

Messages:

- ▶ Messages from Moorepark Open day 2021:
- ▶ Knowledge is power to financial wellbeing.
- ▶ Get the Booklet “Irish Dairying – Delivering Sustainability”
- ▶ I have summarised key section.
- ▶ “Print off and learn them off”, the school teacher might say.
- ▶ The farming year starts in October – make the plan.

By Matt Ryan

MESSAGES FROM MOOREPARK OPEN DAY 2021

Environment & Sustainability:

- ▶ Good news:
  - ▶ We have a carbon footprint of 0.99 kgs CO<sub>2</sub> per kg MS (milk solids) compared with the world average of 2.4. It could be as low as 0.86 if sequestration is included in the calculation – one of the best in the world! This means: In the last 12 years Ireland has produced an extra 3,358 billion litres of milk – all of it sold on the world market. If that was produced by the average cow in the world then CO<sub>2</sub> in the atmosphere would have increased by 4.7 million tons of CO<sub>2</sub>.
  - ▶ Ireland’s GHG (greenhouse gas) in 2018 were the same as that of 1998, with 2019 declining by 4 per cent.
  - ▶ In 2020 average cattle numbers were 800,000 below the 1998 figure.
  - ▶ Dairy cow numbers are, more or less, the same now as they were in 1984 when milk quotas were introduced.
  - ▶ The value of dairy exports in 2020 was €5.17 billion, accounting for 40 per cent of total food and drink exports up from €2.29 in 2010 (29 per cent increase)
    - » Of every €100 of dairy exported €90 is spent locally while of every €100 of multi-national exports only €10 is spent in Ireland.
    - » With 60,000 jobs being supported by dairy, it means that every 138,000 litres a farmer produces on his farm supports one person in a job in rural Ireland.
  - ▶ Emission intensity of milk production declined between 2012 – 2019.
  - ▶ Calf mortality up to 28 days of age is 3.6 per cent compared with 6 per cent and 7.8 per cent for UK and Netherlands, respectively.
  - ▶ Water use: Ireland has a very low water footprint:
    - » Ireland uses 6 litres water/kg MS while Australia uses 108 litres and America uses 125 litres.
    - » We could improve on the 6 litres by:
      - › Prompt repair of leaks,
      - › Recycling plate cooler water,
      - › Using high pressure washers, and,
      - › Collecting and storing roof water.
  - ▶ Biodiversity: Dairy farms in Ireland have a total land area of 7.5 per cent devoted to natural or semi-natural habitats. This compares well with our European compatriots. The quality of existing habitats should be maintained/enhanced before embarking on new habitats.
  - ▶ Feed – Food competition: This occurs when land is used to feed ruminants which could be used to produce human edible food.
    - » Overall, the ruminant sector produces more edible

protein than if there was no ruminant sector in Ireland because much of the land in Ireland is not suitable for cropping.

- » Activities including increasing pasture yield or removing ruminants from land suitable for arable production can significantly decrease the level of feed-food competition occurring.
- » Dairying is the best, with a land-use ratio of 0.47. This means that for every 1 kg of human edible protein produced by the dairy sector, only 0.47 kg of crop sourced human edible protein could be produced from the land used. The average of the ruminant sector in Ireland is 0.69.
- » The figure for dairy-beef is 1.08 while dairy-beef in America is 3.4 – grossly inefficient!
- » This is an important piece of information to remember, like all of it.
- ▶ Reseeding cost approx. €750/ha but that cost is recouped in 2 years – this makes reseeding one of the most effective on-farm investments.
- ▶ Protected Urea gives a 71% reduction in nitrous oxide loss component to CAN and a 70% reduction in ammonia loss compared with Urea.
  - » Therefore, use protected in the straight N and N+S slots on your farm throughout the year.

Challenging news:

- ▶ Ireland is responsible for 34% of Ireland’s GHG output.
- ▶ Ireland is responsible for 99.4 per cent of the ammonia (NH<sub>3</sub>) emissions in Ireland,
  - » 47.1 per cent from manure housing and slurry storage; 30.1 per cent from slurry spreading; 12.3 per cent from manure deposits on pasture (urine & dung) and 10.6 per cent from N fertiliser.
  - » Hence the need to address each of these by reducing the % Protein in meal to 12-14% at grass, use 100% protected urea on your farm, spread all slurry by LESS. Achieving the latter two will reduce NH<sub>3</sub> emissions by approx 80%.
- ▶ Nitrate oxide (NO<sub>2</sub>) loss is also an issue and it is reduced by:
  - » Reducing chemical N by 10 per cent
  - » Adhering to the Nitrate directives,
  - » Avoiding slurry spreading during the prohibited periods
- ▶ An EPA report shows that in period 1987 – 1990 3.6 per cent of rivers had “poor” quality water compared with 0.08 per cent I 2017-2020 period. However, 230 out of 575 rivers declined in quality – lot done and more to do!
- ▶ Only approximately 33 per cent of applied N is utilised.
- ▶ Emissions per hectare of GHG, ammonia and Nitrogen balances were 2-6 times higher on dairy farms than other Irish enterprises.

