



A FARMER'S PERSPECTIVE ON BIODIVERSITY, EMISSIONS AND WATER QUALITY

A warts and all look

Quick intro – who am I, where we farm, our farming ‘philosophy’

- Thomas Duffy, former President of Macra na Feirme
- Farming in partnership with my father Ned and mother Kathleen in East Cavan
 - The farm;
 - 51ha (125ac) owned – fragmented into 3 blocks with no block being larger than 20ha (50ac)
 - Grazing block is the largest, 20ha with 6ha rented
 - 105 cows milking – all spring calving, predominately Holstein Friesian with some xbreeds
- Our Philosophy – Reduce waste first - ‘Wilful waste brings woeful want’
 - Pollution is EXPENSIVE – every kg of N lost to water, or kg of methane produced is fertiliser or feed you both

Fertility & Calving data based on HerdPlus 2020 Calving Report

Calving Interval (days)

Average number of days between successive calvings for cows calved during the period

384

402

367

62%

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Spring 6 Week Calving Rate

Number of cows/heifers calved within the first 6 wks (78) as a proportion of all cows calved during the Spring (102)

76%

56%

83%

79%

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% with known Sire and Calving Survey recorded

Calves where sire (105) and calving survey (105) are recorded as a proportion of all births during the period (105)

100%

62%

100%

100%

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%AI bred replacements

Calves born in the period from dairy AI (15) as a proportion of dairy females born (15)

100%

54%

100%

100%

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% of Heifers Calved at 22-26 months

No. of heifers calved (13) that were between 22 & 26 months of age (20)

65%

56%

100%

49%

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EBI Statistics based on the latest HerdPlus EBI report 2021

Herd EBI (2021)

Average EBI for Cows (104) with EBI data

€139

€107

€158

77%

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EBI of 2021 Inseminations

Weighted Average EBI of recorded in Spring 2021

€139

€107

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77%

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Why these elements matter



EMISSIONS:

GHG – CLIMATE CAUSING GASES

(CC)

VS

**AMMONIA GAS – LOCAL EFFECTS
TO PLANTS/ECOSYSTEMS**

(AM)



WATER QUALITY:

SURFACE WATERS –
RIVERS/LAKES/SEA

GROUND WATER – WATER FOR
BOTH PEOPLE AND LIVESTOCK

HIGH NITRATES LEVELS – ALGAE
BLOOMS

HIGH PHOSPHORUS/ LEVELS

(WQ)



