Improving Performance and Margins for Sheep Flocks

George Megarry from TGM Software relates the experiences and analyses the data of one user of Select Sheepware as he finishes his first lambing season using the program. Peadar Kearney runs a flock of 330 Belclare x Texel ewes in County Louth, Ireland. He retains 70 ewe lambs as replacements each year and works with 12 rams.

Joanne Martin who is currently completing a Masters degree in Ag Science at University College Dublin and who has been working on Peadar's farm for the last three years, is working with Peadar to help him use the recording results to select sheep for culling and breeding.

What are the metrics which can be used for ewe selection for flock improvement?

There are a number of metrics or performance values which can be used to evaluate best and worst ewes.

Lambs Alive / Dead - Beginning with the simplest system, the number of lambs born alive is a good starting point. Ewes with twins are more likely to add to flock margins than ewes with singles. On the other end of the scale, ewes with no lambs alive, or 3 or more weak lambs will reduce overall flock margin.

Kg of lamb per ewe at weaning - Moving up the scale, if lambs can be matched to their mothers at birth, then when those lambs are weaned, the kg of weaned lamb can be calculated for each ewe.

Joanne Martin and Peadar Kearney are pictured on Peadar's farm in Co Louth, Ireland. Picture courtesy of the Irish Farmers Journal.

Kg lamb produced at slaughter - If it's possible to get the dead weight of lambs back from the processor, individually identified, then the kg of lamb deadweight produced per ewe can calculated.

Kill percentage - If the dead weight has been obtained for the lambs and if the lambs were weighed live immediately prior to slaughter, then the kill out percentage is easily calculated.

Birth difficulties/lamb viability - If the lambs viability has been recorded, for example ' Up and Suck' / 'Slow To Suck' / 'Needed help to Suck' and for the mother 'Easy Birth' / 'Difficult Birth' etc. These records will also help with evaluating the best ewes.

Lamb Weight Gains - When the lambs are weighed, their weight gains can be calculated, both weight gain from birth and weight gain from last weighing. These values give a good evaluation of the mother's milking ability. Ewes with poor milk supply will have lambs with lower weight gains.

Lamb Age at Slaughter - This is another measurement which can be used for selection of ewes for culling or for breeding. Lambs which reach slaughter weight faster take less feeding and often get the earlier lamb prices which can be higher than later lambs.

Considering all these selection parameters, you might be tempted to think that analysis like this is not feasible for the average sheep farmer with a few hundred or more ewes. But this is not the case. One sheep farmer who has been able to evaluate his ewe performance on the basis of some of the above is Peadar Kearney. This is the first year Peadar has used the Select Sheepware system on his computer, with a Psion RFID tag reader, both supplied by TGM Software Solutions Limited. For weighing, he is using a Trutest weigh system, which sends the weights into his Psion recorder via Bluetooth.

With Joanne's help and advice Peadar is making significant decisions on breeding ewes on the basis of the data collected this year.

Lambs are tagged at birth with an EID - linked to their mother using the Psion reader. It's not essential that the lambs get EID tagged at birth as Select Sheepware allows the lambs to be linked via a farm identifier – usually a number sprayed onto the lamb's back. It's also not essential that all ewes are EID tagged – Select Sheepware allows ewes to be located in the psion reader by their visible tag number.

During the birth recording, any particular difficulties can be recorded, lambs' birth weights, any lambs slow to suck etc. These will all form part of the final breeding decision making process later on at the end of the lambing season.

As the season progresses, Peadar says it's most interesting when he weighs his lambs. There can be considerable differences in lamb weight gains. On the basis of this alone, Peadar will be culling some sheep. He says,

"If a ewe hasn't been able to feed her lambs so that they have an acceptable growth rate, they won't get a second chance next year!"

A weight report for some of his lambs is shown below.

