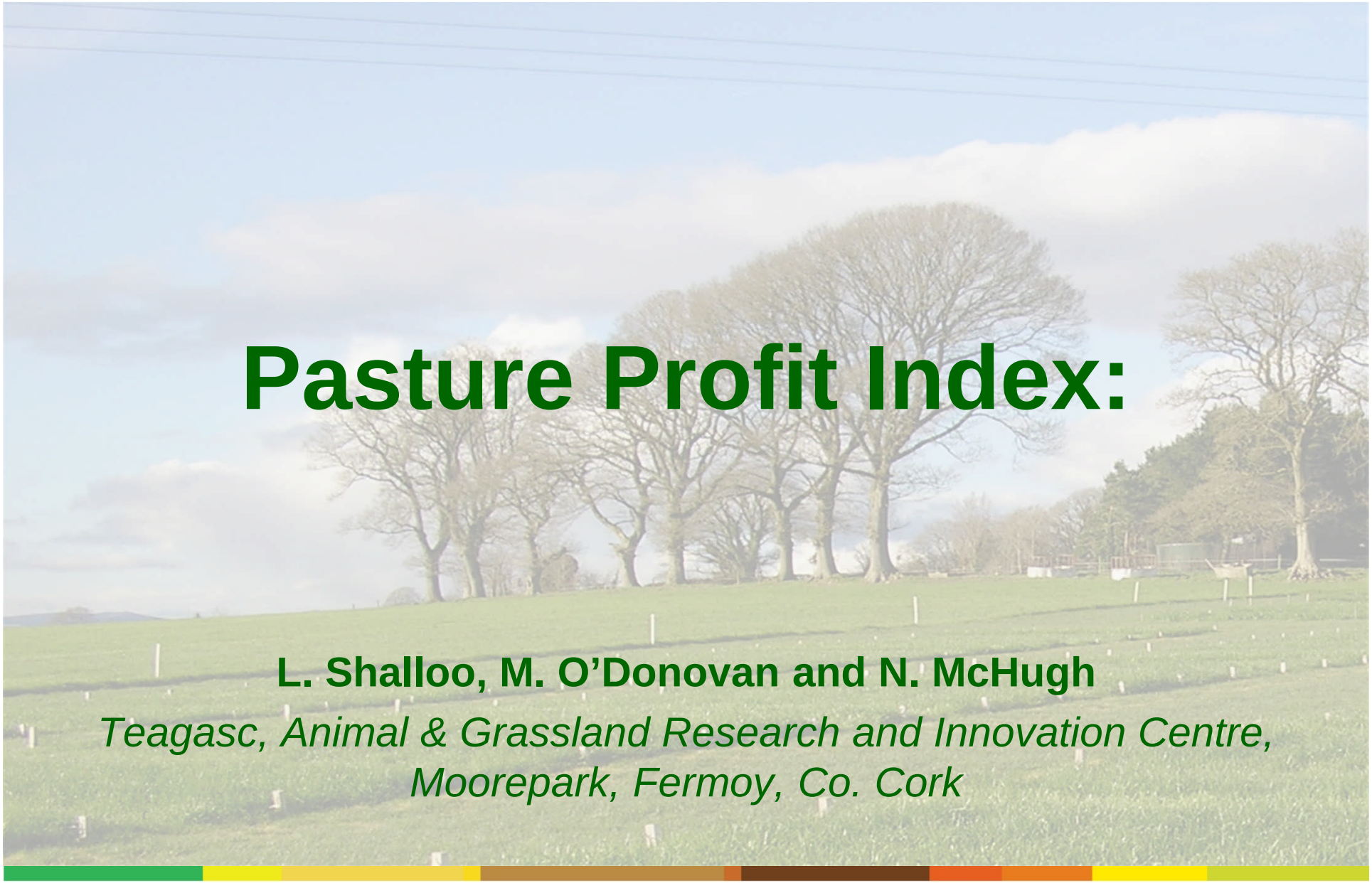

Pasture Profit Index:

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Teagasc
Agriculture and Food Development Authority

