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CAN THE HILL COUNTRY SUPPLY THE STORE STOCK NECESSARY FOR INCREASED FAT LAMB PRODUCTION?

By S. F. BULL, Ngaruawahia.

I PROPOSE to deal with this subject from two angles, the local and the statistical.

In April, 1948, I conducted a survey of 57,000 acres in the Waingaro and Te Akau districts, of the Raglan County, to see how the higher price of fertilizer was affecting the take-up of fertilizer. All of the 71 farms had allocations and three only were entirely fat lamb farms. The remainder were store sheep farms, a few running some Southdown rams with their older ewes. The soil was of two main types. Te Akau mainly Te Kuiti limestone, running up to two ewes, and replacements, was balloted in 400-acre sections in 1909 and 1912. Waingaro, steep sour hills, with a liking for growing manuka, young totara and hard fern, has many big farms, and the original owners came past the Waikato to fell the bush, around the end of the century. It is of interest that the land that Ruakura is interested in just through the bush, is, I think, identical. All of the big farms in Waingaro would have been offered joyfully at the rating value, and I think that many have been offered to Ruakura. Eleven out of 19 farms have been sold since 1939 and some of the remainder are for sale. A boom after a war is the only time this type of land has a sale value and even then they have difficulty getting their rating value. The sales in the better sections in Te Akau have been very few although again in one isolated valley near the coast only two out of 14 originals are left.

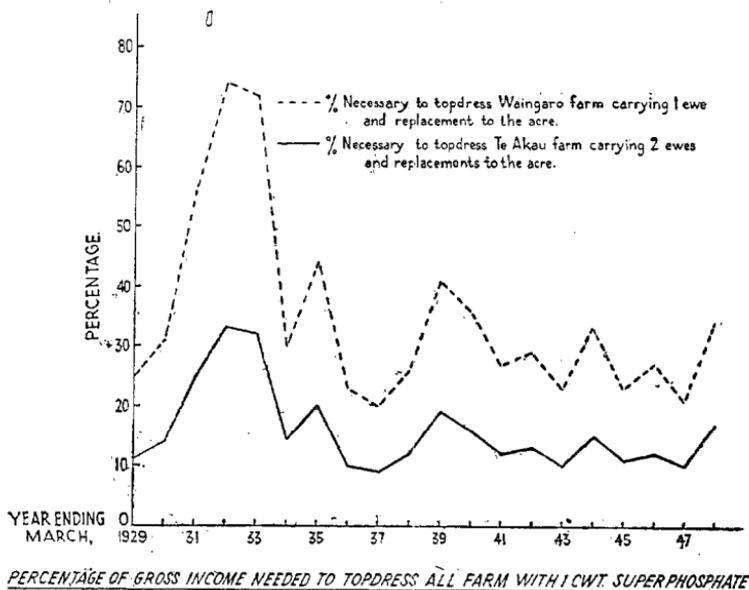
For the area of 57,000 acres I found an allocation of 2,742½ tons, of which 733 tons were cancelled. Two main facts emerged:

1. That the cancellations were highest on the one ewe or less to the acre land—land which earns in these boom times only £2 to £2/10/- to the acre of gross income and that farms carrying two ewes to the acre took up their allocations easily and any black market stuff that came their way.
2. That the big units could take up their manure allocation far more easily than the single unit farms on similar country.

In Waingaro where only an odd farm carries a ewe to the acre and replacements, the allocation worked out at 0.8 cwt. per acre and cancellations were 0.26 per acre or one-third approximately. There were 19 farms in this group averaging 900 acres, mostly one-man farms. On the better sections in Te Akau, where they carried two ewes and replacements to the acre or near it, their allocations averaged 1.1 cwt. per acre and cancellations brought this down to 0.94 cwt. These cancellations were usually for some special reason, such as sickness, sale of farm, and were not general. The cancellations among the returned soldiers (of whom we have over 20 in the district) were very high, mainly because these men were in the process of getting established. There seemed to be a definite correlation between the amount of manure sown and the number of ewes carried—about 0.6 cwt. per acre.

With the present set-up, the poorer country has only the house paddocks, and maybe the hogget paddocks, topdressed. At the present price of super it would take 25 per cent. of the gross income to put 1 cwt. per acre on a farm if a farm is earning £2/10/- per acre, which is more than 1 ewe and replacements would earn. Many of these farms did quite a lot of topdressing in the hill country boom around 1936 and were unable to follow it up and refused to be caught again.

