hello and welcome to ear to the ground

the agricultural podcast brought to you

by farming connect

I'm your host Aled Jones and thank you

for tuning in

we aim to bring you a new episode of

this podcast every fortnight

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whether that's via apple

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with all the latest episodes. Today we're

going to be talking about how farmers

can improve their bottom line

by improving the quality of their grass

silage

over the past five years farming connect

has helped welsh farmers to analyse over
2

2000 silage samples and I met the person who's been examining the data to see how much difference good silage can make to a business.

Hi everybody um I'm Dave Davis i am a farmer's son originally from the welsh borders Powys, Shropshire borders um and i did a phd in rumen microbiology actually looking at how well the rumen functions under different feeding regimes and spent 20 years as a scientist at IGER in aberystwyth and then in 2010 I left IGER and established my own company Silage Solutions limited and in the last 10 years I think I've probably learned
a lot about the practical aspects of silage more than I could when I was a research scientist and I've traveled widely across Europe talking about silage but I still do research so I have a number of research projects that I continue and I think I'm a very lucky person being able to mix research and practical agriculture so I am very lucky. And that's the key isn't it matching that academic research ability with practical application which is so important. Interesting you mentioned there that your work takes you all over Europe but tell us a bit more
about the work you've done

in other countries so generally I
do a lot of work directly with the
farming community

and learning about their
differences in their management styles

and their production

strategies and I've traveled right

across Europe all the way into Russia
even over into the Asian part of Russia

and Turkey and it's amazing what

similarities there.

I would say most farmers in
the world have the same issues as uk

farmers

uh welsh farmers so the weather would be

a key one and

and what they do with their product is

the other key one
um all working within difficult

0:02:54.000,0:02:59.040
different political systems

0:02:56.000,0:03:02.879
and the range in silage making

0:02:59.040,0:03:04.159
technologies is also very similar so

0:03:02.879,0:03:06.400
you see very good

0:03:04.159,0:03:07.599
producers in each of those countries and

0:03:06.400,0:03:09.280
some

0:03:07.599,0:03:12.480
uh less good should we say and that's

0:03:09.280,0:03:14.000
being polite.

0:03:12.480,0:03:16.080
There's a range in all

0:03:14.000,0:03:18.239
countries but how would you say

0:03:16.080,0:03:19.760
Welsh farms compare to some of the

0:03:18.239,0:03:22.480
countries you've been to in terms of our

0:03:19.760,0:03:26.080
ability to produce high quality silage?

0:03:22.480,0:03:28.640
I think we are

0:03:26.080,0:03:30.159
very similar like I said, I think our

0:03:28.640,0:03:32.319
best farmers would compete

0:03:30.159,0:03:33.599
with their best farmers. I'd say our

0:03:32.319,0:03:37.360
average farmers in

0:03:33.599,0:03:39.920
in Wales are average in Europe.
People that come to me and say if you wanted to go on a farm tour to look at silage making practices which country would you go to and I'd always say the Czech Republic. Their average farm is significantly better than most other European Countries and those in Wales um and then people say the other extreme what's the worst place you go and I'd say that would be Latvia Lithuania where if you can do a incorrect practice they seem to manage it on most farms. I think the particular challenge we have here in Wales is the low dry matter grass because in many of those countries their focus is on
lucerne and May silage because they have the weather conditions for it.

I think when I look at grass silage quality we do a very good job in Wales on making grass silage but I still think we could learn from some of those other countries and again here I would say uh Sweden and Denmark are two places that we could possibly learn some things from. What are the key things do you think we could take home from those countries?