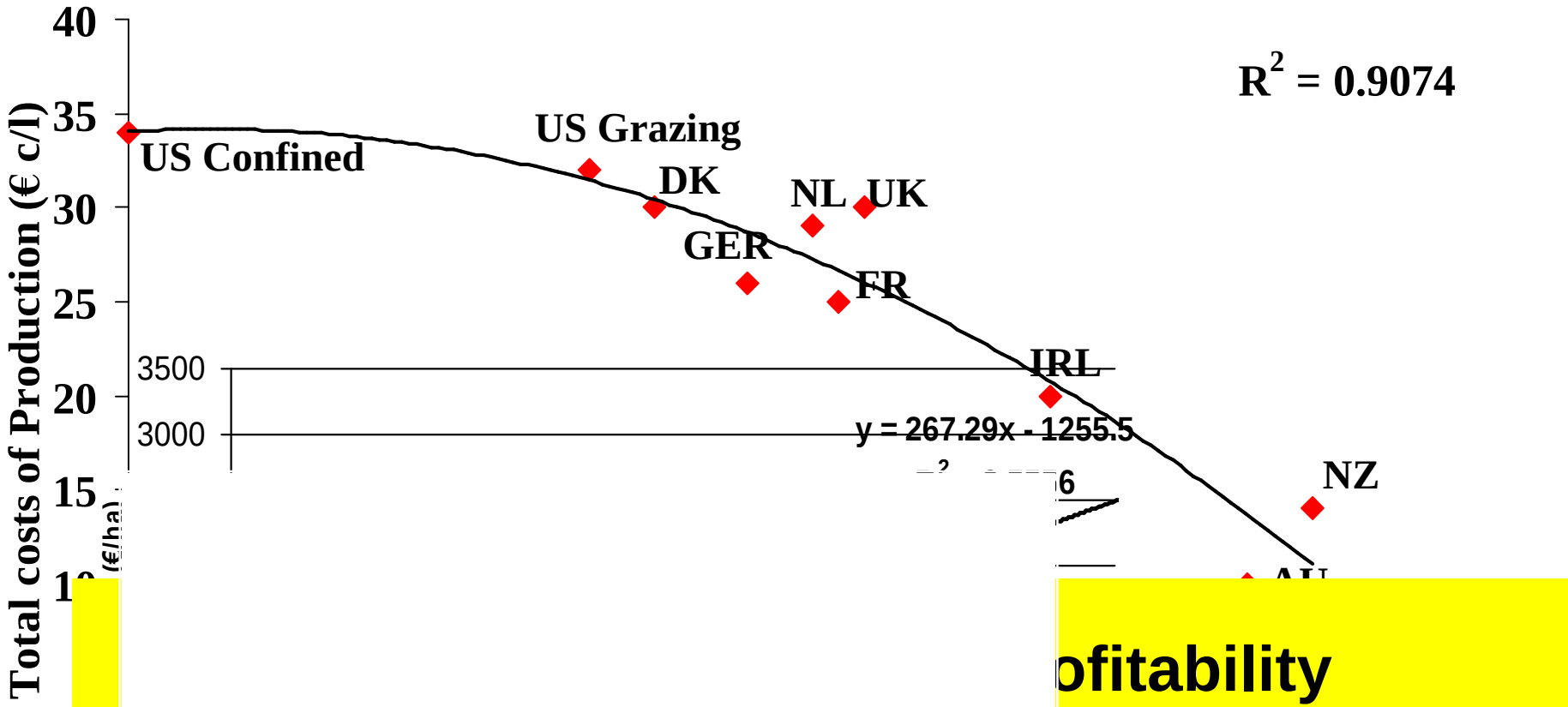
The Irish Agriculture and Food Development Authority

Pasture Profit Index - Overview

- Total merit index developed to assist in cultivar selection
  - Assigns an economic value to important traits of grass performance
  - Define the total economic merit of a cultivar (€ per ha per year)
  - Rank cultivars on Total Economic Merit
- Traits of importance:
  - Seasonal DM yield
  - Quality
  - Silage DM Yield
  - Persistency

Grassland systems will continue to predominate

Each 10% increase in grass proportion in the diet reduces the cost of milk production by 2.5 € cents/l