When super becomes cheaper and off the ration it will be better class land that can take it up more easily so that they eventually become fattening or semi-fattening farms either running all ewes to the Southdown or their 5 and 6 year old ewes to the Southdown. In one case they would need to buy in ewes—in the other they would sell ewes only to the works. It is the dream of many farmers to improve their farms so that they can run just enough ewes to the Romney to provide replacements for their flock and run the rest to the Southdown. This way you would need to run fewer hoggets and would not be worried by the everlasting changing phases of the store market that seems to send the fatteners for cover like quail on the 1st of May. Universally cheap, subsidised fertilizer would give the fat lamb trade chronic indigestion. An increase in breeding ewes is usually accompanied by a decrease in ewe killings, i.e., 1936 and 1937, although this decrease in killings is also affected by the disparity between 5-year-old and works' prices for ewes. Older ewes being kept would affect the efficiency of the farming in higher losses, less wool etc.; also the country that would receive the most lift would be the fattening and semi-fattening. I think that it would be easier to build up 2-ewe to 4-ewe country, than 1-ewe to 2-ewe and with the high sowing costs of the 1-ewe country any manuring programme is expensive. It will be said that higher prices for ewes and wool will cause a swing to the Romney ram, but an increase in lamb prices and lower wool prices, both of which are probable, would make anyone be careful before taking such a step. It would be better to make a Romney lamb grade and even keep the present artificial grading and subsidise second-grade Romney wether lambs from the meat pool.



The Waikato hill country committee was in agreement with Mr. Bruce Levy that some land should get its phosphates cheaper than others according to its requirements, and that the rebate be on a sliding scale. We realised that it would be years before the land could be classified on a soil survey basis. The scheme that we put up before the sheep commission at Hamilton and Te Kuiti was based on the gross income per acre — economic as against physical classification; a simple classification scheme that would enable super to be subsidised overnight and which might satisfy politicians. Graph I illustrates this. I have worked on £4 per ton as transport and sowing costs per ton, which would be reasonable, with a maximum 30s transport as in the interim report of the Royal Commission.

In this scheme, if the farm was earning £2 per acre it would get super at £2 per ton ex works and for each 6/8 increase in gross income per acre the super would cost £1 more per ton ex works until at £4 gross income per acre the cost per ton would be £8 ex works. This would be based on the gross returns of the previous season as the shearing schedule is based on the wool returns. A bad year would mean cheaper manure and a good year dearer. At the present time one's main income comes in, say, February, and the fertilizer too. So that you have to guess your capacity to buy it. In all cases it would take 15 per cent of the gross income to topdress half the farm with 2 cwt of super. This would give only a slow increase—at first merely a better edge on the farming in improved tone in stock. However, the farmer himself, without a great deal of extra assistance, could cope with it. If you are going to use shock treatment and give farms high initial treatments you will probably need to give the farmer similar treatment. Increased labour, housing, not to mention stock and finance, would be necessary.

A point that has not arisen is one that will be caused by aerial topdressing. Much of our hill country probably won't see topdressing. If and when it does will the State understand that the farm and farmer can afford to pay only a nominal amount for the fertiliser and the spreading? By then complete soil survey will be ready and whole districts will be able to be done, without worrying about individual boundaries at, say a nominal cost per acre. Even if this was entirely free the increased prosperity of the land would repay it. It has now been suggested that the aerial topdressing should be paid for as a rate on the improved value; as the farm improves it pays a bigger proportion.

