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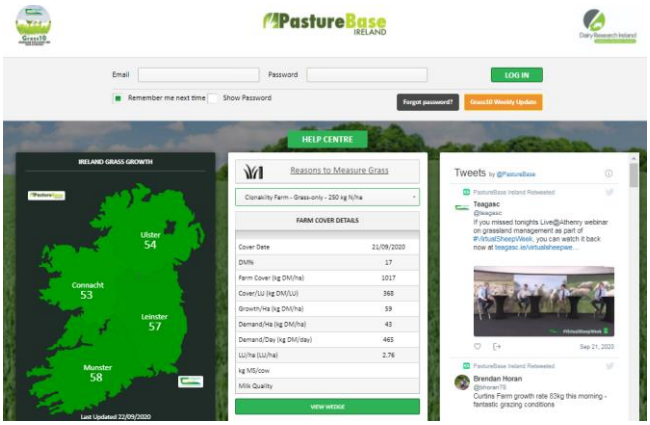
Increasing the usability and development Pasture Base Ireland as a National Grassland Database



Key external stakeholders:
Grassland farmers, researchers and Business & Technology Advisors
Agri-consultants and Advisors, All Agri industry
Dairy Co –ops, Department of Agriculture, Food and Marine, Public and Met Eireann

Practical implications for stakeholders:
PastureBase Ireland (PBI) is an internet-based grassland management tool. It offers farmers 'grassland decision support' and stores a vast quantity of grassland data from dairy, beef and sheep farmers in a central national database. At the moment the vast majority of farms recording grass measurements on PBI are dairy farms. Drystock farms account for just 5-7% and has remained steady over the last number of years. PastureBase Ireland has evolved in the last number of years and will continue. Now PBI is linked to FBA soil laboratories, two grassland measurement tools, 13 coops, and includes an array of tools and reports; grazing planner, projected wedge, fodder and grass budgets, grass, milk and soil fertility reports.
Dairy farms recording farm cover regularly on PastureBase Ireland have grown on average 13.3 t DM/ha/year over the past seven years (2013-19). Drystock farms recording farm cover regularly on PastureBase Ireland have grown on average 11.3 t DM/ha/year over the past six years (2014-19). There is large variation in grass DM production between farms, much of this variation is attributed to grazing management differences and not location differences.

Main results:

- The number of farmers using PastureBase Ireland to manage grass on their farms is growing year on year.
- Dairy farms recording farm cover regularly on PastureBase Ireland have grown on average 13.3 t DM/ha/year over the past seven years (2013-19).
- Drystock farms recording farm cover regularly on PastureBase Ireland have grown on average 11.3 t DM/ha/year over the past six years (2014-19).
- The adoption of grassland measurement and decision making with PBI will overcome some of the differences between farms in grassland output.
- Approximately 500,000 dairy cows (30% of the national herd) are managed through PBI.

Opportunity / Benefit:

In total there is over 7,000 farms registered on PBI. This includes research, commercial and student accounts. In 2019 over 4,000 individual commercial farms recorded a cover or more, which was an increase of 60% compared with 2018 (drought). When taking a more in-depth look at users in 2019, dairy farms account for approximately 500,000 cows, 30% of the national herd. For the first three months of 2020, 2,300 individual commercial farms recorded a cover or more. Since the introduction of the PBI Grass App there has been a steady increase in the number of commercial farms recording fertiliser data. Approximately 50% of all grass covers are now uploaded from the App.

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Collaborating Institutions:
Teagasc project team: Dr. Michael O'Donovan (PI)
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External collaborators: James O'Donnell (Bestsoft, Dublin)

1. Project background:

PastureBase Ireland (PBI) is an internet-based grassland management tool. In operation since 2013, it offers farmers 'grassland decision support' and stores a vast quantity of grassland data from dairy, beef and sheep farmers in a central national database. At the moment the vast majority of farms recording grass measurements on PBI are dairy farms. Drystock farms account for just 5-7% and has remained steady over the last number of years. Our aim is to greatly increase participation by cattle, dairy and sheep farms over the coming years. PBI has evolved in the last number of years and will continue to do so. Now PBI is linked to FBA soil laboratories, two grassland measurement tools, 13 coops, and includes an array of tools and reports; grazing planner, projected wedge, fodder and grass budgets, grass, milk and soil fertility reports and is App available to download from the App store.

What PBI is informing us is that farmers must have a good handle on current grass supply in order to manage grass well. If farm covers, grass demand and grass growth are unknown it is virtually impossible to operate a high-output grass-based system. A key factor in the profitability of any farm is to use the feed resource produced inside the farm gate efficiency. Relying on imported feed leaves the farm very exposed in the current volatile environment, using PBI is an effective way of overcoming this.