Close Report   Backup   Print Preview   Reports   Custom Reports   **Kingswood Sheep**

Find (Dept Tag)   Continue Searching   Sort Order   Weighing Report2: Sorted in Descending order by Age

Double Click on a line to view an animal's full details

✓	Farm Tag	EID	OneOf	Date Weighed	Wt	Age	Gain	DLG	LastWt	DaysSinceLast	GainSinceLast	DLGSinceLast	Dam Left Tag
	RED 1B	372043121105494	2	30/05/12	35.8	148	32.8	0.22	38.6	4	-2.8	-0.7	32408
✓	RED C3	372043121105551	2	01/06/12	43.6	144	39.6	0.28	40.4	6	3.2	0.53	94236
	9C	372043121105562	2	01/06/12	42	142	38.5	0.27	38.2	2	3.8	1.9	23605
	4C	372043121105554	2	30/05/12	41.4	141	37.4	0.27	40.8	4	0.6	0.15	64244
	8B	372043121105559	2	30/05/12	45	140	42	0.3	42.6	4	2.4	0.6	44323
	8C	372043121105560	2	30/05/12	44.2	140	41.2	0.29	42.6	4	1.6	0.4	44323
		372043121105786		30/05/12	50.4	140	46.9	0.34	48	4	2.4	0.6	
	7B	372043121105564	2	30/05/12	48.8	140	44.3	0.32	46	4	2.8	0.7	72302
	5A	372043121105567	1	01/06/12	37.8	140	32.3	0.23	37.6	2	0.2	0.1	94302
		372043121105590		30/05/12	47	139	43.5	0.31	49.4	4	-2.4	-0.6	

In the above sample, I've sorted the order of the report by age. A number of lambs were 140 days old at this weighing. This report for this small sample of lambs shows some very interesting figures.

Lamb 5A was 37.8 kg, weight gain since birth was 32.3kg and daily live weigh gain per day was 0.23kg. It was one of 1, so it was a single lamb. It's mother was ewe number 94302. Compare the performance of this lamb with Lamb 7B, weight 48.8kg, weight gain since birth 44.3kg, weight gain per day 0.32kg. It was one of 2, so was a twin. Its mother was ewe number 72302.

	Lamb 5A	Lamb 7B
Weight	37.8	48.8
Age	140 days	140 days
One of	Single	Twin
Weight gain	32.3	44.3
Mother	94302	72302

This is example of how a really poor performing ewe can be identified. That ewe has no chance of being kept on for another year.

The potential for flock improvement in just one year using Select Sheepware and weighing lambs is huge. It's not necessary to have a Bluetooth linked digital weigh scale, even a simple analogue clock scale will work perfectly well for smaller numbers of lambs – the psion program allows you to key in the weight if not using a connected weigh scale.

Some processors are now sending back individual dead weights for lambs. Peadar has been able to get back slaughter weights. It's a very simple process to bring these weights from a spreadsheet file into Select Sheepware. The spreadsheet does not need to be in any particular format as Select Sheepware allows the user to match up the columns in the spreadsheet with its own database field names, see the example below.

Once you select the spreadsheet, the columns headings are picked up. You then match up each heading to Select Sheepware's own database field names as shown – beside each database value, there is a drop down list, from which you choose the heading to match up.

When done, you click on save and exit.

Using the data from Peadar's sheep, a typical sales report is shown.

System   Registration   About   Help   Import/Export Data   Load Data from PDA   Support/Web/Information   Flock Number: 01194009

Close Report   Backup   Print Preview   Reports   Custom Reports   **Kingswood Sheep**

Find (Dept Tag) ▾ [ ]   Continue Searching   ↕ Sort Order   Sale report with slaughter details: Sorted in Descending order by Kill Percent