This fertilizer question is only one of the many costs that bear heavily on the hill country land. I know of no cost which, calculated on a per ewe basis, is not heavier on the hill country than on the lowlands. Of course they have some facial eczema, but there they have hordes of good natured scientists trying to solve that one. The major cost of a hill country farm that is standing still, apart from labour, is fencing. Unfortunately it is on the farms that are running around a ewe to the acre, where the position is worst. Most of their fences were put in around the bush in, say, 1901, and have been patched spasmodically since. Most of these fences, if turned up, would yield little worth putting back again. If, theoretically, 160 ewes were considered a standard mob for lambing in a paddock and the present-day cost of fencing, £5 per chain, and you were comparing a hill place of 1 ewe capacity per acre and a fat lamb farm of 4 ewes to the acre, the fencing would be £2 10s per ewe on the hill farm and £1 5s per ewe on the fat lamb place. This takes no notice of the different type of country to be fenced, but works on the fact that

if you take only half the boundary and if your paddocks average, say, 160 acres, you would have $\frac{1}{2}$ chain of fencing to the acre, if 40 acres, 1 chain to the acre. Theoretically you have 4 times the number of paddocks for twice the length of fencing. Excessive road frontage or poor farm shapes would cause an error. Unfortunately for the hill country man, as the carrying capacity per acre increases, so does the efficiency of the ewe increase.

In the statistical side of my paper I have used the A. & P. statistics with stock values that I have obtained from local farmers who kept records and from the monthly reports of stock values kept by a Waikato stock firm. These trends may be exaggerated in the Waikato compared with other parts of the North Island.

The slump in the early thirties caused a recession in the number of breeding ewes. In the Auckland province this was caused by slaughter of ewe lambs and a complete or partial turnover to dairying. With better prices for fat lambs and wool and an increase in ewe numbers, prices were high for 5-yr. and 2-tooth ewes in the four years 1935, 1936, 1937 and 1938. These were boom years for the hill country. With low costs and high prices and little taxation, the hill man did very well. Most of our cars were bought then. These good times for the hill man caused a demand for the Romney ram so that numbers increased in the North Island from 166,000 in 1936, to 217,000 in 1941. The fatteners in the meantime had a comparatively lean time with an excessive margin between 5-yr. olds and fat ewes, and to cap it all, facial eczema in 1939. With an over supply of ewes which followed on from the increase in Romneys and the difficulty of disposing of the fat ewe, in the early 1940s, replacements dropped to fairly low values. The fatteners were able to replace their ewes for a few shillings, and in some dry years, at a discount. The numbers of Southdown rams which remained fairly stationary with a slight recession around 1938 and 1939, increased slowly, and then rapidly, from 1944 to 1947, since when it has declined slightly. Half of this increase of 30,000 Southdown rams in the North Island has taken place in the Auckland district.

In 1948 and 1949 a new turn has taken place. High wool and ewe prices have caused a demand for Romney rams and a shortage has meant extremely high prices. An inner cycle is operating here. As the increase in Romney rams caused an over-supply of ewes some years later, the demand for Romney rams caused the breeders to increase their flocks and new studs to start principally in other provinces than Wellington. While the peak number of Romney rams in the North Island was reached in 1941, the single entry peak was reached in 1945 and has now almost fallen to the 1939 level. The hammering that the Romney ram breeders took up to 1947 through the forties, is going to cause a shortage of rams for a year or so yet. The man who has the courage to swing against the swings reaps his profit. The Southdown breeder is in the opposite position. The consistently high prices he has obtained through the 40's has caused a marked increase in the number of Southdown ewes and a slight falling off in demand, coupled with an increased offering, may cause a considerable reduction in price. Southdown ewes have already become hard of sale.

In the North Island the number of flock Romney rams has remained fairly constant, about 210,000 since 1941. If each Romney ram averaged 28 lambs, which is more than they do in Gisborne, (26-27) although the North Island figure is only 32 approximately—this would mean approximately 5,880,000 Romney lambs docked. Allowing 3% weaning losses, this would mean 2,850,000 ewe lambs weaned. With 10 per cent hogget losses, this would mean 2,565,000 2-tooths coming in.

Rams	210,000
Per ram	28
Romney lambs docked	5,880,000
Ewe lambs	2,940,000
Losses to weaning, docking, fly and sales	90,000
Hoggets	2,850,000
Hogget losses, 10%	285,000
Hold-over 2-tooths	2,565,000

					in 1000s
					2,565 2-tooth
2,565,000	—	5 %	128,000		2,437 4-tooth
2,437,000	—	5 %	122,000		2,315 6-tooth
2,315,000	—	5 %	116,000		2,199 4-yrs.
2,199,000	—	12½ %	275,000		1,924 5-yrs.
1,924,000	—	12½ %	240,000		1,684 6-yrs.

13,124

1,684,000 — 12½% 210,000 works ewes 1,470 7-yrs.