Performance Indicators for current and future dairy systems:

	Current	Target
Stocking Rate (LU/ha)	2.1	2.7
MS/ha	866	1222
Replacement Rate(%)	26	18
6-week calving Rate (%)	65	90
Nitrogen (Kg N/ha)	186	150
Grass Utilised (Tons/ha)	7.3	12.1

Meal Fed (kg DM/cow)	1025	450
% Slurry spread by LESS	10	100
Protected Urea		100
GHG (kg CO <sub>2</sub> /kg(MS))	0.99 (0.82)	0.74 (0.62)
GHG (kg CO <sub>2</sub> /kg/ha)	9,465 (7,862)	10,498 (8,832)

### Technical Tidbits

- ▶ Farm debt has reduced from €3.08 to €1.93 per kg MS from 2007/09 period to 2020. Because greater efficiencies, increased output with little increases in overall debt, producing more MS/cow.
- ▶ EBI, continued to deliver profitability and low environmental hoofprint. The shock is that the national average EBI is only €126 and that doesn't take into account the sizable number of cows, by stock bulls, with no EBI.
  - ▶ Jersey crosses deliver approx €150/cow more than the H-F. Nationally, Jx herds had higher EBI (+€47), higher annual milk receipts/cow (+€63), and a higher 6-week calving rate (+13.7 per cent) compared with the average straight H-F herd - Source: ICBF)
  - ▶ Every €10 increase in herd EBI was associated with 0.0074 kg decrease in milk carbon footprint.
  - ▶ We are basically short of individual data from farmer individual herds but mid- infrared spectroscopy testing of individual cows milk (through milk recording) and bulk milk samples offers vast potential. Traits such as, DM intakes, fertility and emissions could be predicted for individual cows – mind blowing technology!
  - ▶ Positive research is ongoing to identify bulls that are good at maintaining milk yield post peak and who will have lower SCC.
  - ▶ DNA test R1s and R2s – Why?
    - » Will ensure more accurate identification of superior replacements, embracing such traits as milk yield, fat, protein and fertility.
    - » It can also be used for DNA-based calf registrations (approx 8 per cent of all dairy calves born have a parental error), the monitoring of inbreeding, the % jersey in the animal and genetic defects. It only costs €22 with a net gain of €33/animal.
  - ▶ Progress is being made on selecting sires with greater genetic merit for disease resistance and this will enhance herd health, reduce costs and increase profits - more data is required from individual farmers
  - ▶ Next Generation Herd experiment shows:
    - » High EBI herds are more productive, more fertile and more efficient than the national average herd,
      - › % F and % P was 0.23 per cent and 0.09 per cent higher,
      - › The 6-week incalf rate was 82 per cent V 65 per cent
      - › Milk solids (kg/body weight) was 0.90 V 0.87
    - » MS/ha was 40 kg more.
    - » Jerseys, Danish and NZ, were better than the national herd on all these traits, and their ratio of MS/kg body weight was 1.03 and 1.10 respectively – impressive!
- ▶ Sexed semen is the future:
  - ▶ Because we will have a lab in Moorepark spring 2022 we will have sexed semen from the best AI bulls,
  - ▶ By using sexed semen to provide the necessary replacements to your herd, the calf crop profile will be close to 30 per cent female dairy calves, 3 per cent male dairy calves and 67 per cent beef calves.
- ▶ However, we may have to use in-vitro produced embryos to advance AI bull genetics – will occur because of reduced numbers of male dairy calves.
- ▶ Genetic gain is improved by breeding heifers with sexed semen. Timed AI protocols allow two inseminations within 24 days.
- ▶ Sexed semen has a shorter duration of viability in the female reproductive tract, 12-16 hours, compared with conventional semen, which is greater than 24 hours; hence delaying AI time improves pregnancy rate.
- ▶ Grassland:
  - ▶ Every extra day at grass in the autumn is worth €1.80/cow/day and €2.70/cow/day in spring.
- ▶ Being a participant in Teagasc's PastureBase is essential:
  - » You will have recorded grass measurements to:
    - › Help you make instant decisions as to when you have too much or too little grass ahead of cows,
    - › Field and variety comparisons,
    - › Manage N applications relative to available grass.
  - » You will have year to year data for comparison with yourself and with group members.
- ▶ See weekly growth rates and projected growth rates and much more.
  - ▶ Reseeding cost approx. €750/ha but that cost is recouped in 2 years – this makes reseeding one of the most effective on-farm investments.
    - » On-farm varietal trials show that the best varieties can be grazed 7.3 to 8.0 grazing's/year with another 0.45 to 0.77/ha silage cuts.
    - » Every extra grazing delivers 1300kg DM/ha.
    - » Work on "multi species" is ongoing at Moorepark but it, with white clover, is a no brainer for cattle farmers.
  - ▶ Clover is the future:
    - » A grass clover sward (22 per cent) getting 150kg N/ha compared with perennial ryegrass, getting 250kg N/ha, was €108/ha more profitable, because:
      - › It produced 20kg MS/cow more,
      - › N savings,
      - › Nitrogen use efficiency was 18 per cent better.
    - » Reseeding (3-5kg/ha) and over sowing (4-6 kg/ha), of white clover should commence as early in the year as possible (April – June)
    - » The first grazing should take place at 600-1000kg DM/ha cover.
    - » I am a big fan of Red Clover on outside silage ground with perennial ryegrass give yields of 12-15 tons DM/ha with 90kg N/ha. But in a mixed species grazing trial (one year) it's addition to the mix increased per hectare yield by 1006, 854 and 587 kg DM with 100, 150 and 250 kg N/ha. Because of its contribution in early reseeds with white clover it makes a big contribution before the white clover reaches max production,
  - ▶ Nitrogen: Because of the pressure coming on it's availability at farm level we must use it more efficiently than here-to-fore.
    - » We will get more out of our N (up to 30 per cent +) if soil fertility is optimum as highlighted in Table1. It shows:
      - › That where lime, P and K are all below optimum, only 35 per cent of applied N is used up.

