during the three year transition phase. As mentioned previously.

Sward type had no effect on the winter feed shortage with PR systems being 55% self-sufficient and PRWC systems being 56% self-sufficient (Table 2).

It is clear this was an effect of accelerated levels of sward renewal and not as a consequence of reduced N application on WC swards.