INTENSIVE PASTURAL MANAGEMENT AND THE ESTABLISHMENT OF DAIRYING IN CONJUNCTION WITH CANE-GROWING UNDER PROPERLY ORGANISED CONDITIONS.

By Mr. JOHN FISHER, Principal, School of Agriculture, Cedara.

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The Congress continued at 10 a.m.

CHAIRMAN: I have great pleasure to-day in introducing to you the Principal of the Cedara School of Agriculture. It is quite a number of years since we had the pleasure of Mr. Fisher's presence at out meetings. Some of you will remember the address he gave us a number of years ago and I am sure to-day's address will be equally interesting. I sincerely hope this will not be the last occasion on which Mr. Fisher will address us. (Loud applause).

Mr. JOHN FISHER then addressed the Congress

Upon many occasions the idea has been expressed that the Natal Coastal belt is suitable for dairy farming. The enthusiasts have even gone so far as to say, in support of their contention, that the grass is green even in the winter! Green grass, even in winter, may not be worth much. The rosy blush of health on a maiden's cheek is quite different from that colour more or less similar in appearance on her grandmother's! Colour does not make the quality lying underneath.

We are in a transition stage today. Producers are looking in all directions for something that they can produce, for which there will be a demand, and such that the interaction of supply and demand will give them a price to cover their labour and efforts that they put into it. Just at the moment there is a very decided restriction in the amount of circulating money, with its resultant effect on price-levels. We hope that it will be but a temporary phase, and that we may return to what we consider normal at an early date. If prices do not return then the primary producer will certainly have to overhaul his system. The request for me to address you on this subject today, indicated that amongst the sugar growers there is the beginning of an overhaul. I am very pleased to be here and give you a few facts and some thoughts on the subject chosen. Let me state right at the beginning that I am enthusiastic concerning what can be done on the coastal belt. There are very fine possibilities, but the farmer who has not been a good cane farmer, will not get a first class certificate as a dairy farmer. It will require just a little more knowledge, application, determination, etc., to succeed in the new sphere than in the present.

Dairy farming on the coast will find itself in competition with dairy farming elsewhere, and on coastal lands, valued at £15 to £20 per acre, a greater production will be required than where land is procurable at £1 to £2 per acre. There will have to be a greater output per acre on the coast to yield the same profit per acre, than elsewhere, and later on we must come back to what is necessary.

What are the factors required to make intensive dairying a success? You will put down in your mind a number of factors which you need. Let us check up your factors with those I have put down. First, the personal factor of the owner. For intensive work where a knowledge of stock, pasture management, fertilizers, values, costs and returns come into the picture, and where the stock and the pasture must be first grade, we cannot get along with a grade three farmer. Thus the personal factor ranks high. Secondly, a good supply of rain. Production cannot be intensified unless this factor is well met. On the coast I think it is very well met, and in Durban particularly it is real farmers' weather, raining in the evening and at night and being dry through the day. Your rainfalls, if I can take the Mount Edgecombe figures as being a fair average, are around 40 inches per annum. Sometimes they are higher,—frequently, you challenge, they are lower. They are superior to the inland rainfalls, and in addition you have a more moist atmosphere which is to the good of the grazing, adding to the efficiency of the rainfall. Third, an absence of any serious limiting factor amongst the stock you are going to work with. If Nagana were prevalent it would certainly put a very great question mark after the proposal to establish pastures on the coastal belt. There are endemic diseases, red water and gall sickness, which may have an important role or which may be more or less fully combatted. Cane lands which have been planted with cane for years should carry practically no tick life. Planted pastures, on such lands, correctly managed should carry very few ticks. Regular and consistent dipping, with special attention to ears and tails, should keep tick life down to a minimum, with the result of no deaths due to tick borne diseases. Young stock reared on the coastal belt will have the natural immunity of the existing strain to red-water and gall sickness. Adult stock brought into the coastal belt might suffer due to a somewhat more virulent coastal strain. Inoculation in such cases would be a recommendation, together with a movement when tick life was at its minimum, to

the safest pasturage. Apart from this there is no reason why stock will not thrive and produce. Sweating sickness has not occurred on the coastal belt so far as I am aware. In parts of Zululand certain areas have been affected, particularly calves between certain ages at certain times of the year. This age factor can be circumvented by efficient cattle management. Fourth, the market. This would set the limit even with the other factors satisfactory. Competition will naturally be great in a business where many people are already engaged. The supply and demand regulate the price. Is the price a payable one, in view of the cost incurred, and in view of the cane growing which the intensive dairying is going to compete with, or be an alternate to? These are factors to be taken into consideration. When they are thought out, they will convey the impression that there is a good chance. Factors of shade, water supply, paddocking, cooling plants, etc., are minor to the ones already stated. Let us consider them what we can do and what is required.

For a whole milk trade there is an all the year round supply necessary. For a butterfat selling business, there is seasonal production necessary. A modification of the management of the stock and the pastures can be brought about to suit either of these conditions.

Our cheapest production of dairy products is that which is made on grass,—grass with the blush of youth still on it. It is possible to have grass so good that it will maintain a 3-4 gallon cow without any concentrates being fed at all. This is intensive grass. Grass is like beef,—the older it gts the tougher it gets. Young grass is what the dairy cow must have, not the old withered and wrinkled grass of the coast in winter. Those who have tried to get milk from cows fed on old coast grass in the winter, have another think coming. We require young grass all the year round if we can get it, and I think we can on the coast. It will require some organisation, some thought, some management. If we cannot supply these, then we should be well advised to leave the job alone.

