THE WOOL PRESS

November/December 2020 Volume 326

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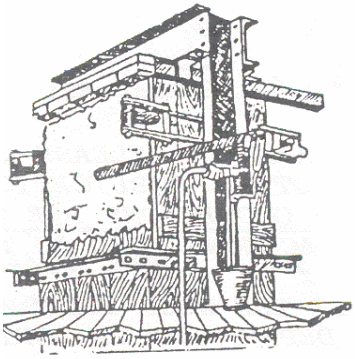
In this issue...



Edited By Merrie Ellis & Teenie Ross
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EDITORIAL

Welcome to the Christmas edition of the Wool Press. Unfortunately, you may not be feeling in much of a Christmas spirit what with the news of the very modified export season at FIMCo next year. Discussions are afoot on that subject and we will have to see how they pan out over the coming weeks and months. The RBA meetings in Stanley (Dec 14th) and Fox Bay (Dec 18th) should prove to be interesting events.

What have you got to look forward to in this edition of the Wool Press? You can find some dates for your diary on the first page and, if you happen to live somewhere which is already rodent free, you can take advantage of the free detector dog offer on page 4. Zoe continues with her series of articles on trace elements – this time looking at zinc and cobalt. You probably don't have to concern yourselves too much with the former but you will be well aware about the importance of the latter. One thing I noted was that plants don't really need cobalt to help them grow – so you can have a really good-looking pasture and it may still be cobalt deficient. Dani has included some interesting information on some of the unwanted foreign arrivals into the Islands; presumably they have been arriving for decades (centuries even) but with today's much more efficient transport links it has never been easier for unwanted stowaways to take a free passage. Andrew brings you up to date with everything that has been happening at Saladero – and most of the news seems to be good. Everyone seems to be impressed with the new sheep yards and they make working with the sheep a much more user-friendly experience. Make yourself a cup of tea or coffee before sitting down to read Matt's article on the importance of water in getting crops and pastures established – it is quite a lengthy article. I was very interested to read his comments about how much better the soil and pasture looked on the areas left as a firebreak compared to the area which had been burnt. Has he interpreted his observations accurately? At the end of the month there will be the traditional Ram and Fleece show at Fox Bay – this year will be its 34th occurrence and it takes place on Dec 29th. And last but not least I recommend the excellent article written by someone well known to me on pages 16 and 17; see what you make of it and let me know your views – preferably as politely as possible.

The final pages are given over to Christmas puzzles and recipes – so enter into the spirit of the season and give them a go.

Wishing you all a very Happy Christmas and an equally good New Year.

Steve Pointing
Senior Veterinary Officer

DOG DOSING DATES FOR 2021/2022

Date	Drug
Wednesday 6th January 2021	Drontal
Wednesday 10th February 2021	Droncit
Wednesday 17th March 2021	Droncit
Wednesday 21st April 2021	Droncit
Wednesday 26th May 2021	Droncit
Wednesday 30th June 2021	Drontal
Wednesday 4th August 2021	Droncit
Wednesday 8th September 2021	Droncit
Wednesday 13th October 2021	Droncit
Wednesday 17th November 2021	Droncit
Wednesday 22nd December 2021	Drontal
Wednesday 26th January 2022	Droncit

Regular weighing - it is important to keep a check on dog's weights to ensure correct dosage is being given.

All dog owners are responsible for worming their own pets. Please remember to contact the Veterinary Office and confirm this has been done. After normal working hours, please leave a message or email.

The Falkland Islands Government

Department of Agriculture,
Veterinary Service,
Tel: (500) 27366 Facsimile: (500) 27352
E-mail: sbowles@doa.gov.fk

Dates for your Diary

9th December - Public Holiday in lieu of Battle Day (8th)
23rd December - Rose Bar Speed Shear
25th December - Christmas Day - Public Holiday
26th & 27th December - Sports, Stanley Racecourse
27th December - BBQ at Millennium Campsite
28th December - Shearing Competition, FIDF Hall
29th December - Ram & Fleece Show, Fox Bay more details on page 12.
30th & 31st December - Government Holidays
1st January - Raft Race

Public Holidays for 2021

1st January - New Years Day
2nd April - Good Friday
21st April - Queen's Birthday
14th June - Liberation Day
4th October - Peat Cutting Monday
8th December - Battle Day
25th December - Christmas Day
28th December - Boxing Day (in Lieu of 26th)
29th December - Christmas Holiday (in Lieu 27th)
30th December - Government Holiday
31st December - Government Holiday

Rodent dog checks available to craft travelling to any rodent free islands around the Falklands

Some islands around the Falklands are free of rats and mice. If you are travelling to any rodent free islands around the Falklands we offer a free check of your vessel with the biosecurity detector dog. A quick check with Sammy's nose will give you peace of mind that you are not introducing a pest.

Sammy is a trained rodent detection dog from Working Dogs for Conservation.

Checks can be done on all types of vessel

Rodent dog checks are FREE

Searches take approx. 30 minutes for a 40ft yacht

Vessels can be searched alongside or if at anchor we can come out on your dinghy

Contact the landowner to see if they are rodent free and if you need a check

To arrange a dog check, contact Naomi Baxter on local number +500 55166 or email: biosecurity.doghandler@gov.gs

This project is funded by the Falkland Islands Government Environmental Studies Budget

Trace Elements, Zinc & Cobalt

By Zoe Fowler

Following on from previous articles about selenium and calcium, today we will take a look at zinc and cobalt.

Zinc

Zinc is a mineral that is found widely distributed in most soft tissues of the body, however there are no significant stores of zinc that can be mobilised during periods of low zinc intake so animals rely on a continuous dietary supply. Control of zinc in the body is achieved primarily by regulating its absorption from the abomasum and small intestine and the rate of absorption increases when zinc concentration in the diet falls. Most zinc ingested by ruminants is not absorbed and is excreted in faeces.