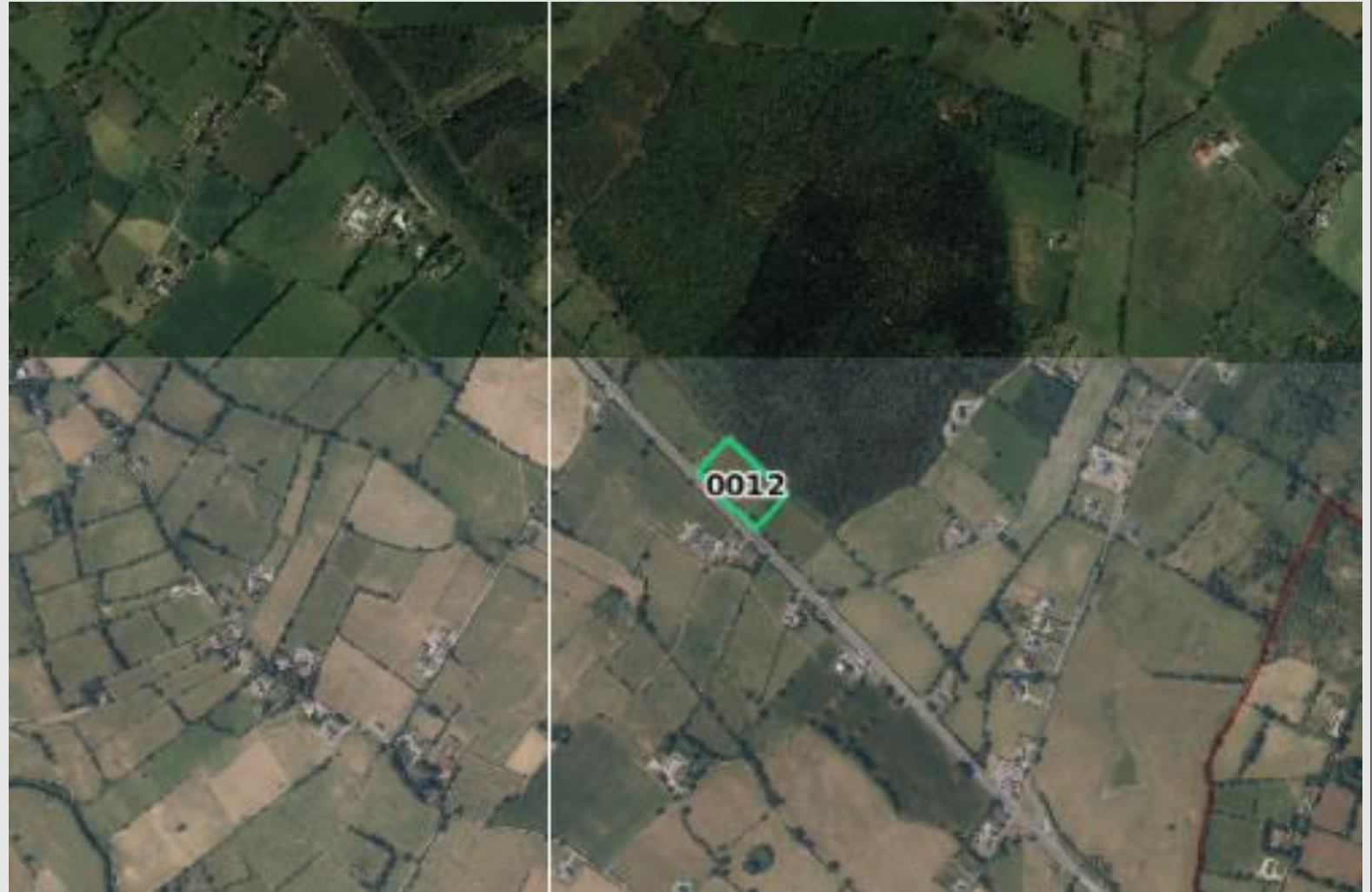
BIODIVERSITY:

LOSS OF SPECIES UNBALANCES
THE SYSTEMS WE RELY ON –

HOODED CROW POPULATIONS
HAVE GROWN 40%+ SINCE 1998
DUE TO HABITAT CHANGE AND
LOSS OF BIRDS OF PREY

(BIO)

Why this
really matter



Quick intro – terminology

- Gases:
 - Ammonia – not a GHG, other issues
 - Methane – belched by cattle/sheep, released by slurry and from dung heaps
 - Nitrous Oxide – powerful climate warming (276 times carbon dioxide) released from manure/fertiliser
 - Carbon dioxide – mostly before the farm gate, drained peat as a major source though
- Can carbon sequestration save us?
 - NO, can help but big uncertainty around soils and VERY complicated global political matter
 - Net increase in hedgerow, new hedges or bigger hedges, existing hedges wont count

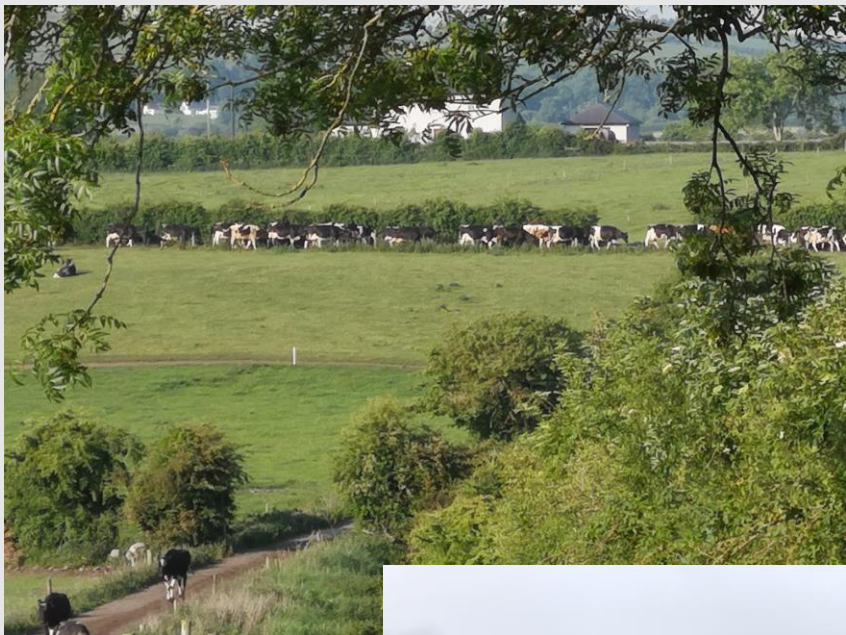
Facts – both entirely accurate and true but only represent one side of conversation

