

Understanding the new Pasture Profit Index

The Pasture Profit Index (PPI) has been developed by Teagasc in conjunction with the Department of Agriculture, Food and the Marine (DAFM). The purpose of the PPI is to assist farmers when selecting perennial ryegrass varieties for their farm. The PPI quantifies the total economic merit (€ per ha/year) of individual perennial ryegrass varieties. This spring, for the first time, the PPI has been officially released. It is published in the National Recommended List for grasses and is also available to download from the Teagasc website. The PPI comprises of a number of sub-indices, with each variety receiving an economic value within each sub-indices, indicating if a variety is above or below the average of all varieties for that particular trait. The sub-indices comprise of the following:

- Seasonal DM yield
 - Spring DM yield
 - Mid-season DM yield
 - Autumn DM yield
- Quality (across the months of April to July, inclusive)
 - April
 - May
 - June
 - July
- Persistency
- Silage
 - 1st cut Silage DM yield
 - 2nd cut Silage DM yield

Calculating the economic value of a trait

In order to calculate the total PPI value of a variety, the economic value of each individual trait was first calculated. The Moorepark Dairy Systems Model was used to determine the economic value of a unit change in each trait (€ per ha/year). The economic value of each trait within the PPI is as follows:

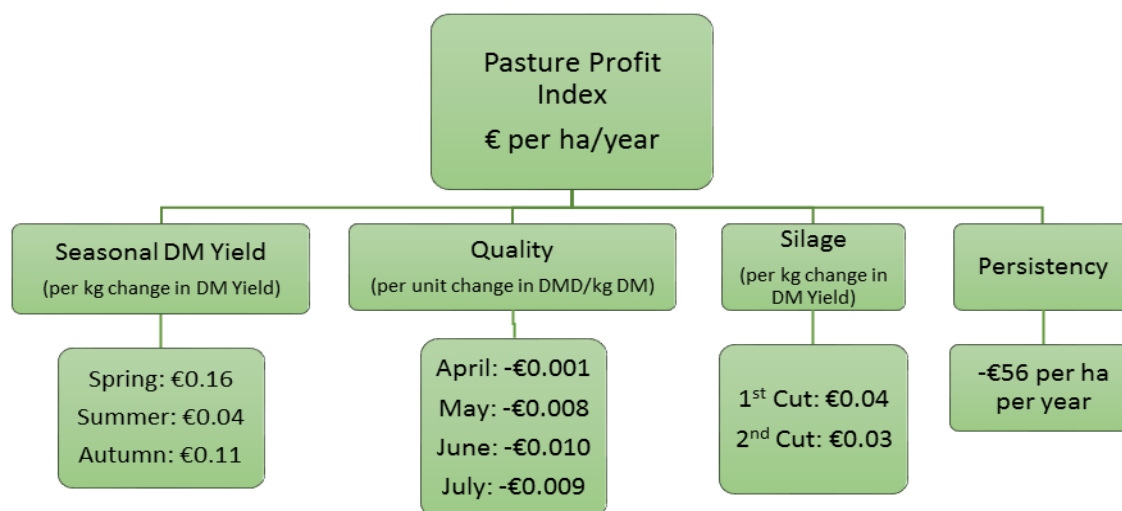


Figure 1. The traits and their economic values which are used to calculate the PPI value of a variety

Estimating the economic value of a variety

A base level of performance was determined for each trait. The performance of an individual variety relative to the base then assessed to determine if a variety got a positive value (improved performance relative to the base) or negative value (reduced performance relative to the base) for that particular trait. The difference between the performance of a variety within a trait and the base performance for that trait is multiplied by the economic value for that trait to determine the economic merit of that trait for that cultivar (see example below for spring DM yield):

Base level of performance for spring DM yield	=	1200 kg DM/ha	(A)
Performance of variety x for spring DM yield	=	1320 kg DM/ha	(B)
Difference between variety x and base for spring DM yield (B-A)	=	120 kg DM/ha	(C)
Economic value for spring DM yield	=	€0.163	(D)
<u>Economic merit of variety X for spring DM yield (C × D)</u>	=	<u>€19.56/ha per year</u>	

This example indicates that Variety X should give an additional €19.56/ha per year for spring DM yield relative to the base. The economic merit of all traits for a particular variety are summed to give the Pasture Profit Index (€/ha per year) for the variety.

Using the Pasture Profit Index

Table 1 presents the 2015 Pasture Profit Index for 2015 according to ploidy and heading date. Information is presented for each variety on total PPI value and the sub-indices (performance across the individual traits). The sub-indices provides the farmer with a good indication as to the relative performance of each variety across all traits. A high value for

spring, mid-season, autumn, silage and quality is desirable and indicates a variety which is performing well in each of these traits. A value of "0" is desirable for persistency, as it indicates a persistent variety, negative values for persistency indicate varieties which may be less persistent.

The first thing to look at is the ploidy and heading date of each variety. To simplify this, the table below ranks varieties within the PPI according to their heading category (Intermediate or late) and ploidy (Diploid or Tetraploid). For grazing mixtures you should select varieties with a heading date of June or late May. Grazing mixtures should contain approximately 40% tetraploid, but use less tetraploid if you are reseeding a heavier soil.

