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Contract Summary

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I must confess that I struggled to emerge from the involvement in the fascinating information delivered so well by the speakers in this contract. To many of us that world is pretty much a mystery. Sue Galloway's demonstration of the relationship between chromosomes and genes was a great help, allowing us to understand it much more clearly. Who among us will ever see a piece of baling twine without remembering that image?

For Inverdale, my first impression is of the tenuous thread by which its isolation was achieved. It begins with Mr Weir's curiosity about a ewe of unknown pedigree, which produced 33 lambs from 11 lambings. There was his disappointment when his offer of this treasure to a scientific programme selecting and breeding for high prolificacy was initially not accepted, but in the end, there was success. The rest of the story we have heard about in this contract. You can read a full account of this great detective story in the NZ Society of Animal Production, Occasional Publication No. 13, titled "Lab Coats to Gumboots". It is fair to say that without the persistence shown by Mr Weir we would not have Inverdale, and for this we thank him.

But that was just the beginning. The "inconsistent" breeding performance of some second and third generation offspring of this ewe excited the professional curiosity of local scientists and geneticists. The result is the discovery of the effect of the Inverdale gene located on the X-chromosome. Peter Fennessy outlined the value this has, not only for animal science but for human fertility studies as well. One wonders if the potential medical benefits will change funding options for continued research. Let it be said that as persistence has characterised the work to date, it is appropriate to expect that it will also be needed to acquire and control resources for the research work to come.

There is another feature which also characterises this effort. It is the quality of communication. I am convinced that it was the clear communication between people of different interests, location and background that was vital in the success of the work we have heard about in this contract.

In a summary it is usual to comment on the papers presented in the session by referring to them individually. I hope those who have presented papers not referred to will forgive me for not following this routine. For farmers, and I have been asked to consider this view, there is much about the application of the information in this contract which I would like to highlight. Time forces that choice on me.

If the genetic potential of farmed livestock is to be realised, they must be fed to a level where diet is not limiting. There is no mystery about that. In New Zealand this feed supply is grass. In pastoral farming, management aims to balance the seasonal supply of pasture to the feed demand of livestock carried, and it follows that if a good balance is

achieved, any additional pasture production costs will be recouped and with profit. As keen young farm advisers in South Otago in the 1960s and 1970s we reasoned that more growth in winter pastures would solve the dilemma. This can be done on paper, but when winter pasture production was improved by such means as nitrogen fertiliser and winter rotational grazing, summer pasture growth increased also. So the dilemma remained, albeit at a higher level of pasture growth.

The simpler, but decidedly more difficult way to balance seasonal feed supply with feed demand is to increase lamb drop and lamb survival. In a South Otago example, a discussion group member had lambing percentages that fluctuated wildly; one year high and the next low. The regularity offered the clue that the quality and quantity of feed at mating was involved. The reasoning was that the heavy load of revenue livestock, in the high percentage years, drafted on a price or weight basis, delayed the final drafts long enough to interfere with flushing/tupping feed. The result was a low lambing drop the following spring. No such effect occurred the next season where mating feed was plentiful. We did some sums, drew up some graphs, and developed a plan to draft revenue livestock by numbers rather than by weight/price. The numbers left on hand could be decided more in keeping with expected feed. In two years the lamb drop increased by 42% on that farm and 17% in the group; an increase of some 23,000 lambs. In the first year the cost in average carcass weight was about 0.5kg.

If high lamb meat production is the goal, and this is surely the arena in which the value of the Inverdale gene will be seen, two requirements must be met.

1. **Ample finishing feed of top quality at the time it is needed.** Although predicting feed supply is a risky business, it is part of the management for prime lamb production. To some extent each property has a meat production potential. By that I mean it has the capability of producing x quantity of meat in its usual season. This may be y lambs at z weight or it may be y+ lambs at z- weight, but the total meat is similar. If the potential is known, give or take the odd kilogram or two, drafting can be more easily managed. It is not simple, but it identifies the crunch points more easily. It also allows a winter stocking rate to be set to yield the lamb crop for the summer. The higher the lamb drop, the fewer ewes wintered. There is likely to be the cost of reduced wool production.

2. **Selling the lamb crop when on-farm management requires it.** I have outlined earlier the effects of late lamb drafting. There is no encouragement at all in developing and using skilled farming practice if, in the end, the endeavour fails because the pre-planned drafting schedule cannot be

maintained. I venture to say that lamb production will make little progress unless some reliable method of lamb disposal is developed. In other words, the pathway to full exploitation of the potential which has been outlined in this contract is blocked by the financial, communication and tradition problems of the meat industry. This is not in any way an attempt to reduce the stature of what has been achieved. Rather, it is an effort to focus on what is required to allow the fullest exploitation of the work, all the while with sustainable profit. Although changes are occurring in meat processing and marketing, many practices and particularly attitudes, are rooted in the traditions of the past. The rate of change imposes limitations on the ability of producers to either challenge them, or to create alternatives of their own. After watching the debacle which blackcurrant exporting eventually became, I am not an enthusiast for wholesale changes in the meat industry, but some changes are necessary if we are to make good use of the opportunities now available to us. Anyone with experience of manufacturing or processing is aware of the management challenge of matching demand with supply. It is unrealistic and very costly indeed to develop processing capacity in freezing works to cope with the seasonal peak. This, along with the disproportionately high level of capital and time involved in lamb buying, processing and sales returns, reduces the options available to freezing works' management. Even within the limits of commercial sensitiv-

ity however, I am convinced there are more opportunities for effective communication from meat processors than are used at present. But it must have a good home. To be frank, farmers have not always received the efforts made by meat companies in the past with the courtesy they have deserved. I suggest that there is much that can be done by communicating clearly and constructively in that area.

In conclusion, the papers presented in this session have enhanced the potential for increased production and profit from sheepmeat. They have also enhanced the reputation of the scientists involved and large scale breeding programmes, and have demonstrated the value of individual commitment. I believe we, at least those of us who are familiar with baling twine, have now a clearer understanding of the science of genetics.

The session has, by implication, allowed the identification of some "drag" factors along the pathway to full exploitation of the Inverdale gene on meat producing farms in New Zealand, and by expansion, it has been possible to focus on some of the effort we might make now to ensure that exploitation becomes a profitable reality.

As an afterthought, I think we are now in a position to claim progress in the long term philosophic debate about the length of a piece of string - we know now that it is probably measured in centiMorgans.

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