In the last three years of the ewe's life at rising 5, 6, 7 year, the old ewes which were dry would find their way into the yards as fat ewes in the spring. Allowing 7½ per cent dry ewes, this would mean 425,000 dry ewes. It will be noted that this rough guess adds up to 1 million more than the total ewes in the North Island. There are several causes for error:—

1. During the early forties, when store stock was cheap, cull ewe lambs were valued only as lambs and many found their way to the works or to the dairy farmer's plate. Our ewe flock, composed as it is of ages from 2-tooth to, say, 7 year old, reflects shortages, droughts and lack of demand in previous years. For instance, in 1946 many top ewe lambs were put in the works to make room for the wether lambs which were virtually unsaleable. Therefore we can expect a shortage of 5-yr. olds in 1951. It is only in the last 2 years that ewe hoggets have had a premium value, so that probably there will be a reasonable supply of 2-tooths available.
2. Some intensive fat lamb men arrange the selling of any dry 2-tooths so as to be sold at wether prices.
3. On many Waikato farms sheep bought in as 2-tooths have such poor mouths that they are put in the works as 6-year olds.
4. Many ewes are killed on the farm for home consumption. Now that income-tax covers all farms, farmers have become very conservative when computing the amount of stock killed on the farms.
5. Deterioration of hill country means more 2-tooths held over dry until 4-tooths. It only needs 200,000 less sheep to gain as 2-tooths and our sum would balance.

It is of interest that if you add the annual increase or subtract the decrease from the ewe killings (both North Island figures) since 1942 you have a fairly constant figure between 1,300,000 and 1,550,000. So it seems that of the 14 ewe lambs docked per Romney ram, 7 are killed as old ewes.

Except for the annual 5% loss and the 10% hogget loss, the ewes which are not killed as old ewes are killed for local consumption, so that no saving can be made without affecting the local meat supply. 10% seems high to me for hogget losses, but it is the figure commonly accepted. However the universal use of phenothiazine among the hill men is reducing losses and I think that losses this year would be considerably lighter than in, say, 1942.

In conclusion, my findings are:—

1. THAT even at present prices it is extremely difficult for farms with low carrying capacity to even maintain that carrying capacity, let alone improve it.
2. THAT improvement is more rapid among the better farms, this tending to increase the load on the store country.
3. THAT in the North Island the breeding ewe supply position is finely balanced and that an increase in number of ewes would be offset for the time being, by less ewe killings.
4. THAT a decline in wool prices and an increase in meat prices would upset the supply position still further, especially if it caused a further swing to the Southdown ram.

Discussion on Mr. Bull's Paper

MR. SMALLFIELD: Mr. Bull raised one point that I think is of considerable importance in the matter of hill-country and that is the definition of land that really ought to get some subsidy for improvements in the way of topdressing and other work. I was not able to follow the way that Mr. Bull would define land that should receive a subsidy. When we were handling the matter we suggested that pasture, possibly, might be used as the measure—that is that marginal land might be defined as the land that was deficient in clovers. That was not very acceptable.

MR. BULL: We were working on the gross income per acre. It was the ability to pay for manure. If super costs £8/10/- per ton at the works then 1 cwt. applied to the farm costs 12/6. If we were only running a ewe to the acre the gross income is at the most only £2/10/- and so this is more or less an impossible amount. We worked on the principle that if the gross income was £2 per acre we have the manure at £2 a ton, ex works, and for every 6/8 increase in the gross income per acre the manure costs £1 per ton more. In all cases this meant that 15 per cent. of the gross income was being spent in applying 2 cwt. to half the farm a year.

MR. SMALLFIELD: By and large, pasture condition would not reflect gross income per acre.

MR. BULL: It is a rough yard-stick. In every district we knew of, there would be one man who had come through "well-to-do"; the next farm would be struggling and there would be two or three farms that had just about "had" it. But it was all the same sort of land.