AberChoice and Drumbo are the top ranked late diploids, both of these have excellent performance across spring, summer and autumn and also have exceptional quality. Majestic, Glenveagh and Tyrella also perform well in spring, but they have much poorer performance in the quality sub-indices, meaning they have a lower total PPI value.

AberGain and Kintyre are the top 2 late tetraploids. Both varieties have exceptional seasonal DM yields, high quality and good performance in the silage sub-indices hence, they have a high total PPI value.

Abermagic is the highest performing intermediate diploid, with a heading date of 30th May, it is suited to both a grazing or silage system. It is the 4th highest ranked variety overall in the PPI.

Dunluce and Seagoe, top the intermediate tetraploids on the PPI list. Both varieties have high seasonal performance, excellent quality and also give more profit to a silage system. They are suited to either a one-cut and graze or an intensive silage system. Seagoe and Trend have the highest performance overall in the silage sub-indices.

Late Diploids									
Variety Details			Pasture Profit Index Sub-Indices (€ per ha per year)						
			DM Production			Quality	Silage	Persistence	Total PPI € per ha/year
Variety	Ploidy ¹	Heading Date	Spring	Summer	Autumn				
AberChoice	D	10-Jun	24	52	47	57	9	-5	184
Drumbo	D	07-Jun	27	35	35	36	-4	-11	118
Glenroyal*	D	05-Jun	25	41	46	-2	6	-11	105
Majestic*	D	02-Jun	43	38	43	-23	0	0	101
Glenveagh*	D	03-Jun	37	39	34	-22	7	0	96
Stefani*	D	01-Jun	25	34	27	-9	9	0	86
Piccadilly*	D	03-Jun	31	38	22	-30	16	0	77
Tyrella	D	04-Jun	41	23	19	-1	0	-11	71
Mezquita	D	06-Jun	22	30	18	-22	6	0	54
Clanrye	D	06-Jun	.	.	.	.	.	.	.

Late Tetraploids									
Variety Details			Pasture Profit Index Sub-Indices (€ per ha per year)						
			DM Production			Quality	Silage	Persistence	Total PPI € per ha/year
Variety	Ploidy ¹	Heading Date	Spring	Summer	Autumn				
AberGain	T	05-Jun	42	50	43	58	26	-11	208
Kintyre	T	08-Jun	29	40	58	25	14	0	166
Astonenergy	T	02-Jun	10	41	43	54	12	0	160
AberPlentiful*	T	08-Jun	15	44	48	30	15	0	152
Navan	T	06-Jun	14	41	50	21	10	0	136
Aspect*	T	05-Jun	26	45	29	30	10	-5	135
Delphin	T	02-Jun	13	42	27	10	21	0	113
AberCraigs	T	04-Jun	14	38	21	17	18	0	108
Twymax*	T	07-Jun	-11	48	20	27	17	-5	95
Solas	T	10-Jun	.	.	.	.	.	.	.

Intermediate Diploids									
Variety Details			Pasture Profit Index Sub-Indices (€ per ha per year)						
			DM Production			Quality	Silage	Persistence	Total PPI € per ha/year
Variety	Ploidy ¹	Heading Date	Spring	Summer	Autumn				
AberMagic	D	30-May	47	53	78	21	13	-28	184
Rosetta*	D	24-May	97	40	39	-2	19	-28	165
Solomon	D	23-May	66	32	35	-30	22	0	125
Boyne*	D	22-May	42	39	33	-56	41	0	99
Rodrigo	D	27-May	.	.	.	.	.	.	.

Intermediate Tetraploids									
Variety Details			Pasture Profit Index Sub-Indices (€ per ha per year)						
			DM Production			Quality	Silage	Persistency	Total PPI € per ha/year
Variety	Ploidy ¹	Heading Date	Spring	Summer	Autumn				
Dunluce	T	30-May	43	45	58	35	24	-11	194
Seagoe*	T	29-May	30	45	43	13	38	-11	158
Magician	T	22-May	59	37	42	-5	28	-11	150
Giant	T	20-May	39	50	39	-2	22	0	148
Trend	T	24-May	25	41	30	3	38	0	137
Carraig	T	24-May	42	40	38	-19	31	0	132

¹D=Diploid, T=Tetraploid; *Limited data based on one sowing year (two harvest years only)

Germinal varieties are highlighted in yellow

If a variety is being selected for grazing, the farmer, should place a lot of emphasis on the seasonal performance of that variety (spring, mid-season and autumn), quality and persistency, with less emphasis being placed on the silage sub-index. If on the other hand, a farmer is interested in reseeding a field specifically for silage, then the focus on silage will be prioritised, with quality and persistency also being important.

There are three varieties (Clanrye, Solas and Rodrigo) which do not have any values in the PPI List. These varieties have insufficient data in the DAFM simulated grazing protocol to generate a PPI value for them. Therefore, when selecting varieties you should also use the DAFM Recommended List as it presents some information on these varieties.