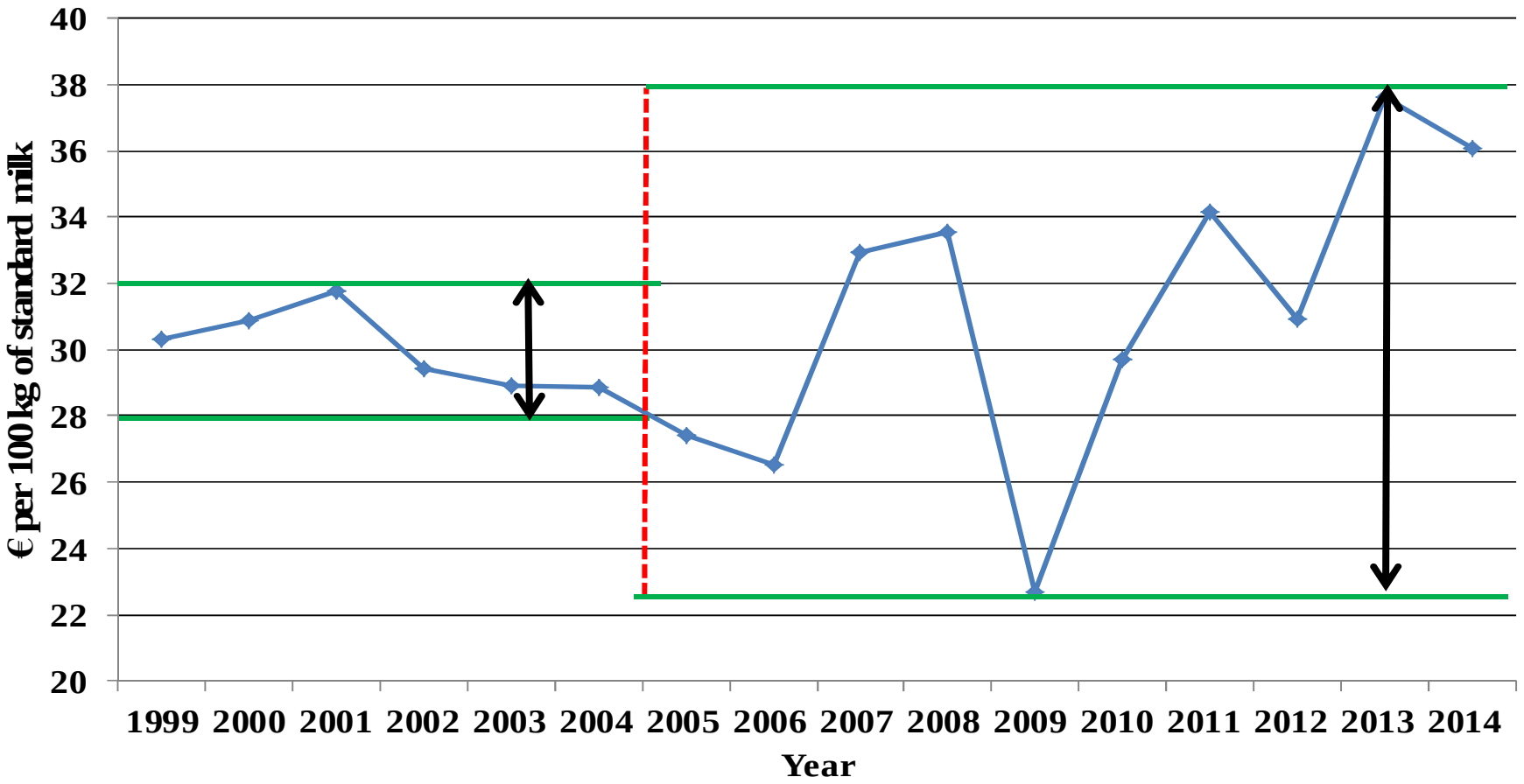


ofitability

Each additional tonne utilised =€161 to €267/ha

(Shalloo et al., 2009 & French et al., 2015)

Milk Price Volatility



Grass Economic Index

- Important traits influence profitability at farm level
- Total merit index developed to assist in cultivar selection
  - Assigns an economic value to important traits of grass performance
  - Define the total economic merit of a cultivar (€ per ha per year)
  - Rank cultivar's on Total Economic Merit

Economic Values

- Moorepark Dairy Systems Model (MDSM)
  - Simulates a model dairy farm across 12 months
  - Includes
    - Herd parameters, nutritional requirements, land use
    - Total inputs and outputs
    - Receipts
    - Variable and fixed costs