Zinc is a constituent of a large number of metallo-enzymes involved in many biochemical processes essential to nucleic acids, protein and carbohydrate metabolism so zinc deficiency affects a wide range of body functions including maintaining integrity of the immune system.

The dietary requirement of sheep is approximately 25mg/kg DM of zinc – the concentration of zinc in pastures can vary widely. The zinc in the soil depends on the type of parent rock, organic matter content and pH but often doesn't reflect the zinc content of the herbage growing in that soil (in some areas this might be where the use of phosphate fertilisers may have a lot of zinc in them). Cereal grains generally contain good levels of zinc, however, as is often the case, zinc may be less available in acidic soils with poor organic matter.

Deficiencies are rare but will be seen if the diet only has 2.4-3.0mg/kg DM and signs include loss of appetite, excessive salivation, deterioration of hair or wool texture and loss of hair or wool specifically around the mouth and eyes. Stiff joints and cracks at the coronary band and skin around mucous membranes can be seen. Reduced weight gain, poor growth rates, reduced healing, poor immunity and poor reproductive function are all consequences of a prolonged low zinc diet. Studies in New Zealand suggest that gross deficiencies rarely occur and there do not appear to be many production responses to zinc supplementation. Zinc is considered low if plasma concentrations are <6umol/L, however, gross marginal deficiencies are hard to assess because other disease states such as liver disease, infections, tissue injury and stress cause redistribution of zinc in the body.

Zinc supplementation has been used to try and treat footrot and facial eczema. It is relatively non -toxic but levels over 2-5 fold recommended intake can cause toxicity (signs are vague like those of deficiency; reduced feed intake and feed conversion, depressed liveweight gain etc). Doses of 12-15mg Zn/kg LW caused a suppression of copper absorption which can be treated by injecting copper.

Cobalt and Vitamin B12

Cobalt is an intrinsic part of the vitamin B12 molecule and its deficiency is essentially a VitB12 deficiency.
Blood vitamin B12 concentration reflects dietary cobalt intake and to a lesser extent the B12 reserves of the liver. Liver concentrations can range from 100-1000nmol/kg fresh tissue. Serum or plasma concentrations can range from 80-900pmol/L depending on cobalt intake.

About 13% of dietary cobalt is incorporated into vitB12. VitB12 is released from rumen microorganisms by the acidic conditions of the abomasum and then absorbed by the small

intestine. The absorbed vitB12 is transported to liver and other tissues in association with the blood proteins transcobalamin I and II. VitB12 readily crosses the placenta and is stored in the fetal liver. It can be provided to young in the milk from its dam. Microbial biosynthesis of vitB12 is not available to the very young lamb as their reticulorumen is not yet functional so the suckling ruminant is entirely dependent on the liver stores and the vitB12 that is provided in milk.

VitB12 is a co-factor for 2 enzymes, methylmalonyl coenzyme A mutase and methionine synthase. VitB12 deficiency constrains total enzyme activity which creates bottlenecks in important metabolic pathways. Clinical signs of deficiency then result from insufficient metabolic capacity. Clinical signs of deficiency are manifested as poor growth due to loss of appetite, watery eyes, anaemia and increased perinatal mortality. Lambs are the most sensitive to cobalt deficiency and the consequent reduced dry matter intake markedly reduces growth rates and wool production.

The recommended dietary Co requirements for sheep are 0.1mg/kg DM. The cobalt in the soil affects the cobalt available in plants. Soils from acidic igneous rocks tend to be low in cobalt. Plant species differ in their ability to accumulate cobalt from the soil. The cobalt content of grasses is less than clovers for example, in soils that have adequate cobalt levels. Interestingly plants do not really require cobalt themselves, but livestock do. This is why well grown pastures can be established on poor cobalt soils but lambs on that pasture will still be poor. Cobalt in pastures may actually be lower in spring and summer. A reduction of soil acidity with lime reduced cobalt uptake by plants.

Cobalt deficiency is well recognised in the Falklands and often the best way to diagnose deficiency is to trial supplementation and monitor production outcomes.

The Importance of Biosecurity

By Dani Baigorri

Biosecurity is, by definition, the precautions taken to protect against the spread of lethal or harmful organisms or disease.

We, the biosecurity team, mostly work at the border checking cargoes and searching passengers that come into the Falklands to make sure they are not carrying anything they shouldn't and could pose a risk for the environment, health and/or economy of the islands. Also, we usually receive information regarding sighting of bugs, seeds or plants from the community and businesses, and these are highly appreciated and take up a big chunk of our days, as we regularly receive images or actual bugs in our office for further identification. If we can't identify them here, we send the images to an expert in the UK and if the images are not enough we then send the bug itself.

As an example, in the last few weeks we have found/received:

Oriental Wood Borer

Furniture with an unknown type of beetle that we managed to identify as an oriental wood borer (*Heterobostrychus aequalis*); these beetles belong to places with higher temperatures than the Falklands and adults won't live or breed here. However, inside houses with the temperatures above 20C sometimes, they could live. Therefore, to

Bedside tables with holes made by oriental wood borer

prevent a major issue we decided to destroy the furniture to avoid the hatching of eggs that could be inside these pieces of furniture.


Oriental wood borer (*Heterobostrychus aequalis*)

Rove Beetle

A mysterious beetle, which we identified as rove beetles. These beetles were introduced accidentally into the islands a long time ago and are now commonly found with livestock, often beneath straw in barns or chicken coops; and are predators that protect your plants against a great number of garden pests.