- > Whereas 65 per cent is used up when all 3 are optimum.
- » Most farmers fall well short of optimum soil fertility.

Table 1. Percentage nitrogen use efficiency across grassland fields according to the status of soil pH, phosphorus (P) and potassium (K) fertility.

Mean grassland nitrogen use efficiency	Soil pH with optimum range	Soil P within optimum range	Soil K within optimum range
63%	✓	✓	✓
54%	✓	X	✓
57%	✓	✓	X
53%	✓	X	X
35%	X	X	X

Grassland nitrogen use efficiency was calculated at the percentage of the applied fertiliser and manure N recovered by the grass sward across the 446 fields on which measurements were taken over 2 years on commercial Irish dairy farms.

- » We have to make better use of slurry as Table 2 shows.
- » The available N in 1000 gallons of slurry is:
  - > Trailing Shoe: Spring = 9 kgs N  
Summer = 3kg N
  - > Splash Plate: Spring = 6kg N  
Summer = 3kg N

Table 2. Nitrogen (N) availability and value (€) using low emission slurry spreading (LESS) methods

Nitrogen Use Efficiency	Cattle Slurry Nitrogen Value when applied at 33m <sup>3</sup> /ha					
	Splash Plate		Trailing-shoe/Bandspreader (LESS)		Direct Injection (LESS)	
	Spring	Summer	Spring	Summer	Spring	Summer
N Recovery %	25%	15%	40%	30%	50%	45%
Available N /ha	20 kg	12 kg	33 kg	23 kg	40 kg	36 kg
N Value (€/ha)	€20	€12	€33	€23	€40	€36

- » I hope this is the last time I have to write the following:
  - > In terms of grass grown/ha there was no difference between CAN, Protected Urea and Urea with all averaging 13,326kg DM/ha.
  - > Therefore, use protected all year round.
  - > There was a difference of 1284kg DM /ha between using 150 and 250 kg N/ha.
  - > Extended autumn grass for profit:
- » Building herbage mass should begin in August,
- » Target AFC (Average farm cover) with a 40-day rotation for end September:

- > 2.5 cows/ha = 1000 kg DM/ha
- > 3.0 cows/ha = 1100 kg DM/ha
- > 3.5 cows/ha = 1200 kg DM/ha
- » The last rotation should begin in early October (late September for wet farms and very compact early calving herds) and end on 21st November, depending on soil type.
- » Over 60 per cent of the area should be grazed by 1st November – that should be 70 per cent for high stocked milking blocks.
- » Autumn closing date did not impact on late lactation milk yield,
- » Autumn closing date has a significant impact in grass availability in spring – every 1 day delay in closing results in 16 kg DM/ha/day less in spring.
- » Increased grass availability in spring is more valuable than autumn grazing. In the period 7-12 weeks post calving when high grass feeding was compared with low grass feeding milk solids (MS) per day were 0.2kg more at 2.4 kg MS/cow/day and methane emissions were 15 grams/day less.