Traits of Importance

DM Yield

- Spring
- Mid-season
- Autumn

Quality

- April
- May
- June
- July

Silage yield

- 1st Cut
- 2nd Cut

Persistency

Calculating economic values

Calculated base net margin per hectare for the system

Simulate a change in each trait independently

Identify the effect of each simulated change on performance of model farm

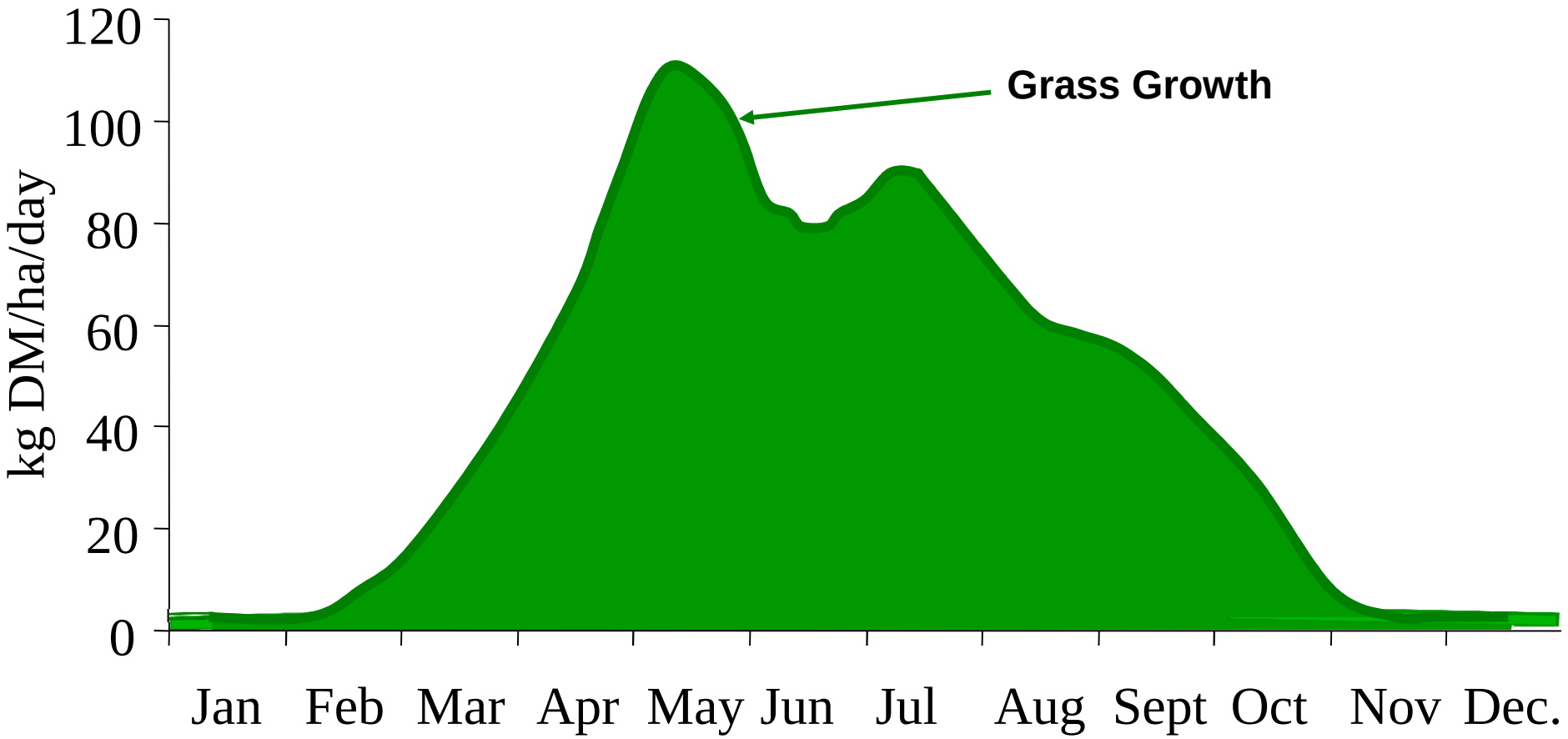
Calculate difference between base and new

$$\text{Economic Value} = \frac{\text{change in net margin per hectare}}{\text{change in trait of interest}}$$