Double Click on a line to view an animal's full details

Dept Tag	Animal Type	One Of	Sex	Birth Date	Sale/Death Date	Live Weight	Dead Weight	Kill Percent	Price	Dam Left Tag	Grade
IE0431211 05580	Lamb	2	Ewe	16/01/12	12/05/12	45	23.4	52	119.07	63471	U3
IE0431211 05552	Lamb	1	Ewe	09/01/12	12/05/12	44.6	21.6	48.43	119.07	24237	U3
IE0431211 05553	Lamb	2	Ewe	10/01/12	12/05/12	42.6	20.4	47.89	115.67	64244	U3
IE0431211 05556	Lamb	2	Ram	10/01/12	12/05/12	45.8	21.7	47.38	119.07	82383	U3
IE0431211 05535	Lamb	1	Ewe	26/01/12	12/05/12	43.2	20.3	46.99	115.1	61599	U3
IE0431211 05555	Lamb	2	Ewe	10/01/12	12/05/12	44	20.5	46.59	116.24	82383	U3
IE0431211 05495	Lamb	2	Ewe	03/01/12	12/05/12	43.6	20.3	46.56	115.1	32408	U3
IE0431211 05508	Lamb	2	Ewe	17/01/12	12/05/12	41.8	19.4	46.41	110	72387	U3
IE0431211 05505	Lamb	2	Ram	17/01/12	12/05/12	43.4	20.1	46.31	113.97	72293	R3
IE0431211 05579	Lamb	2	Ram	16/01/12	12/05/12	43.8	20.1	45.89	113.97	3525	R3
IE0431211 05566	Lamb	2	Ram	13/01/12	12/05/12	43.2	19.7	45.6	111.7	93477	R3
IE0431211 05511	Lamb	2	Ewe	17/01/12	12/05/12	42.8	19.5	45.56	110.57	74160	R3
IE0431211 05517	Lamb	2	Ewe	17/01/12	12/05/12	47.6	21.3	44.75	119.07	74240	U3
IE0431211 05504	Lamb	2	Ram	17/01/12	12/05/12	47.6	20.3	42.65	115.1	72293	R3
IE0431211 05521	Lamb	1	Ram	17/01/12	12/05/12	46	19.4	42.17	110	54234	R2
IE0431211 05569	Lamb	2	Ewe	13/01/12	12/05/12	43	18.1	42.09	102.63	12407	U3
IE0431211 05516	Lamb	2	Ram	17/01/12	12/05/12	42	17.6	41.9	99.79		R2
IE0431211 05519	Lamb	2	Ram	17/01/12	12/05/12	43.2	18	41.67	102.06	71618	R3
372043121105522	Lamb	2	Ewe	26/01/12	12/05/12	26.6	0	0	0	22403	

I've sorted the report by Kill percent. You'll notice that kill percentage varies from 52% down to 41.67%. Interestingly, all the sheep with the high kill percentage have U3 grades!

Price for the batch varies from 119 down to 99 – a staggering difference of €20 in lamb price!

Most of these lambs were twins, including the lamb with the highest kill percentage.

Showing the best, worst and one in the middle of this kill percentage range as a table:

	Best Lamb 05580	Worst Lamb 05519	Middle Lamb 05505
Kill %	52	41.67	46.31
Live Weight Kg	45	43.2	43.4
Dead Weight Kg	23.4	18	20.1
Price	119.07	102.06	113.97
Grade	U3	R3	R3
Dam	63471	71618	72293

From this, Peadar can check up the individual record cards for the ewes, for example ewe 63471. If all other factors also indicate an excellent performing ewe, she will be retained and perhaps offspring considered as replacements.

Her record card is shown below.

In this case, this ewe had an average lamb wean weight of 36.9 and a total kg of weaned lamb of 73.8kg, an excellent performance.

Next season, this record card will be extended and Peadar will be able to start to review his sheep on the basis of average performance over more than one year.

Looking at the record card for the dam of the lamb with the worst kill percentage -

You'll see her average wean weight was only 59.6kg – a difference of around 14kg of lamb! 14 kg of liveweight represents quite a difference in value of lamb produced. It's likely this ewe will not be retained for another year!

Peadar says it's not sufficient to take a single result as the basis for culling a ewe. Take for example a lamb with a poor kill percentage. It's important to look at other performance factors for the ewe like total wean weight as well as the kill percentage of a single lamb. This year, Peadar has been able to weigh his lambs frequently and is able to use total wean weight as one of the main parameters in selection of ewes for culling.

To make it easy to identify these underperforming ewes, the system allows you to set an Alert on these sheep – you'll see an Alert input box on the record card shown. Having decided which sheep to cull, which sheep to retain and which to keep replacements from, Peadar can set alerts accordingly.

When Peadar sets this alert, once the psion reader is synchronised, no matter what Psion screen he is working on, if he scans the EID of this sheep, the Psion will beep loudly and display Cull across the top of the screen.

One unique feature of the Select Sheepware is the ability to set an alert to a block of sheep.