Rove beetle (Quedius mesomelinus) brought to us by Carol Phillips

Chinese Cabbage

A large quantity of Chinese cabbage inspected was seized and destroyed due to being infested with bugs that could pose a risk to local crops.


Imported used vehicle full of animal hair and soil

Vehicle Imports

A used vehicle being imported had to be cleaned upon arrival by its owner due to being full of animal hair, soil and plant products. The owner decided to strip the car out of its carpets and gave them to us for destruction due to the amount of animal hair that could have fleas' eggs on them.

European Field Cricket

A mysterious large bug that ended up being a male European field cricket (Gryllus campestris), this cricket arrived into the island inside a mobile home on the FIRS boat and even though we inspected it we couldn't find anything. However just a couple of weeks ago it was brought to us alive! These crickets prefer dry, sunny locations with short vegetation and have long been considered the most endangered cricket species in the British Isles, occurring only in southern England. This little fella wouldn't survive in the Falklands due to the cold weather and keen winds.

Male European field cricket (Gryllus campestris) brought to us by Tanya Jaffray

Dead fly due to fungal infection. - (Images and sample provided by Karen Jones)

A curious case

A mysterious flying bug with white stripes was sent to the DoA and identified as a fly with a fungal infection. This fly was infected by a pathogenic fungus which causes a fatal disease in flies and other two-winged insects. These are infected simply by either accidentally contacting a fungal spore or, since the spores are aerially dispersed, having one land on them. The fungus will then grow within the living fly, usually favouring the abdomen. As pictured; just before the fly dies, around 5-8 days after initial infection, it will be 'driven' by the fungus to assume a high position on the underside of overhanging objects with wings and legs outstretched.

Huge thanks to everyone who has called us to report something unusual and to those brave souls who bagged a beastie for us to look at!

What can you do to help?
If you are importing fresh produce, timber, building materials, vehicles, or have been on holiday, be aware of what you might be bringing in with you, or with your cargo. And if you find something and you're not sure what it is, give us a call or bring us a sample and we'll do our best to identify it. Please contact us on email: biosecurity@doa.gov.fk or phone: 27355

Saladero News

By Andrew Bendall

October -November 2020
Lambing; Ewes were set stocked into their saved lambing camps at the end of August in mobs based on their body condition that was determined at scanning. See below table

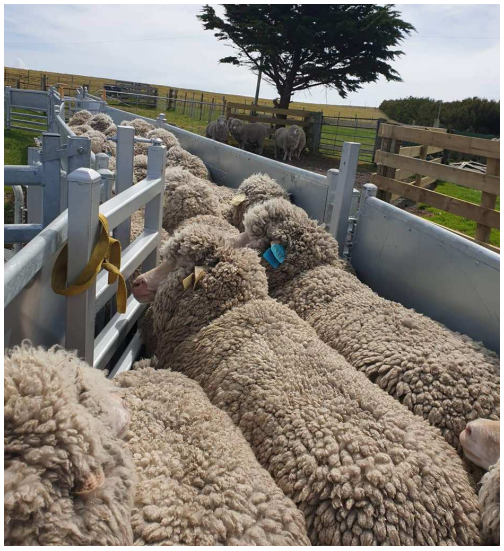
Benefit of a high value feed sources fo 40 days			Swedes		Native forage & Some lupins	
	Weight June (kg)	BCS August	Weight (kg) & BCS		Weight (kg) & BCS	
Ewes	50.3	2.8	54.3	2 6	50.6	2
Shearlings	43.6	2.9	44.4	2 5	41.5	2

The weather during lambing was generally typical for that period, without too many severe storms or weather events going through. There was, as to be expected, cold winds and sleety showers and some periods of snow during October.

Ewes mated to lambs marked is 71%, a significant improvement on the last two years however disappointing considering the genetic potential of the NSF ewes.

Paddock percentages ranged from 95% to 61%
Factors that have influenced lamb survival at Saladero in 2020;

- Body condition of ewes; not only did these mobs rear more lambs, they are still in better condition; udders were fuller and their wool in better condition. They will wean heavier lambs in 6 weeks time.
- Shelter; Saladero has limited planted shelter but this paddock had the highest survival despite the ewes actually being lighter in condition. These ewes are still lighter but have live lambs and are now on better feed.
- General paddock aspect, contour and vegetation cover also can influence survival by providing natural shelter away from prevailing wind and rain.
- Crutching of ewes; some shearling ewes did not receive a full tail crutch and I believe this cost that mob 15% in lamb survival.
- Feed cover at set stocking; having sufficient covers present at set stocking to get into the spring is paramount to both maintaining ewe condition, milk production and lamb growth but also means that the cover on the greens are not eaten down too short to get the most out of the late spring growing period while ewes have lambs at foot.
- Age of ewes is a significant factor in ewe deaths, with older ewes greater than 6 years old having higher mortality rates and lower body condition.
- One camp with considerable ditches may have also contributed to that camp having a higher mortality rate.
- Ewe deaths are a major contributing factor to low lambing percentages



So when you look at the list above of the influencing factors to our farm profitability, we have control over all of these. I hear you argue, but we do through strategic planning throughout the year and making planned decisions to lesson the effect of those factors out of our control being the weather and seasonal variation.

Worm burdens among young stock;
Although the stocking rate is relatively low at present at Saladero and we have all stock on rotations so camps are being spelled and rested at periods of the year, we are still seeing a significant build up of worms within the hogs. More so in the ewe hogs where the camps that they were wintered in had fewer greens and more extensive white grass & native forage areas.

This meant that each time these hogs were moved they went straight to the greens and grazed these areas more intensively than other parts of the camp. By continuously grazing these greens to low residual levels they were picking up the worm larvae that have over wintered. The danger period for Trichostrongylus (our most common worm) is in winter, as the infective larvae are very resistant to cold and desiccation and their numbers can reach high levels in the cooler months.

