Podcast Transcript Episode 36

0:00:01.830,0:00:05.169
[Music]

0:00:07.919,0:00:12.400
Hello and welcome to Ear to the Ground,

0:00:10.320,0:00:14.320
the agricultural podcast brought to you

0:00:12.400,0:00:14.960
by Farming Connect. Well, I hope you're

0:00:14.320,0:00:18.000
all keeping

0:00:14.960,0:00:20.000
safe and well. This is episode number 36

0:00:18.000,0:00:21.680
and I'm joined by Rhys Owen,

0:00:20.000,0:00:23.519
an agronomist who's going to tell us

0:00:21.680,0:00:24.080
more about the importance of looking

0:00:23.519,0:00:27.119
after

0:00:24.080,0:00:27.920
your soil. Rhys, welcome to the

0:00:27.119,0:00:30.880
podcast

0:00:27.920,0:00:32.960
and how are things with you these days?

0:00:30.880,0:00:35.760

0:00:32.960,0:00:36.960
In terms of work out in the field things

0:00:35.760,0:00:38.800
haven't

0:00:36.960,0:00:41.360
changed too much really, but it's

0:00:38.800,0:00:45.360
not been the easiest year for

0:00:41.360,0:00:47.600
for anybody.

0:00:45.360,0:00:48.879
The winter lockdown is

0:00:47.600,0:00:51.600
felt more than the

0:00:48.879,0:00:53.440
spring lockdown. I can certainly

0:00:51.600,0:00:55.600
relate to that. I think a lot of people

0:00:53.440,0:00:56.719
are feeling this lockdown is dragging

0:00:55.600,0:00:58.719
and looking forward

0:00:56.719,0:01:00.239
to the light that is at the end of a

0:00:58.719,0:01:02.160
very long tunnel. But

0:01:00.239,0:01:03.840
there is hope isn't there. Thankfully

0:01:02.160,0:01:05.040
through your work, Rhys, you've

0:01:03.840,0:01:07.680
managed to maintain

0:01:05.040,0:01:09.360
your activity, visiting fields and

0:01:07.680,0:01:10.960
farms and land, albeit

0:01:09.360,0:01:12.560
from a distance and not necessarily

0:01:10.960,0:01:13.119
meeting farmers face to face, but you've

0:01:12.560,0:01:15.119
been

0:01:13.119,0:01:17.119
able to get out and about,

0:01:15.119,0:01:18.960
given that the work you're involved with

0:01:17.119,0:01:20.560
is considered to be a key worker

0:01:18.960,0:01:23.200

activity.

0:01:20.560,0:01:24.400
Yes, work in

0:01:23.200,0:01:27.600
the field

0:01:24.400,0:01:31.200
hasn't stopped really.

0:01:27.600,0:01:34.799
We've just limited that contact with

0:01:31.200,0:01:37.840
customers of course

0:01:34.799,0:01:40.799
and just distancing ourselves

0:01:37.840,0:01:41.759
from them and to be

0:01:40.799,0:01:45.280
responsible

0:01:41.759,0:01:46.320
with the Covid

0:01:45.280,0:01:48.479
restrictions.

0:01:46.320,0:01:49.360
Of course. And you've been working as an

0:01:48.479,0:01:52.079
agronomist now

0:01:49.360,0:01:54.240
for just over 12 years since

0:01:52.079,0:01:56.159
graduating from Harper Adams University

0:01:54.240,0:01:57.680
back in 2009.

0:01:56.159,0:02:00.159
Tell us a bit more about what do you

0:01:57.680,0:02:01.520
need to do to become an agronomist and

0:02:00.159,0:02:03.200
what are the qualifications that you

0:02:01.520,0:02:05.520
need to have?

0:02:03.200,0:02:06.719
After graduating from

0:02:05.520,0:02:10.560
Harper Adams with a

0:02:06.719,0:02:13.520
with a HND in Agriculture, and

0:02:10.560,0:02:14.400
I chose to specialise in the

0:02:13.520,0:02:16.800
final year on

0:02:14.400,0:02:19.440
crop production and also

0:02:16.800,0:02:22.560
livestock production as well,

0:02:19.440,0:02:23.040
and then from that I was lucky enough to

0:02:22.560,0:02:26.239
be

0:02:23.040,0:02:29.040
offered a position with

0:02:26.239,0:02:31.599
the company that I worked for on

0:02:29.040,0:02:34.239
my industrial placement from Harper

0:02:31.599,0:02:35.040
and started the job as a Trainee

0:02:34.239,0:02:38.319
Agronomist.

0:02:35.040,0:02:41.920
And the training started with the job

0:02:38.319,0:02:45.120
out in the field, and

0:02:41.920,0:02:48.400
working towards the BASIS certificate

0:02:45.120,0:02:51.599
or diploma in Crop Protection.

0:02:48.400,0:02:52.160
There's a few different ways of doing

0:02:51.599,0:02:54.160
that.

0:02:52.160,0:02:56.000
You can go on quite an intense

0:02:54.160,0:02:58.879
and heavy course

0:02:56.000,0:02:59.200
over a short period of time which

0:02:58.879,0:03:01.760
is

0:02:59.200,0:03:04.159
a lot of it would be classroom based,

0:03:01.760,0:03:04.879
but I decided to do it over an extended

0:03:04.159,0:03:08.080
period

0:03:04.879,0:03:10.159
and that allowed me to spend time

0:03:08.080,0:03:11.760
out in the field with colleagues

0:03:10.159,0:03:14.879
and gaining

0:03:11.760,0:03:17.440
knowledge and experience

0:03:14.879,0:03:20.159
from those. It's in my nature

0:03:17.440,0:03:21.200
that I'm quite a visual learner.