I think one thing that we don't value enough is the value of silage most producers in Wales will be using grass silage as their main crop and that is something that's always there it's in the field and we harvest it and we don't actually
Think, or many farmers don't think enough about the nutritive quality what they want it to do and what they're feeding it to and why some of these other countries are better is that many of those are using silage as 100 of their forage throughout the year because there's a large number of farms where animals are housed all year round so they really do focus on their forage quality. I think in Wales we're starting to do that to a greater extent with our grazed grass but you know there's no reason why we shouldn't be doing it with Silage as well and when we look at the top farmers in
Wales they are doing it silage,
and they reap the benefit. And it's really interesting to read
you've recently produced a report for Farming Connect
the silage quality report which you've been analyzing data from over 2000 silage samples taken from farms all across Wales and some of the best performing farms producing the highest quality silage are seeing some incredible gains uh over and above the average uh silage quality farms which we'll come on to in just a moment. But tell us Dave a little bit about how that information was collected in the
first place
and how you've completed the task of
analyzing all that data
as part of Farming Connect. Many
farmers supply
a sample either taken by a farming
connect officer or themselves
where they can get their analysis done
uh for free
through a standard uk laboratory where
it's
analyzed by a rapid technique called
near infrared spectroscopy
and that predicts your silage quality. So
what I've done
is actually in partnership with Farming
Connect
had access to the entire database since
2015
so those silages that I've been
analyzing are over
well from this 2015 season right through
to the 2020 season.
Fewer samples in the in the 2015
season and the 2020 season because we
cought it
not right at
the start of that year and not right at
the end of 2020
and obviously with 2020 there were other
challenges on silage sampling
on farm in Wales but basically there's a
standard procedure standard analysis
that
all farms to be honest most farms in the
world will have
that type of silage analysis. And I've
taken those silage analyses
and just pulled apart the data that's
there in terms of the digestibility the metabolizable Energy, the protein and some of the other factors looking at what things have changed and I've broken it down on a year basis so looking at 2015 silages 2016 and so on and I think the key finding is that the actual top 25 and average 25 average silage quality have not changed over that time which is a little disappointing to be Honest.

Have you identified any particular year that was better for silage quality than another we often hear
in the wine industry about the vintage year for wine has there been a vintage year for silage in that five-year window? No there hasn't and I think this comes down to the fact that farmers tend to learn from their fathers on silage making they tend to do the same thing year in year out so the same mistakes are made or the same positives are made and you know nice analogy to the wine Industry, silage is produced as a Fermentation, as a result of a fermentation so is wine but many wine producers I'd say all wine producers have a good taste of their wine whereas
and I wouldn't recommend that

producers should be tasting their silage but they should be analysing the performance from that silage much more closely.

We often hear about the importance of analyzing your silage, how many farmers would you say do this routinely?

I think in the dairy sector, I'd say all farmers do it routinely and the only criticism I'd have at the dairy sector is they probably don't do it often enough through that silage feeding period.

Where as in the sheep and beef sectors it's a lot lower um probably higher in the beef sector maybe 50 60 percent in the sheep sector it's probably 10 15 percent.
Now analysis is one thing but I think the focus for analysis I would say should be twofold and those farmers are analyzing at the moment it's probably for nutritional purposes on looking at that silage and what they need to ration against it but the second process which is probably more important is actually looking at how you have done in relation to what you needed to do and how you change things for next year to do better.

What are the key things you need to look out for in that analysis do you think that enough farmers fully understand the data they're getting when they receive that analysis back? I
think that most farmers do not understand the detail. I think the way the analysis sheet is sent to farmers is sometimes confusing. I also think there are things on that analysis sheet that are superfluous to most farmers needs and so they lose focus on what are the most important factors. So as a short very brief thing I would say there are three things of critical importance, one is the dry matter the second one is the digestibility or the metabolizable energy and those two I group together because they are a mathematical determination from one to get to the other.
and the other one is the protein and

after those then the most important

things is probably the lactic

acid to volatile fatty acid

ratio which isn't given but you can
calculate from your form and that just
gives you an idea of your

fermentation quality but the things I've

focused on in this report have been the

protein and the digestibility and the
dry matter.