- What 'we' say

- Ireland has the lowest emissions per litre of milk in the EU agriculture, 4th lowest in beef
- Ireland has the second highest water quality in EU (after only Austria)
- Ireland has above EU area of habitat on farms at 13% (vs 2.1% in Netherlands)

What 'they' say

- Ireland has the highest % of national emissions in agricultural at 35% and growing
- Farming is the largest pressure on water quality with declines in most categories
- Farmland Birds are declining, some species by 50% due to habitat loss



VS



Not all changes are equal

- Easy wins/simple to reduce or replace
 - Protected urea – straight swap for urea, small changes to CAN use (Am)
 - Low Emission slurry spreading – either purchase or contractor change (Am & CC)
 - Liming (CC)
 - Improve beef value of dairy beef stock – high DBI or Terminal bull (CC)
 - Improving hedgerow management – A shape (CC & Bio)
 - Milk recording or cattle weighing and culling lowest performers/ensuring they don't breed (CC & Am)
 - Increasing longevity of cows & reducing involuntary culling – health improvements (CC)
- Smaller changes/investments needed
 - Sexed semen – need good heat management (CC)
 - Clover incorporation – at reseeding or overseeding (WQ & CC)
 - Upgrading fertiliser spreader (WQ & CC)
 - Tolerance of weeds or leaving aside areas (WQ, Bio & CC)
 - Red clover silage (Bio & CC)
 - Minimum tillage (CC)
- Bigger/costlier changes and investments
 - Renewable energy – solar panels (CC)
 - Ponds or rewetting (WQ & Bio)
 - Covering all slurry tanks (CC & Am)
 - Recontouring farm road ways away from water sources (WQ)

Fertiliser – fertiliser doesn't grow grass. Sun, water and soil does, fertiliser helps only

- Largest source of non-methane emissions
- Largest source of water pollution
 - Point source – leaking slurry tanks, livestock in streams, roadway runoff – massive improvements here
 - 'Diffuse' – too much slurry too early, 'early nitrogen' when its cold and wet
- Heavy wet soils – Nitrogen lost to air
- Dry sandy soils – Nitrogen lost to water
- **LOW USE OF NMP = a major barrier to good fertiliser management**
 - Personal opinion: Compounds are not usable on farms following a NMP – all straight P&K needed, 18.6.12 is a crutch
 - Ignore calendars, you don't feed a calf that's not eating and pile the feed in the trough?