0:03:20.159,0:03:23.360

0:03:21.200,0:03:26.000
I'd rather see something out in

0:03:23.360,0:03:28.480
the field and learn that way

0:03:26.000,0:03:30.560
rather than a presentation in the

0:03:28.480,0:03:33.040
class probably.

0:03:30.560,0:03:33.920

Yes, I think a lot of us can also

0:03:33.040,0:03:36.720
relate to that.

0:03:33.920,0:03:38.480
You've got a broad skill base and

0:03:36.720,0:03:39.760
a broad knowledge of different farming

0:03:38.480,0:03:41.440
types because your work

0:03:39.760,0:03:42.959
takes you, not only all across North

0:03:41.440,0:03:43.920
Wales, but over the border into

0:03:42.959,0:03:47.200
Shropshire and

0:03:43.920,0:03:48.480
Cheshire as well. It does. I've got

0:03:47.200,0:03:51.680
a very broad

0:03:48.480,0:03:52.319
area really and broad farming

0:03:51.680,0:03:55.760
systems

0:03:52.319,0:03:57.920
as well. I think 80 to 90 percent of

0:03:55.760,0:03:59.439
what I do will eventually find its

0:03:57.920,0:04:02.239
way through a ruminant animal

0:03:59.439,0:04:03.280
in terms of forage or in silage

0:04:02.239,0:04:06.879
forage.

0:04:03.280,0:04:10.239
Generally, the majority of what I do

0:04:06.879,0:04:14.159
is based on mixed livestock

0:04:10.239,0:04:17.040
or livestock only farms.

0:04:14.159,0:04:17.519
And, of course, grassland is a

0:04:17.040,0:04:19.440
big

0:04:17.519,0:04:20.959
part of that cropping area in my

0:04:19.440,0:04:25.440
area. Probably,

0:04:20.959,0:04:28.320
not many agronomists

0:04:25.440,0:04:30.479
really practices heavily in

0:04:28.320,0:04:35.280
grassland and grassland management

0:04:30.479,0:04:38.960
but I consider it vital to

0:04:35.280,0:04:41.440
overall farm production. Would you say

0:04:38.960,0:04:42.880
that the soil health principles are just

0:04:41.440,0:04:44.240
the same whether you're growing grass or

0:04:42.880,0:04:46.320
growing crops? Is it

0:04:44.240,0:04:48.800
very much the same elements you need to

0:04:46.320,0:04:51.680
get right to grow that plant?

0:04:48.800,0:04:53.520
Yes, the basic principles of

0:04:51.680,0:04:55.199
growing any plant

0:04:53.520,0:04:57.680
would be virtually the same.

0:04:55.199,0:04:59.600
They need elements from

0:04:57.680,0:05:02.400
within the soil and nutrients to

0:04:59.600,0:05:04.960
grow.

0:05:02.400,0:05:06.800
Plants usually use photosynthesis

0:05:04.960,0:05:09.120
to create the energy that they

0:05:06.800,0:05:13.199
need to grow and develop and

0:05:09.120,0:05:15.840
every plant does that.

0:05:13.199,0:05:16.800
Just possibly, the level of inputs

0:05:15.840,0:05:19.520
can change

0:05:16.800,0:05:20.000
and, of course, then moving into

0:05:19.520,0:05:23.039
different

0:05:20.000,0:05:25.199
areas, different crops are affected by

0:05:23.039,0:05:28.160
by different diseases or might be

0:05:25.199,0:05:29.520
affected by different pests as well.

0:05:28.160,0:05:31.120
And one of those key elements that

0:05:29.520,0:05:32.400
you've got to get right irrespective of

0:05:31.120,0:05:35.120
what your farm type is

0:05:32.400,0:05:36.479
is the pH of your soil. And you've

0:05:35.120,0:05:39.120
got this wonderful saying

0:05:36.479,0:05:40.880
haven't you Rhys about which really

0:05:39.120,0:05:42.880
highlights the importance of getting

0:05:40.880,0:05:44.960

your pH right?

0:05:42.880,0:05:46.800
Yes, I often tell my customers Aled

0:05:44.960,0:05:50.080
that soil pH

0:05:46.800,0:05:51.120
is the key for the ignition of the

0:05:50.080,0:05:54.240
engine on the farm, and

0:05:51.120,0:05:57.280
is driving that production

0:05:54.240,0:06:00.400
on the farm. Everything we do starts from

0:05:57.280,0:06:01.919
below our feet. What's the

0:06:00.400,0:06:04.000
target pH

0:06:01.919,0:06:06.240
Farmers, particularly here in Wales,

0:06:04.000,0:06:09.280
should be targeting towards?

0:06:06.240,0:06:11.280
The industry target

0:06:09.280,0:06:13.360
for grassland, for example,

0:06:11.280,0:06:16.639
would be six, but

0:06:13.360,0:06:18.400
personally, I think we're further on from

0:06:16.639,0:06:20.400
that now and I would personally

0:06:18.400,0:06:24.000
be targeting a range of

0:06:20.400,0:06:27.919
6.3 to 6.5.

0:06:24.000,0:06:31.199
Once you get above 6.2,

0:06:27.919,0:06:35.440
phosphate availability especially

0:06:31.199,0:06:38.560
is greatly improved in the soil,

0:06:35.440,0:06:42.479
so, I would recommend within

0:06:38.560,0:06:44.800
that range 6.3 to 6.5.

0:06:42.479,0:06:45.840
And where do we currently sit?

0:06:44.800,0:06:48.160
pH

0:06:45.840,0:06:50.000
is not necessarily something new.

0:06:48.160,0:06:50.400
Most farmers are aware of the importance

0:06:50.000,0:06:53.120
of

0:06:50.400,0:06:53.919
applying lime to land but do you think

0:06:53.120,0:06:56.479
that

0:06:53.919,0:06:57.120
Wales has a fairly good level of pH?