And those farmers who are producing the

best quality

silage um your report highlights some

quite striking statistics in terms of

the improvements they're seeing over and

above the average in terms of

of yield and productivity, share some of

those some of those um

statistics with us if you can so looking
at

the um Digestibility and the Protein content of these silages, taking the top 25 of those silages analyzed versus the average on a beef farm so you talked about uh Quantity? I’m only measuring quantity in terms of outputs and this is somewhere where there’s a big mistake on farm as well so in terms of beef the top 25 are producing uh live weight gains of by calculation of 0.4 kilos per head per day greater live weight gain than the average and in the milk or in the dairy sector 2.2
kilos of milk per cow per day now these are our values that are calculated from knowing the energy requirements to produce a liter of milk or a kilogram of live weight gain and assuming an intake in the beef sector of 10 kilos of silage per day versus 15 kilos of silage per day in the milk Sector. Now the reason why I just slightly changed what you said there I'm looking at yield of product how they get to that yield of product is that they're not looking at yield of grass in the field before they harvest and this is where some farmers slip up
they look at yield of grass in the field

and think oh I've got a big yield

but actually quality when you've got a

big yield is often lower

than if you've got a lower yield for

silage because the quality drops

as you get towards heading and seed

formation.

But the advantages uh and the

economic benefits of producing high

quality silage is staggering on those

figures that you've just shared with us

now

and it's a massive influence on the on

the performance of the business in terms

of reducing your reliance on input costs

as well?

Yes um to be honest I

only did this calculation just before we

started this podcast but
I calculated from the figures I've got so if we take protein and we've got 300 tons of silage.

If you wanted to supplement your average silage to get to the top 25 percent on that 300 tons of dry matter of silage you'd need an extra 45 tons of a 20 percent concentrate and when you calculate that out in terms of costs taking the five year average of concentrate at 220 pound per ton that works out at 10 grand roughly speaking over that 300 tons of silage.

And if you just do it on a ton of silage basis that's £33.50 for every ton of silage to correct that protein um lack in that poorer quality. Now all I
would say is that you want high protein silages for your productive stock so you're high producing or you're milking cows you're fattening and growing beef cattle and your pregnant ewes. If you're feeding your dry cows be that sucklers or dairy then you don't want that quality so this is one potential flaw in the data set that we've built everything together because we don't know the information within that data set whether it was for dry cows or productive stock but just making the assumption that much of that silage is poorer quality will
be for
0:14:40.000,0:14:44.320
highly productive animals you know not
0:14:43.120,0:14:47.199
many people really
0:14:44.320,0:14:48.160
can afford to throw away 33 pounds for
every ton of silage
0:14:47.199,0:14:50.720
dry matter they've made. And clearly you
0:14:48.160,0:14:52.720
work in this area you work with farmers
0:14:50.720,0:14:55.279
and you understand the differences in
0:14:52.720,0:14:57.760
quality that you can find across farms
0:14:55.279,0:15:00.320
but how surprised were you to see
0:14:57.760,0:15:03.279
some of this data and results were you
0:15:00.320,0:15:04.000
taken aback
0:15:03.279,0:15:07.600
by some of this? I wasn't taken a back
0:15:07.600,0:15:11.199
because I've been looking at data sets
0:15:09.360,0:15:14.720
like this for 15
0:15:11.199,0:15:16.240
20 years and I suppose
0:15:14.720,0:15:17.760
in some respects for me personally it's
0:15:16.240,0:15:19.360
a good thing because
0:15:17.760,0:15:21.279
I've got a few more years before I
0:15:19.360,0:15:23.040
retire so I need to carry on being
able to advise farmers

but in another respect it's disappointing that farmers aren't taking really an assessment of that silage quality and how they can influence their bottom line by paying a little bit more attention to detail and.