2. Questions addressed by the project:

Grassland measurement is a growing management tool at farm level. Within Grassland it is obvious that there is huge variation in grass DM production on farms (within and between farms). High grass DM production can be achieved on grassland farms with good grazing and soil fertility management irrespective of location. Previous to 2013, there was no national grassland database available for farmers, so to be able to input grassland data, compare to their peers and obtain grazing management guidance is a real step forward – PBI aims to fill this void. Grass is the main feed available in Ireland and because of this; Irish grassland farmers need to better manage it, to further increase competitiveness and system sustainability. Since PBI was been established a number of significant developments have taken place in the area of grassland because of this project, namely the development of on farm grass variety evaluation, and the establishment of grass growth prediction on PBI farms. This project has developed a lot of grassland efficiencies in the past years and will continue to develop new innovations in the future.

3. The experimental studies:

In total there is over 7,000 farms registered on PBI. This includes research, commercial and student accounts. In 2019 over 4,000 individual commercial farms recorded a cover or more, which was an increase of 60% compared with 2018 (drought). When taking a more in-depth look at users in 2019, dairy farms account for approximately 500,000 cows, 30% of the national herd. For the first three months of 2020, 2,300 individual commercial farms recorded a cover or more. Since the introduction of the PBI Grass App there has been a steady increase in the number of commercial farms recording fertiliser data. Approximately 50% of all grass covers are now uploaded from the App.

4. Main results:

Dairy Farms

In 2013, dairy farms produced an average of 11.5 t DM/ha. This was the first year farmers were able to use PBI and the number of farms were also small at this initial stage. Total DM production increased to 13.0 t DM/ha in 2014, highlighting the large year effect on grass output. In 2015, again there was an increase of 0.2 t DM/ha compared to the previous year where on average dairy farms grew 13.2 t DM/ha. Much of the extra DM produced in 2015 was grown by April, and the mid-year grass growth profile was consistent with 2014. After a slow spring in 2016 growth recovered well in May and there was 0.2 t DM/ha increase in DM production with the average dairy farm producing 13.4 t DM/ha. In 2017, total DM production reached 14.3 t DM/ha on dairy farms. This was somewhat in contrast with 2018 where grass growth was curtailed due to a prolonged summer drought. Total grass DM production declined to 11.6 t DM/ha, this is close to 3t DM/ha or three quarters of a cow equivalent. Last year was again an average year for grass growth with a great start to the year but a wet autumn, the average dairy farm on PBI grew 13.6t DM/ha.

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When all years are taking into consideration it is clear that the average PBI dairy farm is growing 13.0 t DM/ha, which has the carrying capacity of between 2.6–2.7 cows per hectare. The annual data also highlights the level of variation between farms is very high, the difference between the lowest and highest producing farms was 10.2 t DM/ha in a given year. An important aspect of the grass production data is that the highest producing farms are growing >16.0 t DM/ha, with little variation between paddocks. The lower producing farms have much greater variation between individual paddocks.

Drystock farms
In 2014, the average grass DM production on drystock farms was 11.8 t/ha which was a 1.3 t DM/ha increase from the previous year up from 10.5 t/ha which was anticipated as 2014 was a superior year for grass growth. In 2015 there was an increase of 0.5 t DM/ha when compared with DM production in 2014. Similar to dairy farms, DM production on drystock farms as reduced by 0.3 t DM/ha, where the average farm grew 12 t DM/ha in 2016.
Investigating the annual DM production further, it showed that the range in DM production that existed between drystock farms in 2016 was very large. Some drystock farms only produced 8 - 9 t/ha while, the top drystock farms on PBI exceeded >14 t/ha, with some farm achieving >8 grazing on the grazing platform.

5. Opportunity/Benefit:

It is clear that Ireland has incredible potential to increase annual grass DM production with a better focus on grazing management. PastureBase Ireland, the national database, will allow the industry to move forward with better understanding of the performance of grassland farms. PastureBase Ireland has highlighted that all farms need to focus on making more measurements and taking action on the information provided. This will achieve higher annual DM production, increased milk solids, increase liveweight gain and overall farm profitability.

6. Dissemination:

International conferences
Presented at many international conferences, invited and contributed, such as the European Grassland Federation and EDF.

National Conferences and seminars
Presented at the Rural Network Conferences, Webinars, National Dairy, Beef and Sheep Conferences.

Open Day
PBI data is presented at all Moorepark, Athenry, Grange, Johnston and Ballyhaise Open Days.

Farmer discussion groups
Discussed at many farmer discussion groups and at advisor in-service training, PBI reports are the main reports used on the days

Press
Grass10 newsletters, results regularly presented weekly, through social media forums (Grass10 newsletter, twitter etc).

Main publications:

Donovan M, McHugh N, McEvoy M, Grogan D, Shalloo L (2017) Combining seasonal yield, silage dry matter yield, quality and persistency in an economic index to assist perennial ryegrass variety selection. Journal of Agricultural Science 155: 556- 568.
Byrne N, Gilliland TJ, McHugh N, Delaby L, Geoghegan A, O'Donovan M. Establishing phenotypic performance of grass varieties on Irish grassland farms. Journal of Agricultural Science 2017;155(10):1633-1645; doi http://dx.doi.org/10.1017/s0021859617000740.

Popular publications:

Grass10 weekly Newsletter – disseminated to wider grassland industry now in its 114th edition.

7. Compiled by: Dr Michael O'Donovan and Micheal O'Leary

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