DR. WALLACE: If I understood this paper rightly, the speaker suggests that manure should be subsidised for properties which would respond most slowly to the application of that manure. Surely, from a national point of view it is more reasonable to suggest that we should subsidise manure on land that is good and so get the benefits of increased production. I know that it would raise difficulties re-

garding the supply of breeding ewes to the fat lamb breeder. I think perhaps we ought to think about meeting that shortage of ewes in a different way. Should we be prepared in this country to take over from the hill-country, ewes which to my mind are really not ideally suited to fat-lamb production or should we think of some such system whereby we take from the hill-country fewer Romney ewes. We could cross those Romney ewes on the fat-lamb country with, say, Border Leicester, giving us an animal which should yield a higher proportion of twins. Then perhaps we could carry those through on the fat-lamb country and put them to a Southdown ram and possibly even consider putting them to the ram as lambs. It seems wrong that we should spend money putting manure on land which is on the verge of going out of production, when, as the speaker said, it is easier to make two-ewe country into four-ewe country than it is to make one-ewe country into two-ewe country. Experiments already show that the overall returns from the weight of meat marketed is greater if you mate your ewes as lambs than as two-tooths. I suggest you combine ewe breeding with fat-lamb breeding by putting the Romney ewe to a ram such as the Leicester thereby getting a Romney-cross animal. The wethers can be sold as fat lambs and the ewe lambs retained for mating to Southdown rams for production of fat lambs. From that you should more than compensate for reduced size of ewe flock. You may suffer some reduction in wool weight. You have a heavier wool clip relative to the type of flock you are running and you have your increased lamb percentage. You have reduced costs in the form of culls and reduced transport costs and I think that aspect of the problem should be considered.

MR. BULL: A small point there. In the South Island there has been quite a considerable replacement of Border Leicester and English Leicester by Romney and Southdown yet there are no more ewes. In the South Island the number of ewes is just about the same as the 1939 level.

DR. WALLACE: The Leicester ram is a much better fat-lamb sire than is the Romney ram but I am proposing a system whereby you are going to supply ewe replacements on a class of country where you cannot normally do that.

MR. BULL: I was just pointing out that they seem to have discarded that idea in the South Island.

DR. HAMILTON: I think we have two opposing points of view here. We have one point of view which says we have 27½ million acres of hill-country and about 6½ or 7 million acres of good ploughable country. The question is whether we are to retain that 27½ million acres, or the greater part of it, in production or whether we are to write it off and find how to provide the ewes that that land can no longer provide by breeding them on the 6½ million ploughable acres we have. Those are the two extreme points of view. It seems to me that this broadly opens up the major headache that is going to face us, agriculturally, in the course of the next 20 years both from a technical point of view and from a political point of view. What are we going to do with the hill-country which, under the present cost structure, has become marginal? Do we say that because country has fallen down to one ewe per acre that the only sensible thing to do is to write it off because it does not pay us to topdress it? I can't remember the exact area of the hill-country that would fall below that level of stocking but roughly it would include the 12 or 13 million acres of South Island tussock country and I think about 6 million of the 17 million acres of hill-country in the North Island. I think that both the present speaker and Mr. McGuinness have opened this question up very well. I would like to see it discussed on that broad basis rather than in terms of detail. My feeling is that the farmer on the marginal or sub-marginal country cannot afford the measures that are

necessary to bring that country back into production. If we are going to carry on and increase the carrying capacity of the flat-land as we have done in past years there obviously must come a time when the present system of buying-in ewes can no longer be continued unless the hill-country increases correspondingly in carrying capacity. Are we going to accept Dr. Wallace's solution or Mr. Bull's solution? I think that is really the question we should debate.

DR. DRY: Could I ask Dr. Wallace if he would explain how to get those ewe lambs in lamb? Would it require hormonal treatment? Can a reasonable proportion be got in lamb? I did some experiments but I got so few in lamb that I gave them up.

DR. WALLACE: As far as this question of getting ewe lambs in lamb is concerned not nearly as much work has been done in this country as perhaps should have been done but I think the situation would be this. In the case of Romney ewe lambs, if the rams are put out over the normal tupping season there would not be a very good lamb percentage. Work that has been done in the United States on the mating of lambs shows their lambing percentages to be round about 60 or 70 per cent.

In a particular experiment in the United States where two groups of sheep were run on this basis, they took ewe lambs, pair for pair, weight for weight. One ewe lamb was put to the ram and the other held over to the two-tooth stage. They ran those two flocks through for six years and when they compared the aggregate sales of meat in the form of weight of lamb, the flock that was mated as ewe lambs left the other behind by quite a handsome margin. If we are putting Romney lambs to the ram I think we should get a poorer result than if we were using crossbreds. I think, however, that even with Romney lambs, we should be able to get about 60 per cent. in lamb, provided we are prepared to put with autumn lambs.