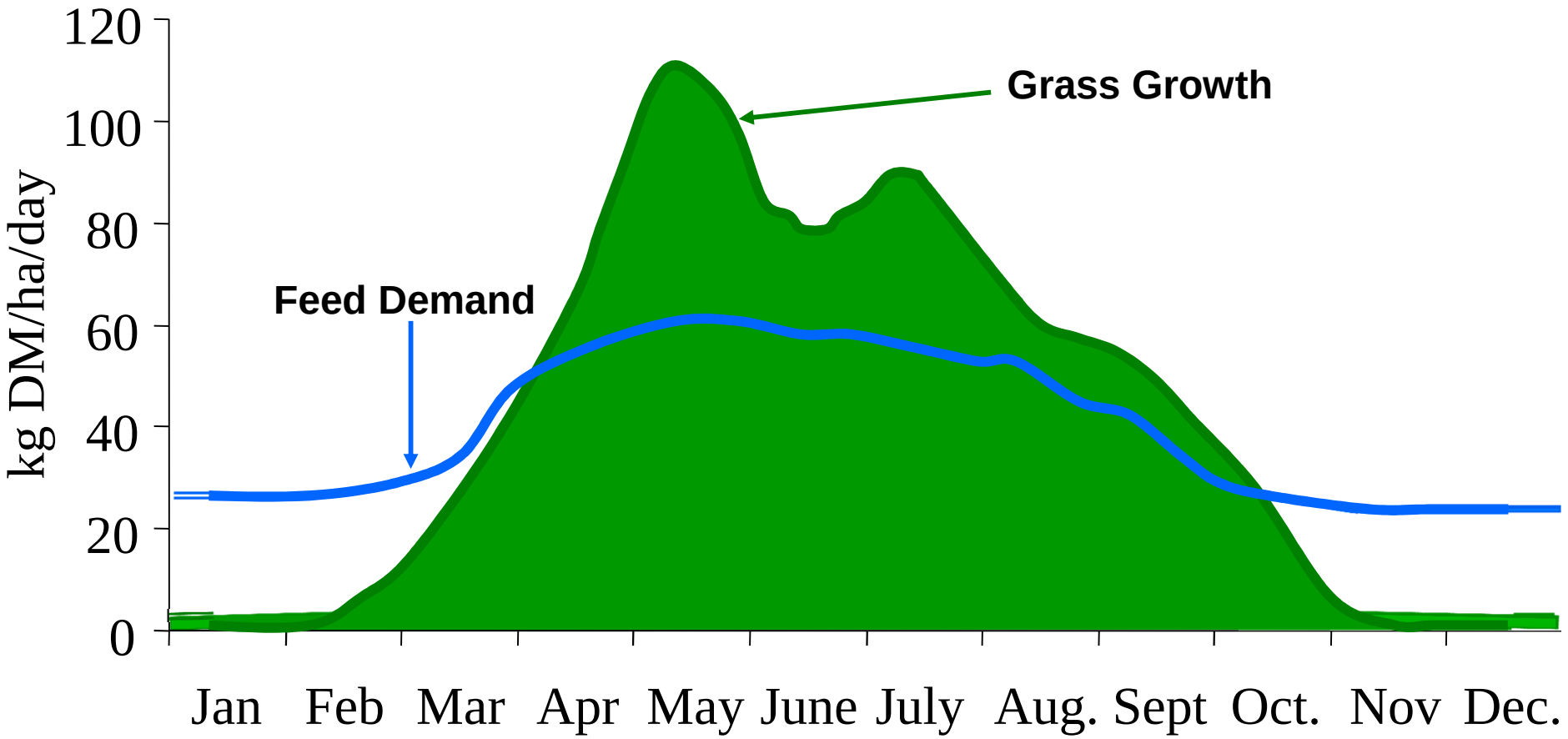
Assumptions

	Default
Milk Price c/l	27.0
Concentrate price €/t	250
CAN €/t	320
Urea €/t	420
Opportunity cost of land €/Ha	430
Silage Contractor 1st Cut	125
Silage Contractor 2nd Cut	95