0:06:56.479,0:06:59.280
What's

0:06:57.120,0:07:02.080
the current condition of Welsh

0:06:59.280,0:07:04.800
soils you'd say?

0:07:02.080,0:07:05.520
The recent reports of

0:07:04.800,0:07:08.319
information

0:07:05.520,0:07:10.560
back from Landcrop

0:07:08.319,0:07:13.759
Laboratories, who I use for

0:07:10.560,0:07:17.120
for analysis on soils,

0:07:13.759,0:07:21.120
showed that 64%

0:07:17.120,0:07:21.599
of Welsh soils were below optimum.

0:07:21.120,0:07:26.639

0:07:21.599,0:07:31.759
Frightening in itself was

0:07:26.639,0:07:35.039
the range below the pH of 5.4.

0:07:31.759,0:07:38.240
25% of soil sat in that 5 to

0:07:35.039,0:07:42.000
5.4 pH range.

0:07:38.240,0:07:45.280
I think we could

0:07:42.000,0:07:48.400
also look at it with the

0:07:45.280,0:07:50.319
soil samples that go to the laboratory that

0:07:48.400,0:07:52.560
they can often be

0:07:50.319,0:07:53.840
either problem fields

0:07:52.560,0:07:55.840
or fields that

0:07:53.840,0:07:57.360
farmers know that they want to improve,

0:07:55.840,0:07:58.160
but I think on the whole over the last

0:07:57.360,0:08:01.280
few years

0:07:58.160,0:08:02.720
we haven't really seen a great

0:08:01.280,0:08:06.000
shift or an improvement

0:08:02.720,0:08:08.240
in in that trend really.

0:08:06.000,0:08:09.199

What's causing our soils to become

0:08:08.240,0:08:11.120
acidic? Is it

0:08:09.199,0:08:13.039
the fact that we we're in a high

0:08:11.120,0:08:15.120
rainfall country? I'm sure that doesn't

0:08:13.039,0:08:18.000
help the situation.

0:08:15.120,0:08:19.840
It definitely doesn't help.

0:08:18.000,0:08:22.960
Soil created under

0:08:19.840,0:08:25.120
under high rainfall, they naturally

0:08:22.960,0:08:29.280
tend to be acidic anyway,

0:08:25.120,0:08:30.479
but also some lime equivalents will

0:08:29.280,0:08:33.360
be lost through

0:08:30.479,0:08:35.599
drainage and Irish work

0:08:33.360,0:08:38.159
identified the equivalent

0:08:35.599,0:08:40.399
loss through drainage annually would be

0:08:38.159,0:08:44.080
in the range of 200 to

0:08:40.399,0:08:47.519
600 kilos of lime per hectare.

0:08:44.080,0:08:50.000
Then our fertiliser inputs and both

0:08:47.519,0:08:51.519
organic and inorganic will have an

0:08:50.000,0:08:55.200
acidifying effect

0:08:51.519,0:08:58.399
on the soil as well. Ammonium nitrate

0:08:55.200,0:08:59.760
and urea for instance, as nitrogen

0:08:58.399,0:09:02.560
fertilisers,

0:08:59.760,0:09:03.440
it's well reported that we

0:09:02.560,0:09:07.440
require

0:09:03.440,0:09:10.800
1.8 kilos of lime equivalent

0:09:07.440,0:09:13.120
for every kilo of nitrogen

0:09:10.800,0:09:14.399
used on the farm just to

0:09:13.120,0:09:17.040
neutralise that

0:09:14.399,0:09:18.880
acidifying effect. The other

0:09:17.040,0:09:21.440
aspect to remember

0:09:18.880,0:09:22.640
is the offtake from the field as well,

0:09:21.440,0:09:26.480
be that in

0:09:22.640,0:09:29.760
cropping or in produce.

0:09:26.480,0:09:32.560

0:09:29.760,0:09:33.760
A typical cut of silage

0:09:32.560,0:09:37.760
would remove

0:09:33.760,0:09:38.560
the equivalent of 75 kilograms per hectare

0:09:37.760,0:09:41.279
of lime.

0:09:38.560,0:09:44.000
A simple sum to do on a dairy

0:09:41.279,0:09:46.959
farm is a thousand litre

0:09:44.000,0:09:48.959
removal of milk or offtake of milk

0:09:46.959,0:09:51.519

0:09:48.959,0:09:54.240
would be equivalent to three kilos of

0:09:51.519,0:09:56.959
lime per thousand litres.

0:09:54.240,0:09:58.240
I guess the longer it goes or the

0:09:56.959,0:10:00.160
longer the time frame

0:09:58.240,0:10:01.920
between each application of lime, the

0:10:00.160,0:10:04.560
more lime gets lost.

0:10:01.920,0:10:05.440
It's important to remember

0:10:04.560,0:10:07.200
that the pH

0:10:05.440,0:10:09.600
of the soil needs to be at the optimum

0:10:07.200,0:10:10.959
rate for the fertiliser you're applying

0:10:09.600,0:10:13.200
to have the full

0:10:10.959,0:10:14.800
and best effect and you don't want to be

0:10:13.200,0:10:15.839
in a situation whereby you're applying

0:10:14.800,0:10:18.000
fertiliser and

0:10:15.839,0:10:18.959
essentially wasting a lot of valuable

0:10:18.000,0:10:20.959
investment

0:10:18.959,0:10:24.079

if it's not going to have the effect

0:10:20.959,0:10:27.200
simply because the pH isn't quite right?