- ▶ Expansion has caused most farms in a survey to be inadequately served by their infrastructures:
  - » Only 20 per cent of paddocks on the farms were deemed to be of adequate size for 36-hour grazing,
  - » Over 43 per cent of paddocks on farms with 150 cows were only adequate for 12-hour allocations,
  - » For a 150-cow herd, the cows walked on average 533 metres daily, hence the importance of farm roadways as herd get bigger.
- ▶ Winter feed budgets should be done on a dry matter basis:
  - » For instance, silages of 22 per cent, 25 per cent and 28 per cent Dm will have 0.163, 0.174 and 0.185 ton of DM per cu metre.
  - » Cows, incalf heifers and weanlings will require 12, 10 and 5 kg DM/hd/day for winter.
  - » Silage quality should be:
    - > 25-30 per cent dry matter
    - > 68-70 per cent DMD for dry cows and 73-78 per cent for milking cows. And 50 per cent of silage should be the latter,
    - > Preservation is important; dry silage should have a pH of 4.5 while wet silage must be less than 4.2 pH.
  - » Therefore, it is essential to get silage analysed for quality and mineral status.
- ▶ Once-a-day (OAD) milking has a part to play on some farms



# ICMSA

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and particularly in spring:

- ▶ Full year OAD loses 28 per cent milk yield and milk solids (MS) by 21 per cent,
- ▶ OAD in spring for 4-weeks reduces yield by MS by 11kg and 10 kg MS in the year.
- ▶ OAD in spring for 6-weeks reduces yield by MS by 15kg and 17 kg MS in the year.
- ▶ Autumn OAD for 7 weeks had no effect on yield or MS,

▶ Animal Health:

- ▶ Johnes: Testing individual cows for it is unreliable but herd-level testing has merit.
- ▶ The use of chlorine-based products for cleaning dairy equipment has been banned since 1st January 2021 – based on random test 97 per cent of farmers are compliant.
- ▶ Lameness is a very painful disease that results in reduced milk yields, increased SCC's, reduced fertility rates and increased culling rates.
  - » It is present in 7.9 per cent of cows at grass and 9.1 per cent of cows when housed.
  - » On average, herds with a 19 per cent suboptimal level of mobility lost €2,138 per 100 cow herd.
  - » Regular mobility scoring, footbathing and selecting cows with a negative PTA for lameness should be the norm.
  - » Reducing stones on paddock entrances/roadways, avoiding slats on roadways and collecting yards, avoiding concrete roadways, and avoiding sharp turns both on entrance and exit to the milking parlour are key to preventing lameness.

Benchmark Indicators of Welfare in Ireland (Survey of all farms):

	Top 20%	Average	Bottom 20% of farms
Lameness	5%	9%	32%
BCS outside target	13%	20%	
Skin damage	2%	8%	29%
Tail breaks	3%	9%	52%
Tail lacerations	2%	18%	
Nasal discharge	15%	30%	86%
Human Avoidance			

Response

74%

82%

100%

If you don't compare well with the top 5% then you should strive to improve.

- ▶ Teat sealants, why, when, where and how?
  - » Why, because overuse of antibiotics can lead to antibiotics resistance in humans. (I know because I got a staph aureus infection in my knee and it took 12 weeks of antibiotics to get rid of 'him')
  - » When? Herd average must be less than 120K SCC and little or no clinical cases in previous lactation.
  - » On farms with good individual milk recording and clinical mastitis records who practice good preventative protocols.
  - » How? A high level of hygiene, proper teat end preparation and use of correct infusion technique.
- ▶ Calf rearing is a labour-intensive task and it is essential to do it well for farm profitability without compromising calf health, behaviour, growth and overall welfare.
  - » Automatic feeders are 39 per cent more labour efficient than manual feeding. There was no difference in calf health, behaviour or weight gain between the feeding systems.
  - » A calf housing survey showed that two-thirds of sheds had excessive wind speed and insufficient light while 90 per cent of pens had insufficient floor slope and were generally short of calf rearing space.
    - › Individual and group 'calf hutches' are a lot more labour demanding than indoor manual or automatic systems, while individual hutches may negatively impact on calf welfare.
    - › On average 10% of calves surveyed had pneumonia (range 0 – 80 per cent). Round roofed sheds with lean-to roofs had a significant higher percentage of pneumonia than other house-types.
  - » The key target date and weight periods are 6, 9 (housing), 14,15 (breeding), 24 (calving) months when the animal should be 30 per cent, 40 per cent, 50 per cent, 60 per cent and 90 per cent of the cow's mature weight.