I get very frustrated at times going on farms where you can spend half an hour with a farmer talking to them or in a meeting and then somebody will turn around in the audience and say yeah but silage is it's what I've got and It's not! There's a lot of effort that can go into improving that quality and the only thing that shouldn't be in your
ability to change is the weather
everything else
you have a focus on and the best farmers
even managed to
manage the weather to a degree compared
to your average farm.
If you were talking to a farmer now and
and wanting to give
some advice around improving the quality
of their silage what would be some quick
wins that they could do
those things which are within the
farmer's control that they could change
quite easily and see a difference in
the quality of the silage they produce?
There are three things
of equal importance the first one
is actually looking at
your grass quality and I'm not saying
to look at the analysis. I'm saying looking at your grass quality requirements before you harvest and the biggest downside is that farmers think of yield of silage rather than yield of meat or milk that they produce from that silage. So if you could add a pair of spectacles on and you could put them on and walk into that field you could see beef hanging on a hook rather than grass growing you would harvest your grass earlier than you do. Because your yield of beef is from an earlier harvest before you get that stem.
formation

so that's one aspect is actually looking at that quality in terms of yield of protein or energy in the field per hectare rather than yield of grass dry matter. Probably before that then is your fertilizer requirements and whilst the industry has reduced fertilizer requirements which in many ways is a good thing in terms of NVZ’s and water pollution we may have reduced too far so if we're not putting enough nitrogen and I must say sulphur now as well onto that grass for it to grow optimally to have that protein quality within that Grass.

All that comes from what access
to those nitrogen sulphur nutrients it has then you're never going to get to the required level of say, my target would be 16 to 17 crude protein in your grass and if you haven't got that in your silage then you're gonna have to Supplement. And then the third thing is the way you harvest and actually looking after that silage when it comes in on that first day and a half when you're harvesting from cutting through to filling your clamp or baling because you can lose a lot of nutrients then as well.
Have you come across a level of resistance against cutting silage earlier at a younger stage because farmers are concerned about getting enough volume enough bulk of silage to see them through the winter? At the risk of upsetting my father I have this debate or had this debate when he was still actively farming many many times and it is still the most common thing that I face when I talk to farmers oh but I won't have enough yield well actually the data shows that um if you cut earlier your total grass yield per hectare or per acre per year is greater and the reason for that is that when you cut late your crop is actually going into
dormancy it's going into old age
and it takes longer for that crop to
actually start to regrow
if you cut before you get to seed stem
formation
then the next day the green the fields
greening up
and within a week you've got another
couple of inches growth there.
So cutting frequently
or cutting early for that silage cut
gives you better quality
grass silage and it gives you an
extended growing period
in effect the additional benefit is that
because it's also green throughout the
crop
you have less problems in the silage
clamp, of the clamp heating
because you've brought in less yeast and moulds which are in that dead part of the clamp

uh grass in the field and survive the preservation process so they're there eating your nutrients at feed out as well before the cows gets hold of them or the sheep gets hold of them.

So yes it's a big impact but if farmers turn it round and looked at it in a different way in terms of total yield per field rather than the yield in that cut. And the only negative of cutting early is if you're making clamp silage and you're paying per unit area a contractor to do it actually with bale system there's no difference because you're paying for the bale.
and if you're cutting more frequently in

dairy system and you have a good

relationship with your contractor they

will know that if you're cutting more

frequently

you're doing less yield each time so

they if you

have a good relationship with them, will

probably alter the

ways of paying them because they know

they're going to get the business and

they're going to have

more cuts to do for you. Interesting

that you pick up there on the way the

silage is done and the use of contractors

have you noticed an increase shift

towards the use of contractors with the

ever increasing cost of machinery and

equipment

has that changed? I think over the years
that has changed inevitably so

and I think there are issues around that

but you know when you consider a brand

new forage harvester is going to set you

back a significant

amount of money a quarter of a million

probably

then you know it's not possible for

every farm to

run that sort of system. I have seen

farms that are used to make

clamp silage, relatively big farms

that have gone over to bale silage

because they felt that they couldn’t afford

in the dairy sector to have their own

Machinery.