Strategy to worm management;

Worm location;
At any one time the vast majority of the worm population is on the pasture, rather than inside the gut of the host animal. Therefore, effective controls should minimise pasture contamination and minimise the exposure of susceptible stock to contaminated pasture. Keeping the worm challenge low by keeping low larval levels on pasture results in healthier, more productive stock.

Worm numbers;
Worm numbers in pastures vary throughout the year, with peaks in spring and autumn, when the

climate favours worm development and young stock are present.

Spelling period;
Spelling pasture for short periods (less than three months) will not reduce numbers of infective larvae sufficiently. Larvae can survive for many months, even years, on pasture. Cold weather slows their development but does not kill them. Exposure to direct sunlight will dry out and kill some eggs and larvae.

Immunity;
Sheep develop a level of age immunity to worms. They begin to develop some immunity from around six months, which is fully developed by 18 months of age. Therefore, it is important to avoid exposing young stock with under-developed immunity to high levels of infective larvae.

Nutrition;
Animals under stress are less able to counter the effects of a parasite challenge. It is vital to maintain good levels of nutrition to meet the seasonal needs of the animal. Remember, adult stock under stress, animals suffering a mineral deficiency and stock that have recently calved or lambed, may also release more worm eggs onto the pasture.

Other Saladero News;

Visual inspection day of ram & ewe hogs & mature sire rams
A day was held where the NSF committee came to Saladero and along with DoA staff we weighed, Body Conditioned Scored and visually inspected all the ram & ewe hogs. The mature rams were also given a close examination for structural soundness and wool characteristics.

All these animals were later shorn, a mid-side sample was taken and fleeces weighed. Once all this data has been collated it will help us determine what ram hogs will be kept for public sale in March 2021 and potentially kept for use within the NSF flock next year.

Average weights & body condition of hogs.

	Body weight	Body Condition score	Fleece Weight
Ram Hogs	37.7kg	2.7	2.8kg
Ewe Hogs	30kg	2.5	2.5kg

Installation of sheep yards;
"Farmquip" sheep yards have now been installed and work very well, a few minor alterations will be made to adapt them to our specific needs. But great having purpose built facilities to work in.

The Millennium Dome is also nearing completion of being dismantled and cleared away.

Mandy Ford had to return from the UK without getting her much anticipated hip replacement due to potential post-operative complications. Macaulay Davis has done an excellent job of covering management during her absence.

With Christmas fast approaching, best wishes to you all for the festive season and the New Year.

Lamb marking percentages & death rates – what do you make of them?

By Steve Pointing

While I was in isolation following my recent annual leave away in the UK I had a very interesting phone call from a farmer concerned about the state of the national flock in the early stages of this shearing season. He followed up with further thoughts in an email and I promised him that I would look into his concerns more deeply when I had returned to the office. My first port of call was the 2019 -20 farming statistics. It is quite a time-consuming process – both on your part and ours – obtaining all of the relevant information and then compiling it into a readable format. And usually the first – and sometimes only comments we receive – are from one or two farmers who say that the information printed isn't correct!

The trouble with very detailed statistics is that it is quite easy to get lost in the sheer volume of figures on the page and to fail to notice some of the more important lessons that could be learned from studying them more closely.

I am going to home in on just two of the statistics – lambing percentages and death rates – and ask the question "Why are there such large differences between individual farms – sometimes even neighbouring farms?" Firstly, let us consider what some of the contributing factors might be as far as lambing percentages and death rates are concerned:

- Poor ewe condition (< BCS 1.5) as a result of inadequate nutrition.
- Late or too early lambing.
- Bad weather conditions at critical period.
- Predation at lambing time – lambs and ewes.
- Low weight at joining (not sufficiently well grown).
- Age of ewe – natural deterioration in health and welfare with aging process.
- Inability to cope with twins
- Mis mothering
- Inadequate milk production (again related to poor nutrition)
- Poor genetics – can affect mothering abilities and general robustness.
- Ditches
- Other causes—what are they?

Location	Lamb marking %	Estimated overall sheep death rate %
EF	58.2	8.6
WF	56.2	10.2
Islands	63	13.3
Combined	57.8	9.5

So, for this particular year (2019-20) there was not a massive variation between lamb marking percentages and sheep death rates between the various regions of the Falkland Islands but within all of those regions there were some very large variations between individual farms as indicated on the next page:

Lamb marking % (only for properties with > 1,000 sheep)

Location	Highest	Lowest
EF	83.8	29.7
WF	82.2	20.2
Islands	76	49

Estimated overall sheep death rate % (only for properties with > 1,000 sheep)

Location	Highest	Lowest
EF	52.2	1.1
WF	23.7	3.5
Islands	24.8	4.5

So, as you can see – some really large differences between individual properties and the question that these statistics immediately raises is "Why the difference?" I've not named individual farms and you can find out which ones they are by perusing the farm statistics booklet – and having done so you (or the farmer concerned) might come up with a whole host of reasons as to why their particular results in 2019/20 were much better or much worse than the average. In any specific year there might well be some very particular reasons why the results were better or worse than in the rest if the Islands – but that really isn't the point of the exercise. In order to have an average in anything you will obviously have those who perform above average and those who perform below average but, ideally, for the sort of parameters that we are looking at you would hope that the extremes are not too far apart and that those properties below average would only be a little below average and not significantly below average. Ideally you would hope that the same properties don't appear at the bottom of the table year after year - but that isn't usually the case. The well performing farms tend to be above average in most years and the poorly performing farms regularly appear in the bottom half of the statistics. This raises some questions.