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- » Post rearing regime had a greater effect, by increased dry matter intake, on body weight than weaning age, and throughout the rearing life of a replacement unit. Jx heifers had a higher intake as a % of body weight compared with H-F throughout all stages of the replacement's life.
- » To vaccinate or not? Large expanding unvaccinated dairy herds are endemically infected with BRSV, BVD, IBR, Salmonella Dublin and Leptospira Hardjo.
  - » Contract rearing did not adversely affect the prevalence of these diseases.
  - » Farmers giving 3+ vaccinations compared with those giving 2 or less vaccinations had an extra €478/ha gross margin more.
- ▶ Uterine disease was not associated with the breed of cow, or EBI but with herd management, such as clean calving facilities, timely intervention when problems arise and knowing the risk factors, such as, calving difficulty and twins.
- ▶ Dairy calf-beef by way of contract calf rearing offers the dairy and beef farmer a profitable opportunity in dealing with male calves.
- ▶ Staff, time and working conditions:
  - » Family farms, 117 cows, can operate effectively with 3,000 hours/year and 1,500 hours between mid-January and June. Larger herd are more labour efficient than small herd (national av.size) 11.6 V 27.5 hours/cow respectively.
  - » The workplace of the future, 2030, as seen by students

- and staff, will have to be much more staff friendly:
  - » Time off and regular end of day (finish by 6pm) plans must be communicated well in advance,
  - » Most staff want 2-3 weekends off per month,
  - » Over 72 per cent want to work a 40 – 50-hour week,
  - » More staff will be 0 contract, flexi-time,
  - » They expect to be using improved technologies for managing fertility, calving, milking, drafting, moving cows to and from paddocks grass measurement/management, calf rearing and whole farm management programmes with more recording of data required. And expect to be trained in these technologies.
  - » To compete with their non-farming friends, they expect to work shorter hours, have good safe working conditions with comparable pay.
- » The application of LEAN principles does reduce working time and the physical workload.
- » Good communication relationships/skills by both manager and staff are essential.
  - » Induction programme for new employee; rarely done on 1 employee farms compared with 30 per cent on 3 employee farms,
  - » Probationary period for new employee – same result,
  - » Performance/review – very rarely done,
  - » Rosters – ranges from 18 per cent to 55 per cent from 1 to 3 staff employed,
  - » Regular staff meetings
  - » Training plans, rarely done, which is worrying,
  - » Career plans are as rare as “hens’ teeth”,
  - » Paid sick leave occurs on 20 per cent (1 staff) to 36 per cent (3 staff) of farms,
  - » Approximately one-quarter to one-third are paid over-time,
  - » This survey should alert farm employers how badly we generally manage staff; and it needs a lot of employer training/awareness as to staff needs.
- » Teagasc, through Emma-Louise Coffey, run an excellent training programme for ‘would-be’ farm managers and farm owners.
  - » There is unlimited opportunity for farm managers with a starting salary of €30,000 increasing, with experience, to €60 -70,000 working outdoors.
  - » Many of these managers have gone onto share-farming ventures and farm ownership.
  - » Parents need to explore this option when helping children decide on their futures during Leaving Cert years.

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### The Planning Year starts Now

- ▶ Many of the decisions and actions you take in October have a big influence on how profitable 2022 will be for you.
- ▶ What are the key decisions?
  - ▶ Body condition (BCS) of herd.
  - ▶ When and which cows to dry off in October,
  - ▶ Building and maintaining autumn grass until November,
  - ▶ Investment steps needed to minimise your 2021 tax bill.
  - ▶ Analysis of silage for DMD and mineral levels,
  - ▶ Soil analysis so as no field has a ph of less than 6.3 or below Index 4 for P & K.
  - ▶ Are replacement heifers on target?

*“Contented staff reflect the personality of the employer.”*