0:10:24.079,0:10:28.160
Yes. If we take just over the

0:10:27.200,0:10:31.760
third of

0:10:28.160,0:10:36.160
Welsh soils that were in that

0:10:31.760,0:10:39.839
5.5 range, your fertiliser efficiency

0:10:36.160,0:10:42.240
then drops to a third

0:10:39.839,0:10:43.040
at that pH range only sort of 50

0:10:42.240,0:10:45.920
percent

0:10:43.040,0:10:48.640
of the phosphate would be crop

0:10:45.920,0:10:52.240
available or available to the plant

0:10:48.640,0:10:54.480
and nitrogen and potash would

0:10:52.240,0:10:56.000
would simply be sort of just above

0:10:54.480,0:11:00.160
the 75 per cent

0:10:56.000,0:11:01.760
efficient. In effect the

0:11:00.160,0:11:05.440
applied nutrients aren't

0:11:01.760,0:11:07.200
totally lost Aled,

0:11:05.440,0:11:09.440

0:11:07.200,0:11:11.600
phosphate for

0:11:09.440,0:11:14.640
example is bound to aluminium,

0:11:11.600,0:11:17.120
so it's in an unavailable form

0:11:14.640,0:11:19.440
to plants in the soil. In

0:11:17.120,0:11:22.560
effect this is not lost. I do

0:11:19.440,0:11:24.240
often use another

0:11:22.560,0:11:25.680
saying or another sort of analogy

0:11:24.240,0:11:28.079
on farm

0:11:25.680,0:11:28.880
with farmers. They

0:11:28.079,0:11:31.519
typically

0:11:28.880,0:11:32.640
order the same quantity of fertiliser

0:11:31.519,0:11:35.120
annually

0:11:32.640,0:11:36.399
and if I turned up on the day

0:11:35.120,0:11:39.120
that it was delivered

0:11:36.399,0:11:39.839
and took a third of that fertiliser

0:11:39.120,0:11:43.120
delivery

0:11:39.839,0:11:44.320
away from them, then they surely wouldn't

0:11:43.120,0:11:46.880
be happy about it.

0:11:44.320,0:11:48.079
Unless the soil pH is at its optimum

0:11:46.880,0:11:49.760
range

0:11:48.079,0:11:51.360
the same thing is happening but it's

0:11:49.760,0:11:53.120
just not seen.

0:11:51.360,0:11:55.040
Would you say it's better to invest

0:11:53.120,0:11:58.240
your money in lime in those

0:11:55.040,0:12:02.000
sort of situations? I think

0:11:58.240,0:12:06.160
once you get down to that

0:12:02.000,0:12:07.120
level of soil pH sort of 5.6 or 5.5

0:12:06.160,0:12:10.480
and below

0:12:07.120,0:12:11.519
then I do sort of recommend

0:12:10.480,0:12:14.320
and suggest

0:12:11.519,0:12:15.600
to customers and farmers that the

0:12:14.320,0:12:17.360
fertiliser budgets,

0:12:15.600,0:12:18.639
or part of that budget, would be

0:12:17.360,0:12:20.480
better off spent on

0:12:18.639,0:12:22.079
lime then it would give a better

0:12:20.480,0:12:24.720
return.

0:12:22.079,0:12:26.639
And looking at the biological

0:12:24.720,0:12:28.959
composition of the soil

0:12:26.639,0:12:30.000
and the living organisms that’s in the

0:12:28.959,0:12:33.200
soil, be it

0:12:30.000,0:12:35.360

visible ones and invisible ones, they are

0:12:33.200,0:12:36.880
a fundamental component to soil

0:12:35.360,0:12:38.959
health as well and they need to be

0:12:36.880,0:12:42.160
nurtured?

0:12:38.959,0:12:43.839
Massively Aled. In every

0:12:42.160,0:12:46.240
handful of soil there's

0:12:43.839,0:12:48.480
billions of organisms and

0:12:46.240,0:12:50.959
microorganisms and many of them,

0:12:48.480,0:12:53.200

0:12:50.959,0:12:55.200
we can't see with the naked eye.

0:12:53.200,0:12:57.120
And they're essential

0:12:55.200,0:13:00.800
to soil and

0:12:57.120,0:13:02.800
plant health. It's a

0:13:00.800,0:13:04.560
part where we're only

0:13:02.800,0:13:06.720
starting to

0:13:04.560,0:13:07.760
discover some species. I've been

0:13:06.720,0:13:10.880
reading a book

0:13:07.760,0:13:11.200
recently and they've quoted

0:13:10.880,0:13:13.519
that

0:13:11.200,0:13:15.600
we've only sort of categorised

0:13:13.519,0:13:20.079
or identified five percent

0:13:15.600,0:13:23.040
of soil life. But, the truth is,

0:13:20.079,0:13:24.560
the other 95 percent is always

0:13:23.040,0:13:27.920
growing or there's

0:13:24.560,0:13:31.600
more discoveries all the time.

0:13:27.920,0:13:35.200
That

0:13:31.600,0:13:36.880
soil food web is a critical

0:13:35.200,0:13:40.639
part of

0:13:36.880,0:13:42.959
nutrient cycling, cycling organic matter

0:13:40.639,0:13:44.800
and also carbon

0:13:42.959,0:13:47.760
sequestration as well.

0:13:44.800,0:13:48.160
As I said the whole system is driven

0:13:47.760,0:13:52.560
by

0:13:48.160,0:13:55.199
photosynthesis and carbon and

0:13:52.560,0:13:57.279
these microorganisms have intricate or

0:13:55.199,0:13:58.079
symbiotic relationships with the

0:13:57.279,0:14:01.360
plants. You'll have

0:13:58.079,0:14:03.360
fungi, fungi that act as a

0:14:01.360,0:14:04.880
secondary rooting system for plants, the

0:14:03.360,0:14:08.880
mycorrhizal fungi,

0:14:04.880,0:14:11.040
and you know in return for root exudates

0:14:08.880,0:14:12.240
from the plant they will be

0:14:11.040,0:14:14.560
transporting

0:14:12.240,0:14:16.399
phosphates back to the plant as well as

0:14:14.560,0:14:19.440
other nutrients.