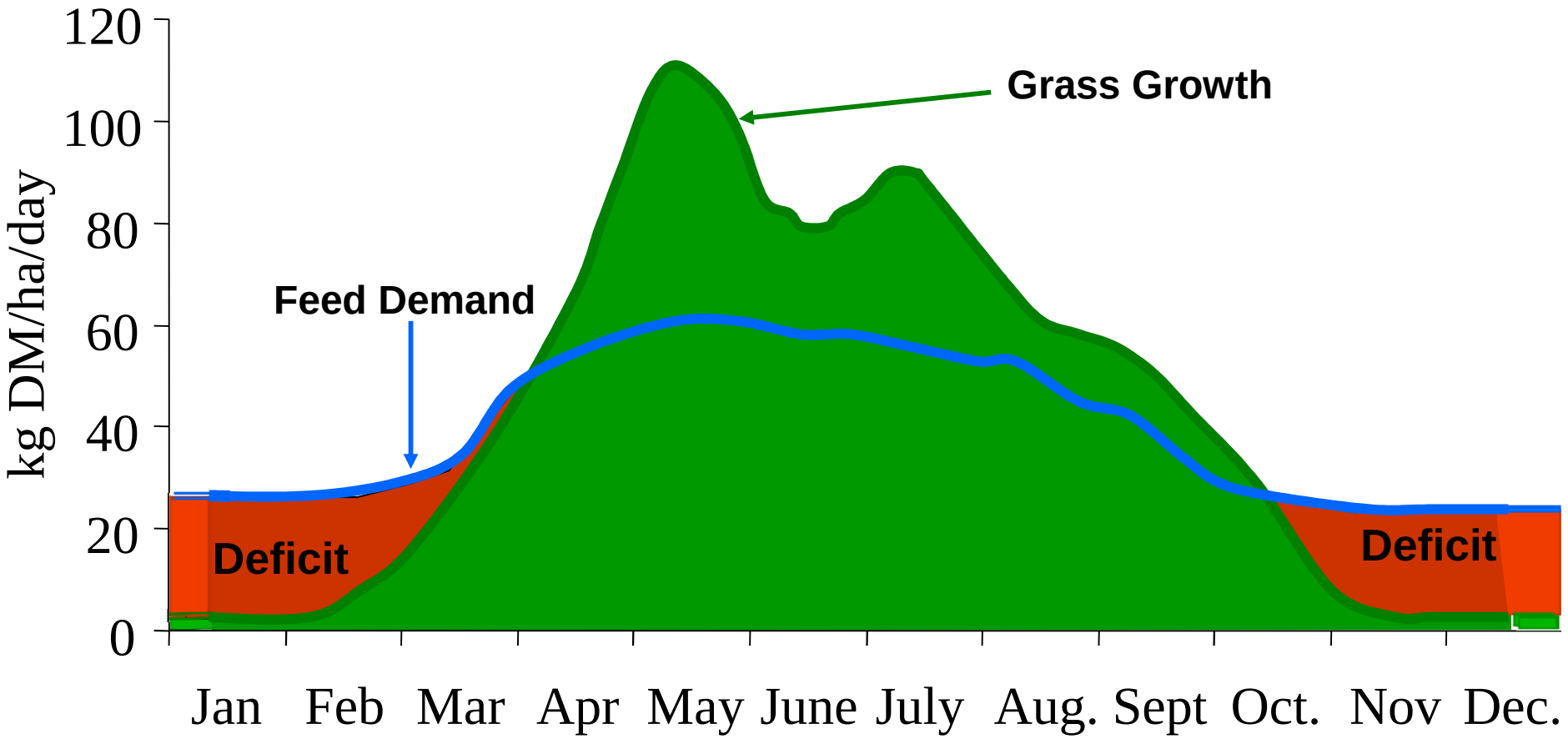
Grass Growth and Feed Demand Curve



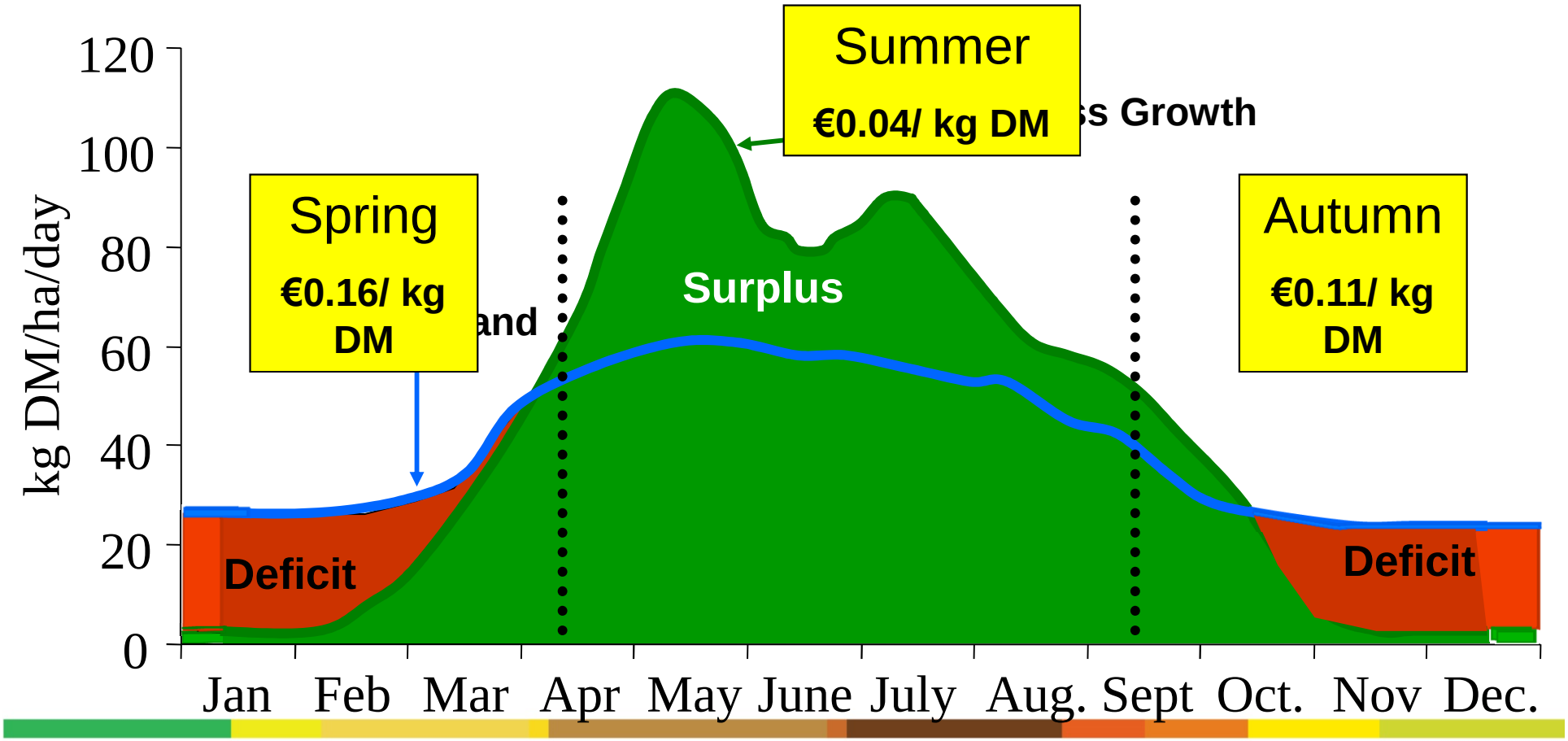
Grass Growth and Feed Demand Curve



Grass Growth and Feed Demand Curve



Grass Growth and Feed Demand Curve



Applying the economic values

- Economic merit one variety against another is based on the relative difference between varieties
- A base for each of the traits is established
- All varieties are compared relative to that base
- Economic merit of each variety established for each trait
- E.g Spring growth
  - Variety – Base = Relative value*Economic value
  - Variety A 1600-1219=381*0.16=€61

Defining Base Values

- Necessary to quantify the economic effect of each cultivar for each trait