Once conditions are right, what do we need

Where possible
no fertiliser

Clover

Soil conditions
right

P&K

Lime

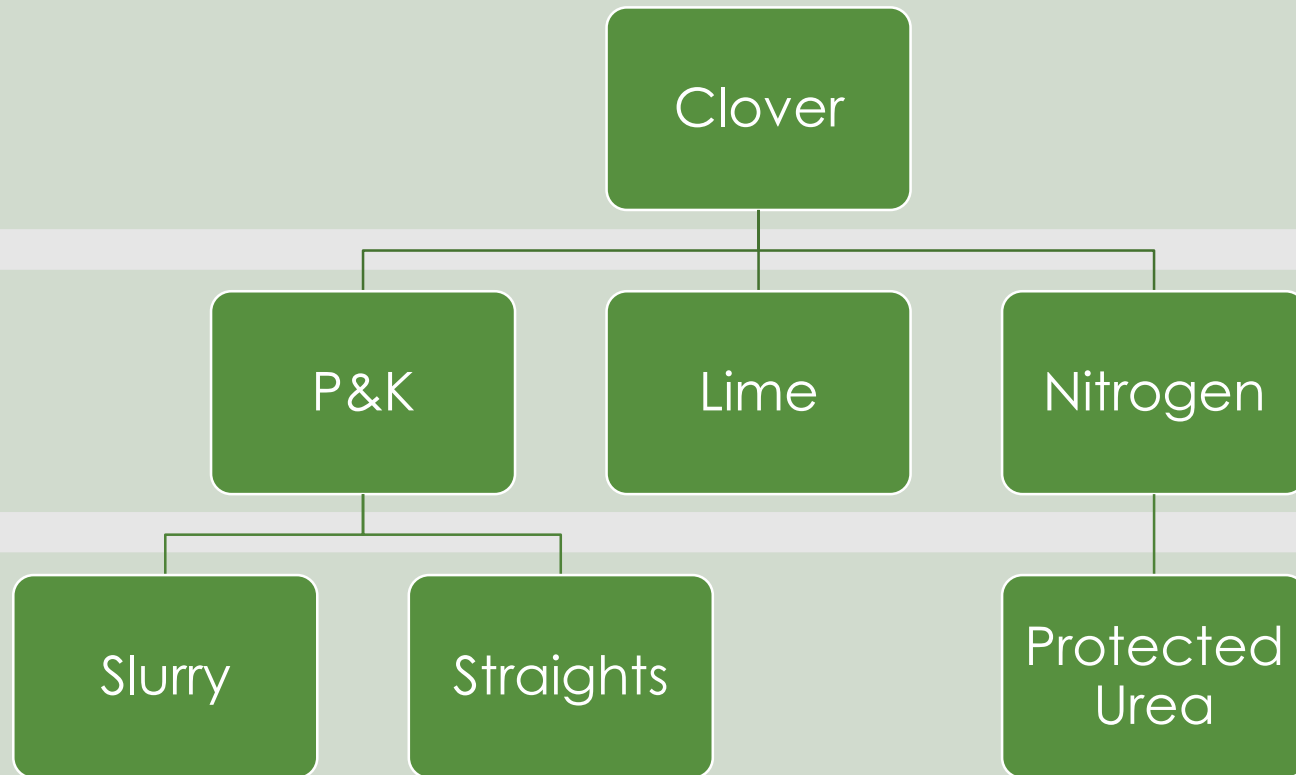
Nitrogen

What we
spread

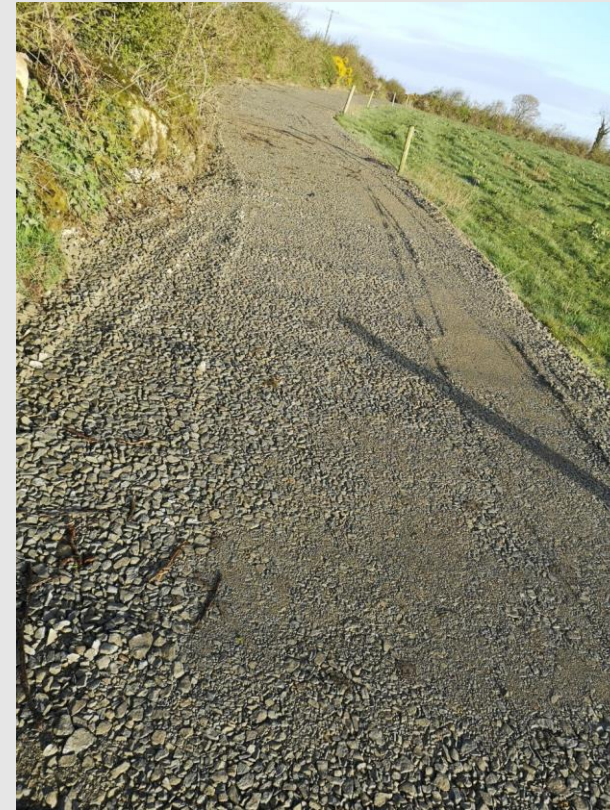
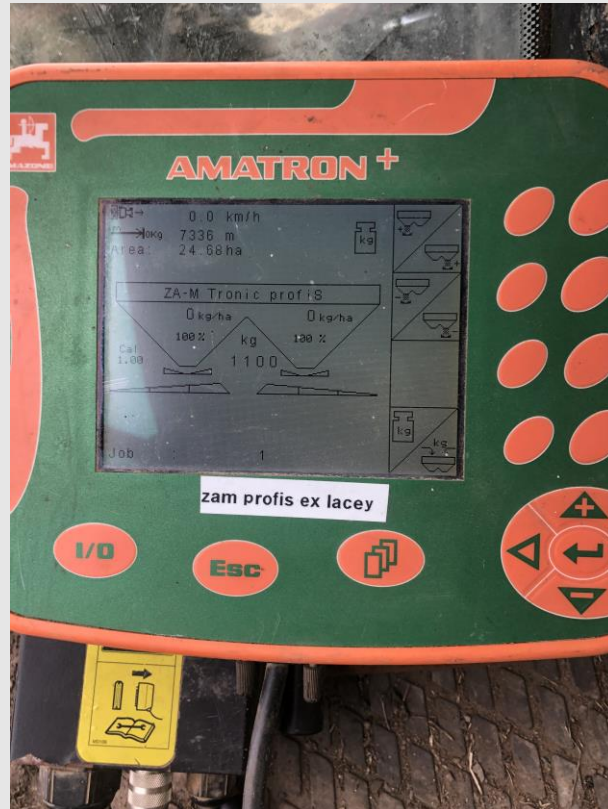
Slurry

Straights

Protected
Urea



Water quality reductions



Red clover/white clover



NMP Plan

			Notes	Applied (Kg/ha)	Advice (Kg/ha)	Balance (Kg/ha)	Jan-Mar	Apr-May																
Paddock	Area	Crop	No. P.	NPK	NPK	NPK	Fertiliser	Rate (kg/ha)	Amount KGs	Split 2			Split 1			Split 1			Split 3			Split 1		
										Fertiliser	Rate	KGs	Fertiliser	Rate	KGs	Fertiliser	Rate (kg/ha)	KGs	Fertiliser	Rate (kg/ha)	KGs	Fertiliser	Rate (kg/ha)	KGs
RealP (0.8)		0.80 Grazing	11314	278.80	279.189	4.111	Urea (46%N) + Protected	54.00	43.2			Urea (46%N) + Protected	140.00	80	Urea (46%N) + Protected	100	80	16% Super P	50	40	Urea (46%N) + Protected	100	80	
NFw3(4)		3.40 2 Cut + Grazing	11214	272.58.238	279.59.0	71.325	Cattle Slurry	3000.0 Gals/Acre				Urea (46%N) + Protected	140.00	80	Cattle Slurry	3000 Gals/Acre					Urea (46%N) + Protected	150	510	