0:14:16.399,0:14:22.639
Mycorrhizal fungi also have a

0:14:19.440,0:14:26.320
important role in soil

0:14:22.639,0:14:28.639
structure.

0:14:26.320,0:14:30.560
They produce glomalin which

0:14:28.639,0:14:32.639
acts as a

0:14:30.560,0:14:34.720
soil glue if and so it

0:14:32.639,0:14:37.839
aggregates soil together.

0:14:34.720,0:14:40.560
Glomalin is about 30-40 per cent

0:14:37.839,0:14:41.680
carbon in itself, so it's a carbon store

0:14:40.560,0:14:45.120
within the soil,

0:14:41.680,0:14:48.079
and a better structured soil is a safer

0:14:45.120,0:14:49.760
or a more resilient carbon store as

0:14:48.079,0:14:51.839
well.

0:14:49.760,0:14:54.000

And we've got to provide

0:14:51.839,0:14:56.000
these organisms

0:14:54.000,0:14:57.760
with the optimum conditions. We've

0:14:56.000,0:15:00.160
got something that we can see with the

0:14:57.760,0:15:02.800
naked eye which is earthworms.

0:15:00.160,0:15:04.160
They are the first, or primary,

0:15:02.800,0:15:07.360
recyclers

0:15:04.160,0:15:10.800
of organic matter in the soil.

0:15:07.360,0:15:14.000
If we take a sort of a target of 10

0:15:10.800,0:15:17.040
to 15 earthworms per spade

0:15:14.000,0:15:18.880
depth and width hole.

0:15:17.040,0:15:20.320
They're obviously

0:15:18.880,0:15:23.920
recycling new

0:15:20.320,0:15:27.120
organic matter and

0:15:23.920,0:15:29.120
also aerating the soil.

0:15:27.120,0:15:31.680
Earthworms can be categorised into

0:15:29.120,0:15:35.440
three key groups. You'll have

0:15:31.680,0:15:37.839
worms that live at depth in the soil

0:15:35.440,0:15:38.560
and others sort of in the mid layer and

0:15:37.839,0:15:41.040
then you will have

0:15:38.560,0:15:43.440
surface dwellers or

0:15:41.040,0:15:45.600
just beneath the surface.

0:15:43.440,0:15:47.839
They're all playing their part

0:15:45.600,0:15:50.079
in carrying organic matter

0:15:47.839,0:15:52.000
to different profiles within

0:15:50.079,0:15:54.320
the soil.

0:15:52.000,0:15:55.279
So you've got to get the chemical

0:15:54.320,0:15:57.920
Composition,

0:15:55.279,0:15:59.680
the biological elements and the physical

0:15:57.920,0:16:00.800
elements of the soil all right and

0:15:59.680,0:16:01.920
I'm sure those are the things that you

0:16:00.800,0:16:03.440
look at when you're walking

0:16:01.920,0:16:05.600
fields and walking land and

0:16:03.440,0:16:06.560
analysing the soil. I'm sure those are

0:16:05.600,0:16:08.639
things that you'll

0:16:06.560,0:16:09.759
often take a look at but also, it's

0:16:08.639,0:16:11.759
important to sample

0:16:09.759,0:16:13.759
soil isn't it and how often would you

0:16:11.759,0:16:17.519
suggest the farmers do that

0:16:13.759,0:16:19.440
on their farms? Every three to

0:16:17.519,0:16:20.560
five years would be a

0:16:19.440,0:16:24.000
good

0:16:20.560,0:16:27.519
protocol or a good plan

0:16:24.000,0:16:31.759
for soil sampling.

0:16:27.519,0:16:33.759

0:16:31.759,0:16:35.199
The aim to be

0:16:33.759,0:16:38.639
sampling

0:16:35.199,0:16:42.000
20% or a third of the farm

0:16:38.639,0:16:45.279
annually. That gives you a

0:16:42.000,0:16:48.240
better picture or a

0:16:45.279,0:16:49.279
better insight as to how

0:16:48.240,0:16:53.279
things are

0:16:49.279,0:16:56.320
working and developing within that soil

0:16:53.279,0:16:57.120
over a period of time. And roughly what

0:16:56.320,0:17:00.639
time of year

0:16:57.120,0:17:03.440
should you take those samples?

0:17:00.639,0:17:04.000
You can soil sample at any time

0:17:03.440,0:17:06.079

0:17:04.000,0:17:07.199

but ideally it will be the

0:17:06.079,0:17:10.160

0:17:07.199,0:17:11.839
furthest point away from any P and K

0:17:10.160,0:17:15.600
containing fertilisers or

0:17:11.839,0:17:18.720
organic manures, farmyard manure,

0:17:15.600,0:17:20.720
or slurry. So, typically, it is in

0:17:18.720,0:17:23.600
the winter months that

0:17:20.720,0:17:24.880
we soil sample. It’s quite important

0:17:23.600,0:17:27.600
to

0:17:24.880,0:17:28.400
keep soil sampling around the same

0:17:27.600,0:17:31.760
period

0:17:28.400,0:17:34.480
on the farm as well.

0:17:31.760,0:17:35.520
That will give you more accurate

0:17:34.480,0:17:38.000
results and

0:17:35.520,0:17:39.039
more accurate insight into how

0:17:38.000,0:17:41.919
things are

0:17:39.039,0:17:43.440
developing. Yes it makes it easier to

0:17:41.919,0:17:44.799
compare like with like

0:17:43.440,0:17:47.280
and having consistency so you can

0:17:44.799,0:17:49.360
identify any trends.