  - If cultivar performance exceeds base value – positive effect
  - If cultivar performance falls short of base value – negative effect
- Where possible use farm data to define base values
  - DM yield (9.1 t DM/ha) average level of on-farm production (Shalloo *et al.* 2009)
  - Persistency – standard is 12 years at farm level
- Alternatively use average data from DAFM trials
  - Silage DM yield
  - Quality

-Total Economic Merit

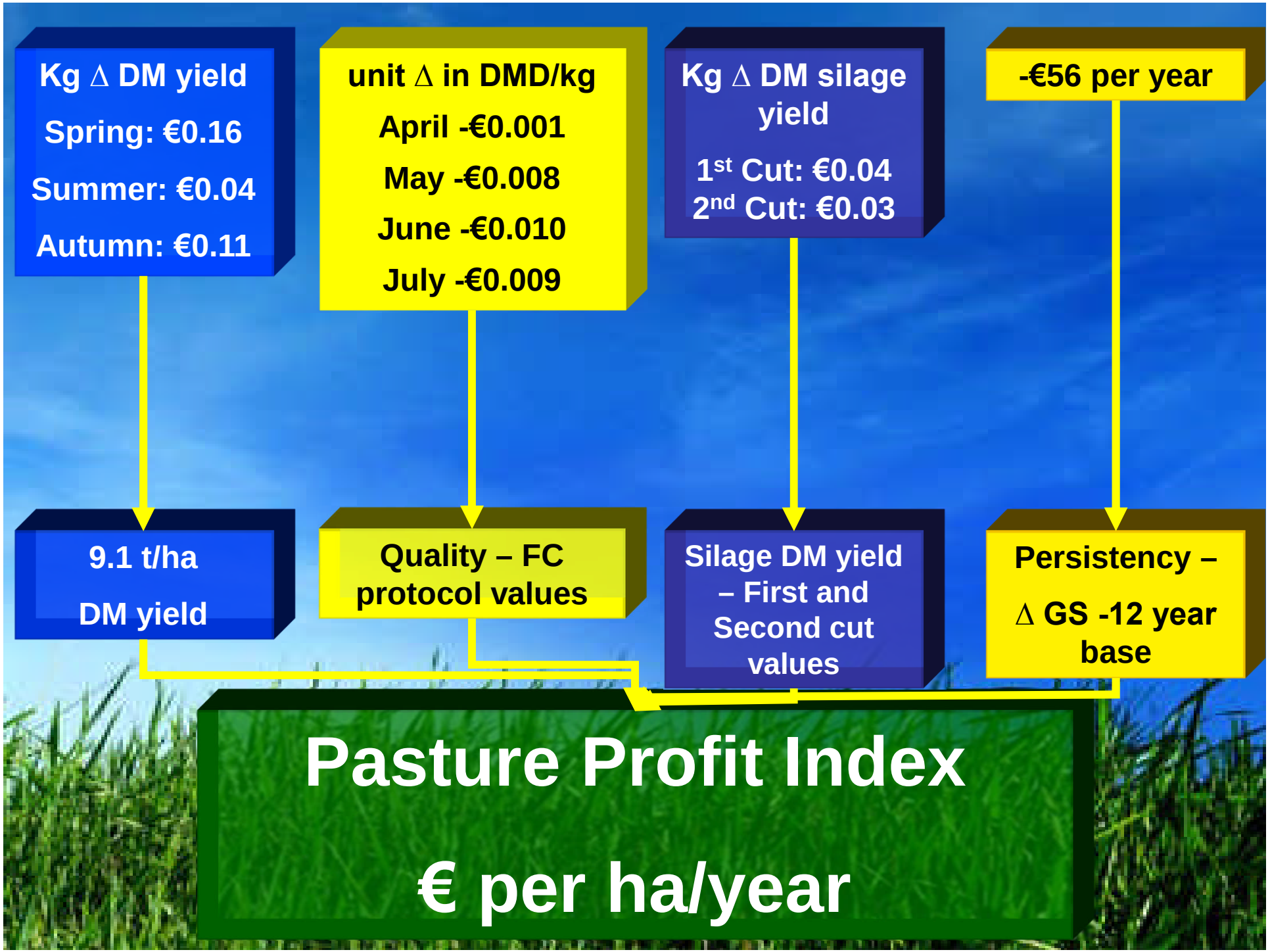
	Trait	Trait value	
Kg DM		**€ /ha/ yr**	
	Spring	20	
	Summer	55	
	Autumn	55	130
Silage			
	1st cut	-15	
	2nd cut	23	8
Quality			
	April	1	
	May	15	
	June	19	
	July	-2	33.5
Persistency			-5.8