- Why is this the case?
- What questions need to be asked?
- What are the farmers on the better performing farms doing which those on the poorer performing farms are not?
- What lessons could the latter learn from the former?
- How could that information best be disseminated?
- What practical steps need to be taken to improve the performance statistics on the most poorly performing properties?

These are perennial questions and after many years of discussion and research we still don't seem to have come up with the answers. A final question – why is that? I'd be very happy to receive your thoughts on these issues – so please drop me a line at spointing@doa.gov.fk

[i] There has been some discussion recently about whether the figures supplied for the estimated overall sheep death rate % are a truly accurate reflection of the death rate on different farms or not. The definition of the sheep death % is the "unexplained sheep population change between one year and the next". Obviously, some of these differences can be accounted for by on-farm practices eg slaughter of sheep for own or dog consumption on farm, sale of sheep to other farmers or to the abattoir etc. These are all reasons why sheep numbers may have declined during the year but they all have an explanation and so should not be included in the "unexplained" change in numbers. Are the death rates being reported on various farms an accurate reflection of what is actually happening?

The 34th West Falkland Ram & Fleece Show

When: December 29th
Where: Coast Ridge Shearing Shed, Fox Bay East
Livestock & fleece entries: 9am-12pm
Barbeque: 12.30pm onwards
Judging: 2.00-3.30pm
Prize giving: 4.30pm

Entries may be sent to Keith before the event or be brought to the Wool Shed on the day. FIGAS will again kindly fly fleeces free of charge, please clearly mark that they are for the Ram and Fleece Show.

COMPETITION NOTES:

- Rams in Class 1 should not have any permanent incisor teeth erupted.
- Rams in Class 2 are Dual-purpose
- Fleece entries should be skirted fleeces only
- Entrants should inform Keith of the probable number of rams or fleeces to be exhibited so that sufficient pens/tables can be prepared.
- The fleece with the highest commercial value, Champion ram and Reserve champion will be judged on the day by two experienced 'Wool People' all other judging will be done by popular vote.

Please note that the judge's decision is final.

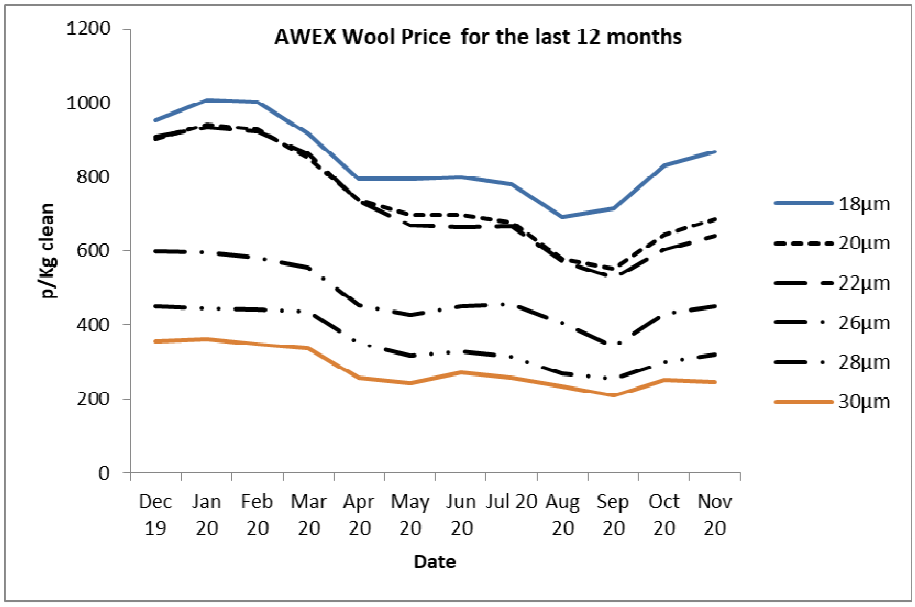
EVENING:

The SCSC will be open all day as usual. Please bring a plate for 7pm @the club if you would like to share in a community supper.

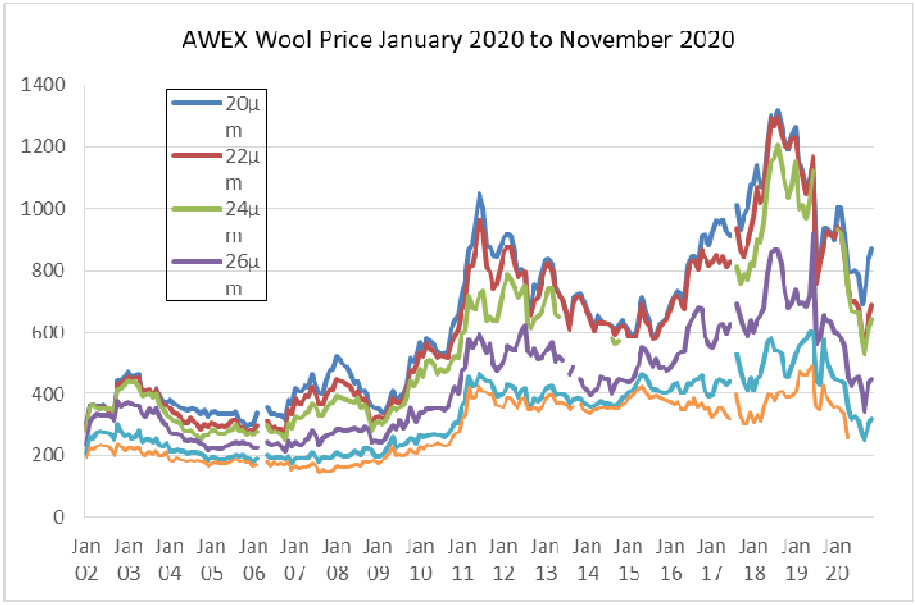
Market Price Trends for Wool (Using AWEX Data)

By Tom McIntosh

The Australian Wool Exchange (AWEX) Eastern Market Indicator (EMI) for the last twelve months shows the dramatic downturn of price since February 2020. It does not show that markets stopped buying wool for a period time after March. Though the AWEX price has recovered from the lowest prices the benchmark paid to Falkland Island Farmers is not always achieved by local growers.