MR. BULL: The ewe lambs that come down to the flat are culls and the ewe lambs that stay on the hills have a pretty chequered career. About April or May a large proportion of them are very poor and I think that they would all die of fright if you put a ram in with them then.

DR. WALLACE: I am not suggesting that you mate your ewe lambs on the hill-country. My proposal refers to breeding fat lambs on the flat. I think that one reason why few ewe lambs have been put to the ram in this country is because the man on the flat-country has not been concerned with ewe lambs and the man on the hill-country knows it is not a good proposition.

MR. HANCOCK: I would like to agree with Mr. Bull, that it is futile to put ewe lambs to the ram on hill-country. I tried to speed up an experiment and had a mob of 140 ewe lambs and all of them were mated on the flat. Out of those only three got in lamb and one of those aborted. All of them came on heat. I know farmers up North Auckland made a practice of putting a proportion of their ewe lambs to the ram. Those are the type of farmers who had rich flats and they thought that was quite a good method.

MR. CRAWFORD: I would like to discuss this matter on the broad basis that Dr. Hamilton has suggested. I think Dr. Wallace, having put forward his suggestion of what can be done with the flat-country, if he does not contemplate depopulating the hill-country entirely of men and sheep, should suggest what will happen to it? Will the people there, as I imagine they would, hold on to their country and attempt to produce as much as they can? They do fatten quite a considerable amount of their wether lambs and some of them even carry two- and four-tooths and fatten them. They have their wool cheque and they will have also a certain amount of revenue from

cattle. They might be able also to supply store stock. I am just wondering how the whole economy of the two types of land will get along. I was wondering whether Dr. Wallace had considered how the hill-country would progress, "paddling its own canoe."

DR. WALLACE: I am not suggesting that the whole of the hill-country should be abandoned. What I am saying is that it seems a most unsound practice from a national point of view to subsidise a failing industry. I think that in general we ought to support and encourage those industries that are standing on their own feet. If a given amount of manure can raise the carrying capacity of one-sheep-to-the-acre country to four-sheep-to-the-acre country, then from the national point of view surely it is better that that manure should go on to the better country. I feel that this portion of country—that cannot be self-supporting unless it is subsidised—ought to be allowed to go out of production and the subsidies that would have been given to it should go to a higher class of hill-country. We should concentrate on that rather than on our lower class of hill-country.

MR. WARD: Seeing that income is probably at a peak and there is no sign that costs will decrease but there are signs that income may decrease, how long will it be necessary to go on subsidising the hill-country, and will the subsidies be increasing? If a subsidy is given to hill-country farming at the moment will that be in the form of an investment where the subsidy can be withdrawn after a short time or will it be of an increasing nature? I think that is inherently Dr. Wallace's question.

DR. HAMILTON: I would like to make a further comment. I think the question revolves round whether, on a long-term basis, we think the country that cannot meet its own costs to-day is permanently submarginal. I would agree that there is some proportion of the country which is permanently sub-marginal and which we must expect to go out of production. I am not prepared to guess what area that may represent. However, I think that even the farmers on those areas would go down smiling if they felt they were not the only people who were not being subsidised in New Zealand—in other words that there were no other uneconomic industries being subsidised.

MR. ROWLANDS: I am quite interested in this aspect and I think it is worth mentioning that the percentage of Southdown lambs reaching the freezing works of the country is well under 50 per cent. I think prices rather than subsidies to be the best mechanism for adjusting ewe slaughterings. You know yourself quite well that it suits some farmers to put every fat lamb through the works and a lot of them have Romney ewe lambs. If they overdo that on the hill-country, for instance, and find they have to pay more for their ewe replacements than they received for their ewe lambs going to the works they very quickly adjust their economy. Farmers should not be able to make a lot of money by putting all their fat-lambs into the works without any consideration of replacement and have the Government subsidise the price of replacement ewes.

MR. BULL: There is always a time lag in these things. Probably a lot of people would turn over to the Romneys and by the time the Romneys became two-tooths there would be a surplus of them. They would then go back to the Southdown.