For example, looking at the weight report, we can filter all lambs with a weight gain less than 0.2 kg / day
We can then create an alert as shown

Once we save this alert, we can apply to the batch of bad performing lambs

S Weighing Report

System Registration About Help Import/Export Data Load Data from PDA Support/Web/Information Flock Number: 01194009

Close Report   Backup   Print Preview   Reports   Custom Reports   **Kingswood Sheep**

Find (Dept Tag) ▾ 71618   Continue Searching   Sort Order   *Weighing Report2: Unsorted*

Double Click on a line to view an animal's full details

✓	Farm Tag	Dept Tag	Alert Code	Alert Description	OneOf	Sex	Birth Date	Date Weighe	Wt	Age	Gain	DLG	LastWt	DaysSinceLa	G.
▶	28B	372043121105522	DLG<.2	DLG weight gain < .2	2	Ewe	26/01/12	12/05/12	26.6	107	21.6	0.2	27.6	4	
	139F	372043121105679	DLG<.2	DLG weight gain < .2	3	Ram	16/03/12	17/05/12	11.6	62	8.1	0.13	3.5	62	
	139E	372043121105680	DLG<.2	DLG weight gain < .2	3	Ram	16/03/12	17/05/12	13.8	62	8.8	0.14	5	62	
	136D	372043121105712	DLG<.2	DLG weight gain < .2	3	Ram	14/03/12	17/05/12	10.2	64	6.2	0.1	4	64	
	173B	372043121105746	DLG<.2	DLG weight gain < .2	2	Ram	19/03/12	02/06/12	20	75	15	0.2	14.6	28	
	142E	372043121105754	DLG<.2	DLG weight gain < .2	3	Ram	19/03/12	17/05/12	8.4	59	4.4	0.07	4	59	
	134F	372043121105833	DLG<.2	DLG weight gain < .2	3	Ewe	13/03/12	01/06/12	18.6	80	14.6	0.18	17.2	15	
	102F	372043121105893	DLG<.2	DLG weight gain < .2	3	Ewe	11/03/12	17/05/12	18	67	12	0.18	6	67	
	142D	372043121105930	DLG<.2	DLG weight gain < .2	3	Ewe	19/03/12	17/05/12	14.4	59	10.4	0.18	4	59	
	117C	372043121105944	DLG<.2	DLG weight gain < .2	2	Ewe	12/03/12	02/06/12	14.4	82	9.4	0.11	10.6	28	
	207B	372043121106045	DLG<.2	DLG weight gain < .2	3	Ewe	24/03/12	02/06/12	16.8	70	12.8	0.18	12.4	28	
	220E	372043121106054	DLG<.2	DLG weight gain < .2	3	Ewe	31/03/12	17/05/12	12.4	47	8.4	0.18	4	47	

These lambs with a daily liveweight gain less than 0.20 kg per day since birth now all have an alert set against them. Next time the Psion reader is synchronised, these lambs will get this alert set.

Should the user be working with the lambs for any reason – weighing, adding medicines etc, when one of these lambs is scanned, the psion will beep loudly and the alert **DLG<.2** will be shown at the top of the Psion screen.

Finally to finish up on the benefits of weight recording and Select Sheepware, when looking up the weight report for ewes, the report shows both condition score and scan result along with the weight details. This lets the user keep a close eye on ewe condition and weight gain during pregnancy. Ewes carrying twins will have a different weight gain to those carrying singles. By integrating these three sets of data in one report – weights, condition scores and scan results, it is easy for the user to keep a close eye on the ewe's condition.

Again for ewes which need attention as a result of that report, the user can use the filters to filter out all ewes which are not putting on weight consistent with the scan result and which may have a poor condition score. The alert will be applied to all these selected ewes, so the psion software can immediately alert the user when one of the ewes is identified.

Because the Select Sheepware Pocket Edition has the full sheep history database, the user can then look up, on the psion in the field, the last scan result, the last weight, the last condition score, last year's birth problems etc.

In conclusion. Peadar says **"As a result of having used Select Sheepware and a psion reader with a Trutest weigh system for this year, significant breeding decisions have been made which should improve flock performance and profitability. There is no doubt in my mind that the investment in this technology has been well worth it and I expect it to pay for itself through improved profitability in my flock."**