The trend compared to the last twenty years is a similar price to wool eleven years ago



The Covid 19 Wool Producers Assistant Scheme has been successful and the majority of wool purchased by FIG has now been sold.

Effective water-use in crops and pastures in a challenging soil environment

By Dr. Matthew McNee

Introduction

A timely seeding program on the islands is best completed by the end of November, if not well before. Early sowing of grass forage crops and pastures should improve pasture / crop establishment, increase yield potential and minimise the gap with attainable yield each season. However, these outcomes largely depend on achieving 'vigorous' early growth in the context of the species and variety being grown.

Early vigour indicates that a grass is effectively scavenging the available water and nutrients in the soil. In the Falklands, we know that vigorous establishment is negatively impacted by a range of soil constraints including, low temperature, low pH (<5), compaction, soil water repellence properties, shallow soil depth, the root masses of native forage and lack of soil in the seedbed, adsorption of chemicals and fertilisers to soil particles. These issues vary spatially in a single re-seeded field as well as between fields in the sowing program. These and seasonal effects introduce considerable uncertainty about sowing techniques and time of sowing. To reduce uncertainty we need to focus on soil and paddock preparation as we do plant genetics and grazing.

One way or another the severity of these soil constraints is related to the soil moisture content during the growing season. Soils are warmer when moist, hydrogen ions are diluted and washed out of root zones by soil water movement, hydrophobic soils permit more water entry when already wet, rotovated root masses are softer and decompose more rapidly with moisture, chemicals and fertilisers are more effective with moisture. In essence, soil moisture conservation is paramount and it should be alarming that "climate change predictions for the Falklands for the next century are for a steady rise in temperature (c.2.2 deg C), increased evapotranspiration and windiness leading to longer soil moisture deficit periods over the growing period".

The sustainability of improved pastures in the livestock system depends on developing systems that prioritise soil water conservation and effective water use by plants. In 2020, the effects of sub -soil constraints on new pastures are still being managed by preparing land with burning. When performed well, burning tends to make soil / seedbed conditions across a field more homogenous. However, this appears to come at a significant cost over the longer term if the fields at Saladero are any indication. When inspecting old re-seeds at Saladero in the last few weeks (a very dry spring!), I find a mysterious green strip bordering an entire field with very little sorrel and much more active grass growth than the field's interior.

The noticeably better pasture performance around the field's extremity appears to be the fire break. Many years after the burn, does this not demonstrate that soil water and nutrient relations have been destroyed by burning? Without any knowledge of the historical field management and how animals have grazed the field it is difficult to be definitive with cause and effect. Nevertheless, the fact is that management has resulted in more effective water and nutrient use on the firebreak in a dry spring, albeit by accident. What is effective water-use?

Effective water use by pastures

Effective water use is the capture of all available water (ET x T) and maintaining control over the

complete utilisation of water in carbon assimilation to maximise plant growth (ET x W). In addition, it depends on the interaction with grazing animals (HI).

Yield = ET x T / ET x W x HI

Where,

ET = Evapotranspiration (total water loss to the atmosphere from soil and plants)
T = Transpiration (water used by the plants)
W = Plant transpiration efficiency (efficient utilisation of water in carbon assimilation to maximise plant growth)
HI = Harvest index (this is a grain cropping term, but in grazing systems would refer to the percentage biomass utilised by livestock)

Any improvement in one of these components should result in an increase in yield, since they are largely independent of each other. However, without good root growth and water capture, the water-use and efficiency traits described above are largely meaningless, perhaps with the exception of inter-species variation in drought tolerance (e.g. stomatal closure to avoid moisture loss in the plant). Hence, it is absolutely essential that soil constraints that inhibit root growth are managed and removed when economically feasible.

What management could improve the situation?

a) Groundcover maintenance pre and post sowing to improve soil moisture conservation

Improved spring/summer soil water conservation is likely to require at least 2 tonnes of plant residue cover per hectare (dry matter basis) at the soil surface in October. For example, in a very dry spring, soil moisture in mid-November was much better beneath a poorly grazed oat crop compared to an adjacent bare paddock destined for a 2nd year of swedes. Carrying 3-4 tonnes of trash over winter to improve an early sowing opportunity would seem feasible if one is willing to forgo grazing the oats and provided the seeding equipment can handle that much trash. Most of the newer double-disk seeding systems should be able to do this, particularly with good cutting coulters and perhaps slightly wider-row spacing than the 17.5 cm centres that are commonly used.

Groundcover maintenance and soil moisture conservation is a simple solution to minimise the impact of sub-soil constraints (compaction and acidity) during the establishment phase. The risks that the trash will tie-up significant amounts of soil nutrients is likely to be inconsequential compared to the benefits of having soil moisture for longer periods in the sowing window. In fact, the duration of anaerobic activity by soil organisms that participate in the nitrogen cycle is likely to improve with increased soil moisture availability, provided soils aren't water-logged. This should increase nitrogen release in organic soils.

b) Sow crops and pastures at the leading edge of the sowing window in October

Sowing crops at the leading edge of the sowing window might be possible regardless of conditions in late September / early October. This is similar to the dry sowing concept in Australia where seed is sown weeks and even months before it germinates. This means that new crops and pastures are established as soon as possible and are able to exploit conserved soil moisture and exploit the full growing season as it varies from year to year. I suspect that the success of

this practice would largely depend on soil temperature variation for germination and the risk of frost damage to seedlings after emergence.

c) Consider other cultural crop establishment methods to improve establishment

Some useful cultural methods for crop establishment don't appear to be widely practiced anymore. Sowing pastures at the back-end of the summer can allow crops to develop first leaves before winter. Those plants over-winter and the leaves are ready to go as soon as conditions permit in spring i.e. early as possible. This would likely improve root growth and effective water use compared to a spring sown pasture.