0:17:47.280,0:17:51.120
What should be included in the analysis

0:17:49.360,0:17:52.480
Rhys? You can test for a lot of

0:17:51.120,0:17:54.000
different things these days but

0:17:52.480,0:17:57.360
what do you think are the key ones that

0:17:54.000,0:18:00.320
should be in the soil analysis?

0:17:57.360,0:18:01.760
I think as a standard

0:18:00.320,0:18:04.400
starting point, a

0:18:01.760,0:18:05.440
standard analysis would

0:18:04.400,0:18:08.720
include

0:18:05.440,0:18:11.679
pH, phosphate levels,

0:18:08.720,0:18:13.200
potash levels, magnesium levels and

0:18:11.679,0:18:14.480
it would also give a lime

0:18:13.200,0:18:18.080
requirement

0:18:14.480,0:18:21.600
based on the soil pH results.

0:18:18.080,0:18:23.440
But we're gradually moving on

0:18:21.600,0:18:26.880
from that to be

0:18:23.440,0:18:27.200
analysing soil for more nutrients,

0:18:26.880,0:18:30.640
for

0:18:27.200,0:18:33.760
some of the trace elements,

0:18:30.640,0:18:35.679
either for plant benefits or

0:18:33.760,0:18:37.280
plant health benefits or all

0:18:35.679,0:18:39.600
you know other trace elements as well

0:18:37.280,0:18:42.720
for livestock benefit,

0:18:39.600,0:18:46.640
And we've seen a sort of a gradual

0:18:42.720,0:18:50.080
move over recent years to

0:18:46.640,0:18:53.280
more broader analysis

0:18:50.080,0:18:56.320
on soils and even some will

0:18:53.280,0:18:59.760
now be looking to include

0:18:56.320,0:19:02.880
biological activity or a carbon

0:18:59.760,0:19:03.679
an organic matter analysis on the

0:19:02.880,0:19:07.200
soil

0:19:03.679,0:19:10.799
and even looking at what the total

0:19:07.200,0:19:12.160
phosphate content of the

0:19:10.799,0:19:14.640
soil is for instance.

0:19:12.160,0:19:17.039
It'll give you that total, not just

0:19:14.640,0:19:18.559
what's plant available.

0:19:17.039,0:19:20.720
And interesting you should mention

0:19:18.559,0:19:21.600
carbon there. There's a lot of discussion

0:19:20.720,0:19:24.080

around the

0:19:21.600,0:19:24.720
carbon sequestration potential of soil

0:19:24.080,0:19:26.400
and

0:19:24.720,0:19:27.919
it'll no doubt be some of the targets

0:19:26.400,0:19:28.640
within future schemes and who knows

0:19:27.919,0:19:30.240
there might be

0:19:28.640,0:19:31.919
commercial opportunities for farmers

0:19:30.240,0:19:34.080
wishing to sell carbon credits,

0:19:31.919,0:19:36.000
is that a conversation you're having

0:19:34.080,0:19:37.919
more and more often with farmers,

0:19:36.000,0:19:40.559
wanting to know what the carbon

0:19:37.919,0:19:42.160
situation is in their soils?

0:19:40.559,0:19:43.919
I think it's

0:19:42.160,0:19:46.720
important to

0:19:43.919,0:19:48.000
maintain a good

0:19:46.720,0:19:50.559
organic matter level

0:19:48.000,0:19:53.360
in the soil anyway and I think as the

0:19:50.559,0:19:56.640
potential for carbon

0:19:53.360,0:20:00.400
credits or carbon trading

0:19:56.640,0:20:02.480
become more available then yes. And if

0:20:00.400,0:20:06.000
you're considering sort of

0:20:02.480,0:20:09.120
future schemes as well, where carbon

0:20:06.000,0:20:12.080
and soil health obviously is

0:20:09.120,0:20:13.200
very important, it's important that we

0:20:12.080,0:20:16.320
do

0:20:13.200,0:20:19.280
get a baseline or an idea of

0:20:16.320,0:20:21.600
levels within our soil.

0:20:19.280,0:20:23.200
And coming back to the pH and should a

0:20:21.600,0:20:24.400
farmer go through the process of getting

0:20:23.200,0:20:25.440
their field sampled and they've

0:20:24.400,0:20:27.679
identified

0:20:25.440,0:20:29.760
that there is an issue with the pH

0:20:27.679,0:20:31.679
they're trying to correct,

0:20:29.760,0:20:33.679
how do you go about doing that? What's

0:20:31.679,0:20:36.159
your advice?

0:20:33.679,0:20:38.720
Well, the correction of the pH

0:20:36.159,0:20:41.919
would involve

0:20:38.720,0:20:43.520
either calcium limestone or

0:20:41.919,0:20:46.400
magnesium limestone

0:20:43.520,0:20:48.640
and that's dependent on whether

0:20:46.400,0:20:51.840
magnesium is required or not.

0:20:48.640,0:20:55.039
I think historically

0:20:51.840,0:20:56.880
within my area a lot of

0:20:55.039,0:20:58.720
magnesium limestone

0:20:56.880,0:21:00.400
has been used because that was what was

0:20:58.720,0:21:03.520
available locally.

0:21:00.400,0:21:06.559
Soil indices for

0:21:03.520,0:21:08.400
magnesium are generally good, so

0:21:06.559,0:21:11.120
there's no need for it

0:21:08.400,0:21:12.640
on every occasion. It's about

0:21:11.120,0:21:15.520
starting really

0:21:12.640,0:21:16.880
with, if you look at calcium

0:21:15.520,0:21:19.520
limestone

0:21:16.880,0:21:20.320
there's lots of various

0:21:19.520,0:21:23.679
different

0:21:20.320,0:21:25.360
quality of products out there

0:21:23.679,0:21:28.159
but you know what I would stress is to

0:21:25.360,0:21:31.919
use the best quality possible

0:21:28.159,0:21:34.720

and that would be a well ground

0:21:31.919,0:21:35.360
limestone or a well-ground magnesium

0:21:34.720,0:21:37.280
limestone

0:21:35.360,0:21:38.960
product. A

0:21:37.280,0:21:41.440
well-ground

0:21:38.960,0:21:44.799
limestone will have a neutralising value

0:21:41.440,0:21:48.799
of sort of 53 to 55 percent.