Now there is no difference in terms

of silage quality

generically between a contractor and a
Farmer.

In some ways many contractors will do a better job than a farmer because they have the machinery they're doing it as a main part, of you know it is a main input for them rather I'm doing it once or twice a year however the drawback with the contractor is that if you're in a queue you can't always get your silage cut when you want it cut and so you do lose that digestibility so there are trade-off’s with both but yeah the economic investment in equipment is massive these days and you know contractors are doing more and more. And one of the interesting things that I
read in the report is that the data

highlights a widening of the time period

that silage is now made

and references made here to samples that

were analyzed from some first

cuts as early as the 10th of February

and as late as the 18th of December

that's almost

all year-round silage making. I used to

think it

some farmers wanted to be ahead

of the game and wanted to show I can

make silage in February but actually

if your grass growth is such and you're

not going to use it

for grazing then actually cutting that

silage at these extremes of the year

can be beneficial for that growth

because you are then starting

with a fresh growth for your next cut
and that actually has benefits in terms

of the quality and the

aerobic stability of that silage when

you're feeding it out. But part of this is

climate change,

I know uh when I first moved to

Pontrhydygroes

30 years ago this time of year I'd have

yellow fields,

apart from the fact the snow cover on

today they are green

and we are having much warmer winters

and grass growth is not stopping so we

need to utilize that grass.

We've also got the added benefits of the

new

grass species that do tend to have wider

windows of growth

so we must utilize this grass whether
it's by grazing

or in silaging. We can argue about the

weather conditions at those times of

year that they're not going to get a

good wilt and they're not

but I'm not going to criticize those

farms for doing it if they have that

good grass there and they're not going to use

it

for grazing. Clearly there are a number

of economic benefits of making

high quality silage but your report also

refers to

the environmental benefits of producing

good quality silage?

Yes um farmers over the years and

I think it's dropped off in the last

couple of years have been criticized for

methane emissions
or they've been the target for methane emissions and one thing is true that you know
cows sheep ruminants produce methane.
It's a natural end product of the rumen and the way we can overcome that negative impact of methane is actually to make more meat and milk for the same level of methane or a lesser level of methane and the key thing that affects that methane from forages is actually the digestibility so the poorer the digestibility the more methane you produce because you're not having such an efficient rumen it's allowing the methanogenic bacteria in the rumen to actually utilize more of that energy for methane Production.
So if we just take the figures and they are headline figures for methane production in the top 25 versus the average and this is assuming 300 tons of dry matter of silage or a thousand tons of fresh matter then it's 1.1 million more liters more on the average farm compared to the top 25 percent.

Now rather than farmers thinking I'm having a go at them about producing methane when you produce methane it's an energy loss to your livestock uh in terms of gross energy it's around eight percent so if you're producing less methane because you've got better quality
silage that means that energy's going