Frost seeding is the practice of broadcasting seed on snow or frozen ground and letting the 'soil heaving' from freeze-thaw cycles work seed into the ground. This would also foreseeably enable seed to germinate at the earliest possible opportunity in spring, but could be less effective than early direct drilling in terms of plant numbers.

d) Water harvesting, minimum energy expenditure and protection from wind

It would be beneficial to consider alternative sowing systems. No-tillage knife-point and tine setups have been used in the Falkland Islands but didn't have press-wheels. These offer many advantages over the zero-tillage pasture drills more widely used here. The main advantage that I can see relates to the deep furrow that can be created on wider-row spacings (20-33cm). The deep furrow created by a knife-point causes water harvesting in and around the seed row where the majority of plant roots reside and where there is preferential water entry into soil i.e. through root channels. This means that the majority of a 10mm rainfall event can be directed to a small proportion of a hectare where plants benefit the most. The plant germinates and emerges at the bottom of the furrow with only a little bit of relatively loose soil to push through. The furrow also offers protection from wind which is important for effective water use by the seedlings first leaves. The energy expenditure of the seedling is further reduced by the cultivation that occurs below the seed when sowing with knife-points.

e) Control weeds that emerge with the pasture

An additional advantage of a knife-point system is that the soil throw enables use of pre-emergent herbicides to control weeds that germinate with the pasture / crop and compete for water. In theory, the herbicide is mixed with the soil and thrown into the inter-row away from the sown plants. The herbicide then kills weeds germinating in between the rows. However, the efficacy of these soil residual herbicides would need to be evaluated on the organic soils of the Falkland Islands. It isn't known if and how long they can provide protection from multiple weed flushes that may compete for water with an establishing pasture. The major upside of pre-emergent herbicides would be reduced requirement for a knockdown application of glyphosate + banvel before sowing. This would also improve early sowing opportunities where one didn't have to wait at least 10 days after knockdown to sow.

f) Renovate hostile soils

For degraded shallow re-seed soils on the Falkland Islands there may not be much that can be done to increase soil moisture conservation and effective use. Another approach is required. Soil engineering includes a wide-range of mechanical and biological manipulations of the soil's

physical and chemical properties. On the Falkland Islands this may involve clay admixture or top-soil dressing, particularly with blue clay. It could involve mechanical manipulation to effectively mix the peat top-soil with clay-rich subsoil and remove subsoil constraints at the same time. Clay delvers and spading implements are used for this purpose. In addition, it could involve the deep placement of lime, calcified seaweed, fertiliser or organic materials that ameliorate hostile soil characteristics. Finally, methods might involve deep-rooted cultivars or cover crops like lucerne, radish, buckwheat and red clover that help retain the benefits of the renovation. Such actions could also be the future for opening up new land for pasture improvement or to improve native pastures.

Conclusion

Re-seeds can be a valued component of livestock systems if management prioritises improved soil water conservation, early sowing opportunities and effective water use of plant varieties and species. A range of options to do this have been presented in this article. These should be explored in on-farm experiments with support from the DOA's Farmer-based Research program.

SEEN ANYTHING STRANGE LATELY??

IF SO CONTACT THE DEPARTMENT OF AGRICULTURE ON 27355 OR VETERINARY SERVICES ON 27366

We wish you and your families a very merry christmas and a happy new year!
From everyone at the Department of Agriculture

Christmas recipes

Mincemeat and Marzipan Tart

For the pastry

- 175g/6oz plain flour
- 100g/3½oz unsalted butter, cubed
- 25g/1oz icing sugar
- 1 free-range egg, beaten, for brushing

For the filling

- 550g/1lb 4oz good-quality mincemeat
- 150g/5½oz marzipan, coarsely grated

To finish

- icing sugar, for dusting
- brandy cream, to serve

1. Preheat the oven to 200C/180C Fan/Gas 6.
2. For the pastry, measure the flour, butter and icing sugar into a food processor and pulse until the mixture resembles breadcrumbs (take care not to over-process the pastry as it will make it tough). Set aside a tablespoon of the beaten egg for the glaze and add the remaining egg to the processor. Pulse again until the pastry just comes together. Put the pastry on a floured work surface and knead until it comes together to form a ball.
3. Reserve a quarter of the dough for the stars and roll out the remaining pastry to the thickness of a pound coin. Line the base and sides of the tin with pastry and prick with a fork. Chill for 15 minutes.
4. Spread half the mincemeat over the base of the pastry and scatter over the grated marzipan. Evenly spread the remaining mincemeat over the top to cover the marzipan. Roll out the reserved pastry and, using star cutters, stamp out enough stars to decorate the top of the tart (about 14). Arrange the stars on the top of the tart and brush with the reserved beaten egg.
5. Bake for 25 minutes, or until the pastry is golden-brown and crisp. Set aside for 10 minutes to cool slightly before removing from the tin.
6. Serve the tart warm, dusted with icing sugar and with the brandy cream alongside.