NFCw3(5)		5.00 2 Cut + Grazing	11314	285.47.138	279.48.0	14.3	Cattle Slurry	3000.0 Gals/Acre				Urea (36%N + 7%S) + Protected	140.00	80	16% Super P	50	250			Urea (46%N) + Protected	100	600		
NFBw(4.7)		4.70 2 Cut + Grazing	11313	274.44.198	279.49.135	5.5.48						Urea (46%N) + Protected	140.00	80	Cattle Slurry	2500 Gals/Acre					Urea (46%N) + Protected	129	606.3	
McD(0.8)		0.80 Grazing	11214	253.24.0	279.29.0	26.5.6						Urea (46%N) + Protected	140.00	80	16% Super P	150	135	Urea 46N	50	45	Urea (46%N) + Protected	129	135	
NFw3(3)		3.00 2 Cut + Grazing	11213	277.58.238	279.59.135	21.8.0	Cattle Slurry	3000.0 Gals/Acre				Urea (46%N) + Protected	140.00	80	Cattle Slurry	3000 Gals/Acre			16% Super P	200	600	Urea (46%N) + Protected	150	460
Fello3(4)		3.80 Grazing	11313	267.18.79	279.19.0	12.1.0	Cattle Slurry	3000.0 Gals/Acre				Urea (46%N) + Protected	140.00	80	Urea (36%N + 7%S) + Protected	100	380			Urea (46%N) + Protected	100	380		
Exd(0.8)		0.80 Grazing	11214	258.25.79	279.29.0	23.4.70	Urea (46%N) + Protected	58.00	44			Urea (46%N) + Protected	140.00	80	16% Super P	100	80			50	40			
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Exd(0.8)		0.80 Grazing	11214	258.25.79	279.29.0	23.4.70	Urea (46%N) + Protected	58.00	44			Urea (46%N) + Protected	140.00											