0:21:44.799,0:21:51.520
The fineness of the grind is very

0:21:48.799,0:21:54.720
important. It's the finer material

0:21:51.520,0:21:58.400
within the lime that will react first

0:21:54.720,0:22:00.799
with the coarser

0:21:58.400,0:22:01.840
particles giving that longer

0:22:00.799,0:22:03.679
term effect

0:22:01.840,0:22:05.200
within the soil,

0:22:03.679,0:22:07.120
so, a

0:22:05.200,0:22:08.559
good ground limestone

0:22:07.120,0:22:12.080
95 per cent

0:22:08.559,0:22:15.600
of it should be going through a

0:22:12.080,0:22:17.200
3.35 millimeter mesh or

0:22:15.600,0:22:19.520
sieve. It's

0:22:17.200,0:22:21.760
important to highlight that anything

0:22:19.520,0:22:24.240
over that three millimetre

0:22:21.760,0:22:25.039
doesn't actually have any effect on soil

0:22:24.240,0:22:27.679
pH

0:22:25.039,0:22:28.159
until it breaks down. Depending on

0:22:27.679,0:22:30.640

0:22:28.159,0:22:32.960
the hardness of that parent

0:22:30.640,0:22:36.000
rock or parent material,

0:22:32.960,0:22:37.440
that could take years, it could take

0:22:36.000,0:22:41.039
hundreds of years.

0:22:37.440,0:22:42.240
So, the finer the material the

0:22:41.039,0:22:44.320
better.

0:22:42.240,0:22:45.280
How much lime would you suggest that

0:22:44.320,0:22:47.840
needs to be applied?

0:22:45.280,0:22:49.919
Will the analysis give that farmer an

0:22:47.840,0:22:50.640
indication of how much needs to be

0:22:49.919,0:22:53.200
applied

0:22:50.640,0:22:54.880
to bring that pH up to the optimum

0:22:53.200,0:22:58.080
level?

0:22:54.880,0:23:00.400
Yes, as a general rule of thumb

0:22:58.080,0:23:02.640
it would also depend obviously

0:23:00.400,0:23:05.280
on the soil pH

0:23:02.640,0:23:07.520
but it was also depend on the

0:23:05.280,0:23:10.559
soil type.

0:23:07.520,0:23:14.320
So, on a medium textured

0:23:10.559,0:23:16.640
mineral soil,

0:23:14.320,0:23:17.360
a ton an acre or two and a half

0:23:16.640,0:23:19.360
tons

0:23:17.360,0:23:21.280
per hectare of a good quality ground

0:23:19.360,0:23:25.280
limestone would increase

0:23:21.280,0:23:27.679
the pH by 0.3 units.

0:23:25.280,0:23:29.600
And when is the best time to apply lime?

0:23:27.679,0:23:31.679
Are there any times of the year

0:23:29.600,0:23:33.360
you would say that farmers

0:23:31.679,0:23:36.240
should avoid?

0:23:33.360,0:23:36.799
You can apply lime year-round as

0:23:36.240,0:23:39.919
long as

0:23:36.799,0:23:40.559
traveling conditions are good

0:23:39.919,0:23:43.120

of course.

0:23:40.559,0:23:44.720
So, the end of summer, early

0:23:43.120,0:23:48.799
autumn's

0:23:44.720,0:23:50.480
a good time to apply lime and

0:23:48.799,0:23:52.320
applying it then you'll be

0:23:50.480,0:23:54.000
setting up the soil and

0:23:52.320,0:23:56.400
setting up

0:23:54.000,0:23:57.279
the crop, grassland or anything else,

0:23:56.400,0:23:59.840

0:23:57.279,0:24:00.880
for optimum performance the

0:23:59.840,0:24:04.000
following year.

0:24:00.880,0:24:06.400
That lime will take time to

0:24:04.000,0:24:07.200
work and it can take sort of 18

0:24:06.400,0:24:10.159
months to

0:24:07.200,0:24:11.360
two years to work. One place I would

0:24:10.159,0:24:14.799
avoid really is

0:24:11.360,0:24:18.400
silage ground,

0:24:14.799,0:24:22.000
pre-cutting anyway.

0:24:18.400,0:24:24.480
Apply it post cutting and onto

0:24:22.000,0:24:26.559
onto your bare ground where it goes onto

0:24:24.480,0:24:29.600
the soil and not onto the leaf.

0:24:26.559,0:24:32.799
You can graze

0:24:29.600,0:24:35.919
once the lime is

0:24:32.799,0:24:38.720
washed off the leaf.

0:24:35.919,0:24:40.080
I'm sure you would join me in

0:24:38.720,0:24:43.039
reminding our listeners

0:24:40.080,0:24:44.400
Rhys that Farming Connect offers a

0:24:43.039,0:24:46.400
soil sampling service

0:24:44.400,0:24:47.520
and that's a really important advantage

0:24:46.400,0:24:49.200
to Welsh farmers

0:24:47.520,0:24:51.120
through the support offered by Farming

0:24:49.200,0:24:53.200
Connect that they can

0:24:51.120,0:24:54.400
gain access to this support service of

0:24:53.200,0:24:57.679
getting their soil

0:24:54.400,0:25:02.159
sampled at a very reasonable rate?

0:24:57.679,0:25:04.960
Yes, definitely.