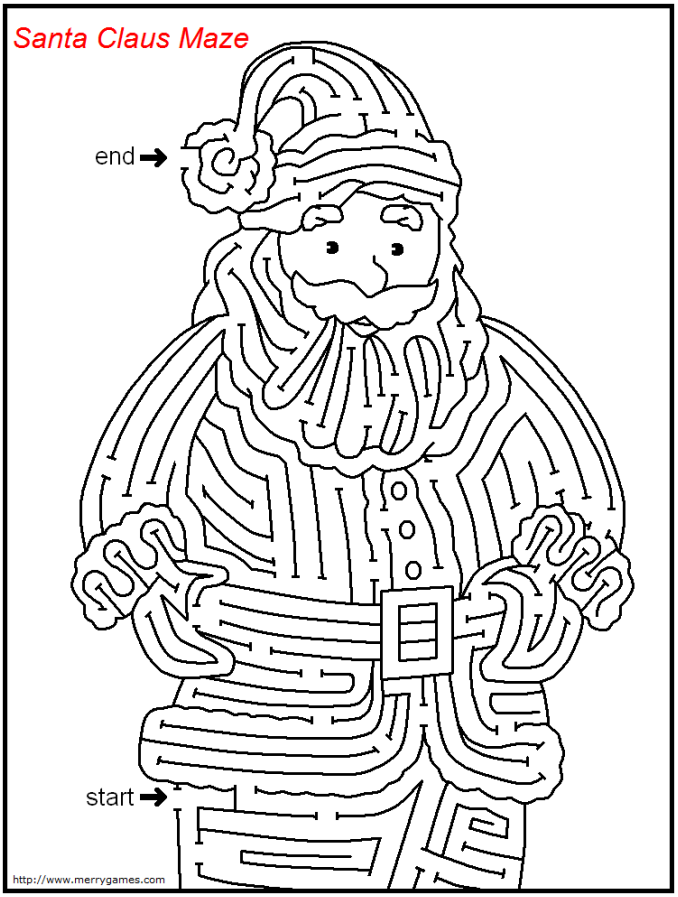
Mary Berry's Christmas Stuffing

- 40g/1½oz butter, plus extra for greasing
- 1 large onion, finely chopped
- 700g/1lb 9oz pork sausage meat
- 150g/5½oz fresh white breadcrumbs
- 1 large unwaxed lemon, juice and finely grated zest
- 3 tbsp chopped fresh parsley
- 1 tbsp chopped fresh sage
- salt and freshly ground black pepper
- 1 tbsp vegetable oil

1. Melt the butter in a saucepan over a medium heat, add the onion and fry gently for 8-10 minutes, or until softened.
2. Stir in the remaining stuffing ingredients, except for the vegetable oil, until well combined. Season to taste, with salt and freshly ground black pepper.
3. Using wet hands, shape the sausage meat mixture into 16 equally-sized balls. Place on a lightly greased baking tray, cover with cling film and chill in the fridge for at least 30 minutes.
4. Preheat the oven to 200C/180C Fan/Gas 6.
5. Heat the oil in a large frying pan over a high heat. Add the stuffing balls and fry for 4–5 minutes, turning once, until golden on both sides.
6. Return the fried stuffing balls to the baking tray (or, if there is room, place them in the same roasting tray as the turkey or chicken). Bake the stuffing balls for 20–25 minutes, or until cooked through. If they brown too quickly during cooking, cover with kitchen foil.
7. Serve with roast turkey, roast chicken, or other roast meat.

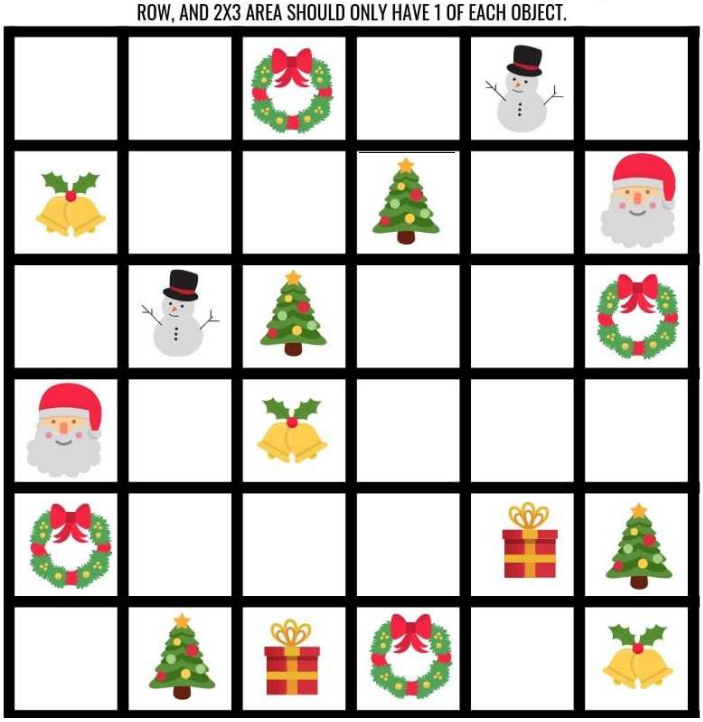
Fun Festive Page!

Santa Claus Maze



Christmas Sudoku

COMPLETE THE PUZZLE USING THE CHRISTMAS OBJECTS. EACH COLUMN, ROW, AND 2X3 AREA SHOULD ONLY HAVE 1 OF EACH OBJECT.



Christmas Jokes

Which of Santas reindeer has bad manners?

Rude-olph!

What falls but never gets hurt?

Snow!

What did one snowman say to the other snowman?

Do you smell carrots?

What do snowman eat for breakfast?

Snowflakes!

What kind of bird can write?

A pen-guin!

What kind of ball doesn't bounce?

A snowball!

Why do mummies like Christmas so much?

Because of all the wrapping!

What goes "Oh, Oh, Oh?"

Santa walking backwards!

Christmas Colouring

1-Gold 2-Green 3-Blue 4-Brown 5-Red 6-Yellow