The warts

- Complaints around Protected area
- Lower 6week calving with more sexed semen
- No return from the market for these measures when not cost saving
- The failures/unknowns – Multispecies Grasslands (huge potential but weed control a nightmare)
- Increasing droughts and flooding making adoption harder (ironically)

Multispecies



Space for nature



Genetics

- Most reliable way to reduce methane
- For dairy cows: longer life = lower lifetime emissions (carrying a 'overhead' of methane for her first 2 years)
 - Key factors
 - Improving EBI
 - Low INVOLUNTARY CULLING
 - Lower replacement rate (once not expanding)
 - More mature cows (3rd-5th lac)
 - Calving 22-26m
- For beef (dairy beef)
 - Key factors
 - Age at slaughter
 - Weight at slaughter
 - Sire more vital than

Lactation Summary

Lact.	Calved	Milk Kg	Fat Kg	Prot Kg	Fat%	Prot%	F+P Kg	SCC	Days	305d Milk Kg	305d Fat Kg	305d Prot Kg	305d Fat%	305d Prot%	305d F+P Kg
1	18-02-11	4836	212	164	4.38	3.39	376	48	279	5050	224	172	4.43	3.40	396
2	23-01-12	6078	248	205	4.08	3.37	453	41	317	6007	245	203	4.08	3.37	448
3	11-02-13	7359	286	244	3.89	3.32	530	75	318	7230	279	239	3.86	3.31	518
4	17-02-14	6284	246	208	3.91	3.31	454	56	265	6706	267	223	3.97	3.33	490
5	10-02-15	7361	323	256	4.38	3.47	579	63	284	7660	338	267	4.41	3.49	605
6	26-01-16	8105	307	277	3.79	3.42	584	180	321	7967	300	272	3.77	3.41	572
7	12-02-17	9354	376	331	4.02	3.54	707	48	293	9557	386	338	4.04	3.54	724
8	06-02-18	7655	300	261	3.92	3.41	561	86	318	7474	292				
9	25-02-19	7602	298	253	3.91	3.33	551	397	326	7317	285				
10	25-03-20	6543	234	216	3.58	3.30	450	73	269	6966	251				
11	08-04-21	1147	43	40	3.78	3.50	83	172	32	7237	270				
Avg (Completed)		7118	283	242	3.99	3.39	525	107	299	7193	287				

Jumbo: AA1602

Animal Number: 3

Sex: MALE

Date Of Birth: 23-APR-2018

Animal Name: LISDUFF RED LENNY U602

Status: Arrived on Farm 04-MAY-19, 769 days ago

Breed: AA (100%)

Dam: LISDUFF RED LUCKY M048 Dam Verified (SNP)

Sire: IE331505880658 LANIGAN RED KRACKERJACK Sire Verified (SNP)

Genotype available for animal, genotype included in evaluation

Replacement/Terminal ☐ Dairy Beef

Euro-star index

Pedigree

Weight

Progeny

Linear Scoring

Evaluation History

Index Comparison

Other

Star Rating (within Angus breed)	Economic Indexes	Purpose	Euro value	Index reliability	Star Rating (across all beef breeds)
★★★★★	Replacement (per daughter lactation)	To breed future cows for the suckler herd	€142	46% (Average)	★★★★★
★★★★★	Terminal	To breed beef animals from the suckler herd that are destined for slaughter	€86	50% (Average)	★★★★☆
★★★★★	Dairy Beef	To breed beef animals from the dairy herd that are destined for slaughter	€96	53% (Average)	★★★★★

Help