into meat or milk production

something you can sell off the farm so

it's about

looking at methane as a loss it's like

if you store your fertilizer wrong and

it flows down the river

it's pollution but it's also an economic

loss but you've paid for it and you've

seen it

whereas this methane loss you don't see

it because it's always been happening

but if we can reduce it

well you'll get some money back in your

Pocket. Yeah that's quite an effective

way of looking at

at that problem isn't it and now we're

recording this podcast

at the end of January um Dave is it too
early to be getting ready for this

0:26:17.600, 0:26:21.279
year's

0:26:18.080, 0:26:22.000
silage cut? No it definitely Isn't, I

0:26:21.279, 0:26:24.400
think

0:26:22.000, 0:26:25.760
you know silage is something that should

0:26:24.400, 0:26:27.360
be on your mind

0:26:25.760, 0:26:29.679
and it's something that you can prepare

0:26:27.360, 0:26:32.159
For. What are the key things farmers

0:26:29.679, 0:26:32.960
should be doing to prepare now? So I

0:26:32.159, 0:26:35.919
think

0:26:32.960, 0:26:38.159
um there are a number of things, planning

0:26:35.919, 0:26:38.480
fertilizer requirements would be number

0:26:38.159, 0:26:40.400
one

0:26:38.480, 0:26:42.159
so that you can get that in even if

0:26:40.400, 0:26:43.679
you're not able to spread it

0:26:42.159, 0:26:45.360
I think the other key one is actually

0:26:43.679, 0:26:46.640
assessing this year's silage quality

0:26:45.360, 0:26:50.080
because you're feeding it out

0:26:46.640, 0:26:50.720
and be critical so assess that in terms

0:26:50.080, 0:26:52.240
of
what you need what you needed and what
you got and the other one
is to walk your fields and look at your
grass growth and look at
the quality of those lays and you
know
because you're feeding then set yourself
a target for what you would have liked
to have had this year compared to what
you have got
and then finally I think you need to
think about
whether you're using contractor or
you're making it yourself what
what you need to do to discuss with the
contractor or
or looking at your machinery. And I
remember we were chatting
just before we recorded this podcast
Dave around

thinking about farmers who might be

listening to this podcast whilst making

their silage in their tractor cabs and

and you recalled an article that you

wrote for the farmer's guardian some

years ago about the seven sins of

silage making tell us

a bit about that? So yeah I did an

article it was specifically for bail

silage seven sins of bale silage

making and

I was talking to somebody I bumped

into a farmer

regularly and he said oh really good

article Dave

um I photocopied it I laminated it and I

put it in the tractor cab for my dad to

read while whilst he was making the
silage

0:28:01.279,0:28:06.399
has it had an impact that's the question?

0:28:03.520,0:28:08.720
It did for a while

0:28:06.399,0:28:12.000
I think uh dad's possibly retired a bit

0:28:08.720,0:28:12.000
now and sons lost it.

0:28:12.640,0:28:16.559
As a final question dave and this is the

0:28:14.880,0:28:19.360
question we were asking all guests

0:28:16.559,0:28:20.080
uh on the Ear to the Ground podcast this year

0:28:19.360,0:28:22.240
and that is

0:28:20.080,0:28:23.600
how would you describe a successful

0:28:22.240,0:28:26.640
Farmer?

0:28:23.600,0:28:28.960
I think farming is a challenge,

0:28:26.640,0:28:30.640
everything's changing year in year out

0:28:28.960,0:28:31.679
and I think as the most successful

0:28:30.640,0:28:35.360
farmers

0:28:31.679,0:28:36.640
it's about adaptability and adapting to

0:28:35.360,0:28:39.200
what

0:28:36.640,0:28:40.559
things are thrown at them, the main two

0:28:39.200,0:28:42.640
are to be honest

0:28:40.559,0:28:44.320
Weather and political and I think
that ability to adapt

and that ability to utilize your own environment and what you have on your farm to the best

is the thing that makes a successful Farmer.

I guess you expected me to say it's the person that makes the best quality silage.

If you're a farmer that's producing lamb and you can produce it all from grazed grass then it's about grassland management it's not about silage making and just as another little anecdote uh I judged the all Wales bale silage competition and the winner one year used very little silage he dominated
his feeding regime with grazed grass but

the silage he made was top quality

so i think it's about that it's about

adaptability and farmers do need to

be adaptable this year

probably more than most but it's about

looking at what's ahead of you

and adapting to try and meet the targets

that you need to.

Well that's some pretty good advice to

wrap up this

podcast Dr Dave Davis thank you for

joining us

on Ear to the ground I've learned a lot

about silage over the last half an hour

and I'm sure our listeners have as well

so on behalf of Farming Connect

thank you for joining us. Thanks Aled my

pleasure too.

For more information on the services
available please visit the farming
connect website
or get in touch with your local
development officer
well that's it for this episode we'll be
back in two weeks time with plenty more
but in the meantime on behalf of the
team at farming connect and myself
Aled jones thank you for listening and
goodbye for now.