0:25:02.159,0:25:06.240
Information and data are such

0:25:04.960,0:25:08.799
powerful tools.

0:25:06.240,0:25:09.760
We've stressed the

0:25:08.799,0:25:11.279
benefits of

0:25:09.760,0:25:14.400
of liming and the increases in

0:25:11.279,0:25:17.840
production that are possible.

0:25:14.400,0:25:21.200
I'd encourage people to

0:25:17.840,0:25:23.919
take up on that offer

0:25:21.200,0:25:25.120
of course. That's only one

0:25:23.919,0:25:27.840
part of the puzzle

0:25:25.120,0:25:29.760
if you like Aled. Getting the

0:25:27.840,0:25:32.720
results, we need to work

0:25:29.760,0:25:33.919
then on acting upon those soil analysis

0:25:32.720,0:25:36.480
results and

0:25:33.919,0:25:38.080
putting a liming plan in place or

0:25:36.480,0:25:41.520
liming policy in place

0:25:38.080,0:25:43.760
and consider that going

0:25:41.520,0:25:45.360
forward as well.

0:25:43.760,0:25:47.279
Yes that's a very good point. It's not

0:25:45.360,0:25:48.559
only getting the data, getting the

0:25:47.279,0:25:51.039
baseline information

0:25:48.559,0:25:52.799
together, it's acting on that

0:25:51.039,0:25:53.919

information that you receive is the

0:25:52.799,0:25:56.640
second element

0:25:53.919,0:25:58.320
of that. And as a final question Rhys,

0:25:56.640,0:25:58.960
this is a question we've asked all our

0:25:58.320,0:26:00.640
guests

0:25:58.960,0:26:01.919
over recent episodes on Ear to the

0:26:00.640,0:26:02.960
Ground and that is, how would you

0:26:01.919,0:26:04.799
describe

0:26:02.960,0:26:06.480
a successful farmer? I'm sure you

0:26:04.799,0:26:07.600
would make reference to the fact

0:26:06.480,0:26:10.720
they need good soils

0:26:07.600,0:26:12.400
But, in your opinion, if you were there

0:26:10.720,0:26:13.520
writing a new definition of what is a

0:26:12.400,0:26:16.799
successful farmer,

0:26:13.520,0:26:17.679
what would it be? A successful farmer in

0:26:16.799,0:26:20.480
my

0:26:17.679,0:26:21.600
mind Aled would be somebody who looks

0:26:20.480,0:26:24.320
after his soils.

0:26:21.600,0:26:25.120
There's truth in the saying,

0:26:24.320,0:26:28.000
if you don't

0:26:25.120,0:26:29.200
feed your farm your farm won't feed you.

0:26:28.000,0:26:32.960

0:26:29.200,0:26:32.960
Firstly, look after the soils and

0:26:33.039,0:26:36.159
produce a produce that the

0:26:35.200,0:26:40.320
market

0:26:36.159,0:26:42.880
wants with as much as possible

0:26:40.320,0:26:44.640
of that product coming from forage.

0:26:42.880,0:26:47.520
Forage would be the cheapest feed

0:26:44.640,0:26:48.000
available to any ruminant livestock

0:26:47.520,0:26:51.440

0:26:48.000,0:26:54.720
on farm and

0:26:51.440,0:26:57.919
being open-minded and adaptable to

0:26:54.720,0:26:59.039
change as well. If

0:26:57.919,0:27:02.480
something's not working,

0:26:59.039,0:27:04.320
act upon it and change.

0:27:02.480,0:27:06.080
And I think that's a very good note to

0:27:04.320,0:27:08.240
finish this podcast on because

0:27:06.080,0:27:10.159
there is a lot of change on the horizon

0:27:08.240,0:27:12.320
and no doubt farming businesses will

0:27:10.159,0:27:13.919
need to adapt and navigate the path

0:27:12.320,0:27:16.320
through all the changes to support

0:27:13.919,0:27:17.840
payments, changes to trade, as we've seen

0:27:16.320,0:27:20.559
in recent months.

0:27:17.840,0:27:22.000
It's been fantastic having you on

0:27:20.559,0:27:24.080
Ear to the Ground. You've shared a lot of

0:27:22.000,0:27:25.039
vital information about some really core

0:27:24.080,0:27:27.600
principles which

0:27:25.039,0:27:29.440
are fundamentally important for

0:27:27.600,0:27:29.760
all farmers across Wales to take note

0:27:29.440,0:27:31.200
and

0:27:29.760,0:27:33.200
we're incredibly grateful for your time.

0:27:31.200,0:27:34.320
Rhys, thank you once again for joining

0:27:33.200,0:27:36.960
the podcast

0:27:34.320,0:27:38.960
Thank you. If you would like more

0:27:36.960,0:27:40.240
information about the support available

0:27:38.960,0:27:42.320
through Farming Connect

0:27:40.240,0:27:44.000
please contact your local development

0:27:42.320,0:27:46.799
officer or the Service Center

0:27:44.000,0:27:47.520

0:27:46.799,0:27:49.520
On 08456 000 813.

0:27:47.520,0:27:51.440
And there we are we've reached the

0:27:49.520,0:27:53.039
end of episode 36.

0:27:51.440,0:27:55.039
Don't forget to hit subscribe on

0:27:53.039,0:27:57.679
whichever platform you use to keep

0:27:55.039,0:27:58.559
notified of all new episodes of Ear to

0:27:57.679,0:28:00.159
the Ground.

0:27:58.559,0:28:02.159
On behalf of the team at Farming

0:28:00.159,0:28:16.170
Connect and myself Aled Jones, thank you

0:28:02.159,0:28:19.400
for listening and goodbye for now.

0:28:16.170,0:28:19.400

0:28:22.799,0:28:24.880