Cultivar *A*

Total Economic Merit

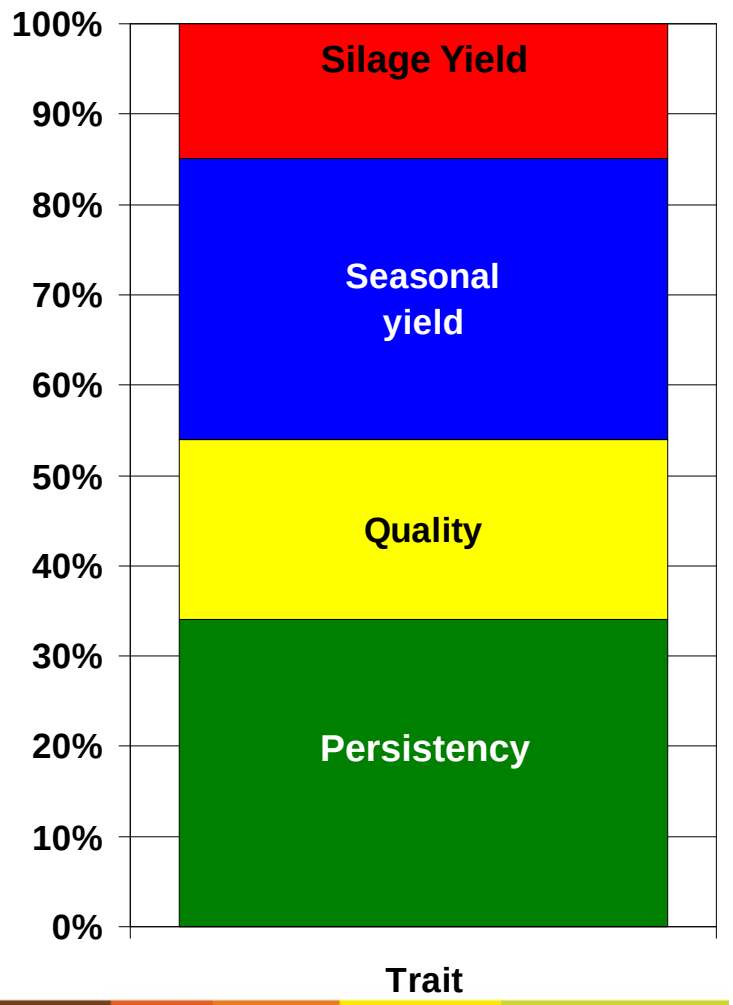
€166

per ha/ yr


Kg Δ DM yield
Spring: €0.16
Summer: €0.04
Autumn: €0.11
unit Δ in DMD/kg
April -€0.001
May -€0.008
June -€0.010
July -€0.009
Kg Δ DM silage yield
1st Cut: €0.04
2nd Cut: €0.03
-€56 per year
9.1 t/ha
DM yield
Quality – FC protocol values
Silage DM yield – First and Second cut values
Persistency –
Δ GS -12 year base
Pasture Profit Index
€ per ha/year

Relative Emphasis of the traits

	Trait	Relative Emphasis	Total Emphasis
DM Yield	Spring	0.15	0.31
	Summer	0.06	
	Autumn	0.10	
Silage DM yield	1st cut	0.09	0.15
	2nd cut	0.06	
Quality	April	0.00	0.20
	May	0.05	
	June	0.08	
	July	0.07	
Persistency		0.34	0.34



Further Index Development

- New Traits
  - Continuous process to add new traits
  - Grass utilisation is extremely important at farm level
    - Grazing characteristics of a sward
      - Grass utilisation
- Economic Value Updates
  - Update every two to three years with a 3 to 5 year time horizon
  - Last updated in 2014
  - Update again in late 2016