HOW TO GET YOUNG GRASS.

Feed it off, and then see that there is enough food in the soil to make it grow rapidly. Feed it off in three to four days, then rest it about four times as long. The grass will then be all young, ready for the cows again. It must be remembered that a constant cropping of young grass, without allowing a period of rest will lessen the vigour very much: in fact it may kill the grass entirely.

WHY COWS NEED YOUNG GRASS.

Cows need young grass because it has a high protein content, high digestibility, high palatability, high mineral content, and low fibre. Old grass has low protein, low digestibility, low palatability, high fibre and low mineral content. Generally speaking the higher the composition the higher the palatability. Cows however, may refuse high composition grass when it has been manured with cow stable manure. High protein content can be noted by a rich, almost black, green colour of the grass. Cows will always go for the dark green stuff, and not for the sickly yellow material. Grass properly managed and rotatively grazed will maintain a high nutritive value. Most grasses when young are fairly good, but some have much greater powers of reaction than others. Red grass in winter may be as low as under 3% crude protein, whereas Kikuyu in summer may be as high as 28 to 30% crude protein on the absolutely dry matter. 3% crude protein will not even maintain an ox when at work, hence its hopelessness for the dairy cow; hence many disappointments that the cows will not milk on beautiful red grass! There is a balance in the dairy business. High quality farmers want high quality cows, which require high quality pasturage, which demand high fertility in the soil, which must be maintained by correct fertilization. Kikuyu is one of the highest quality grasses we can grow. It demands very high quality soil, remaining poor and stunted on poor soils. Lack of vigour in Kikuyu is not due to any rootbound condition but to a lack of the essential plant food. Grass when eaten young is always rich in protein, and if the product of the pasture is removed there is a fairly heavy drain of nitrogen from the soil. Grass is thus different from other crops and calls for a different fertilizer treatment. Its fertilizer requirements are in the following order:—Nitrogen, Phosphates, Potash, and Lime. Nitrogen may be supplied in several different forms, as Nitrate of Soda, Sulphate of Ammonia, or in organic combination. Nitrates are the quickest; Sulphate of Ammonia will show its influence in ten days time, while organic forms will take a longer time. Where Lime is added Supers can be used for the Phosphate requirement. Little Potash is normally required. A standard spring dressing of fertilizer might be:—

200lbs. Sulphate of Ammonia,
300lbs. Superphosphates,
40lbs. Muriate of Potash,
1,000lbs. Lime,

followed by a top dressing during the season of another 200lbs. Sulphate of Ammonia, once or more often as the pasture requires it. The amount of fertilizer to be applied must be determined by the return. From an acre of good pasture from two to five tons of more of milk may be secured. Good British pasture is held to contain around 20% protein and a mineral matter of 1% lime and 0.75% Phosphate. The high lime content is very likely due to a high percentage of clovers with a higher lime content. We have never secured this high lime content here, but have had up to 1% Phosphate. Kikuyu should be one of the main grasses for the coast belt. In the sweet sections Rhodes and Guinea grass, in damp bottoms Paspalum, or where the soil is heavy or clayey. Finger grasses would also do in the dryer areas to be largely reserved for winter grazing. I wish to say here that any

one of these grasses farmed in one way will not provide grazing right through the year. Even on the coast there is a period of growth and a period of quiescence. Your cane does not grow in the winter. The younger the plant cane when winter comes the longer will it continue to grow into the winter. The same thing applies to grass. Kikuyu in a sward several years old will make very little growth into the winter months. Freshly planted Kikuyu, say February or March will grow for a long time into the winter. Sward form of Kikuyu ploughed up to aerate the soil and kill many roots will stimulate root development and growth will continue into the winter. In this way the grazing season may be extended. The degree of intensity that can be reached with Kikuyu grass depends only upon the £ s. d. of the proposition. 800 gallons at 4d. equals £13 6s. 8d. What amount of fertilizer may be used to make this a very profitable yield? 800 gallons at 1/- for the whole milk trade equals £40 per annum. Under the two divergent conditions there needs to be different degrees of intensity.

Regarding the breed of cow, I imagine someone thinking what breed of cow will be recommended? The breed of cow must be any breed that will fit into the conditions. If a farmer is going to sell whole milk and he does not get a higher price for 5% milk than for 3%, then a cow which will give a quantity of standard milk is indicated. If he has a special class of customer, who, tired of sugar wants more cream in the milk, then a high butter fat should be chosen. If a farmer is going to supply butter fat to the creamery, then he must study his problem further. If one acre of grass will maintain two cows during the summer of say the Friesland breed, they will give a certain amount of butter fat. If he can keep three jerseys in place of two Frieslands then he will get almost as much milk but more butter fat. During the present summer—one of the most difficult I have experienced in twenty-four years at Cedara—I have kept three Jerseys on one acre of Kikuyu from October 18th until today (March 29th), and they are still there with heaps of grass, and in addition I have had to cut and remove several tons of grass from this acre as well. I merely mention this to show what can be done under intensive conditions. On the coast it should be possible to reach this figure also, and by proper care and attention to the management to have grasses available in the winter as well, and so have a very cheap way of maintaining the cows through the winter.

Perhaps in my remarks I have thrown out a line of thought that you can follow, and if there are any questions I am prepared to do what I can to answer them. I know that people are usually rather diffident about asking questions at a meeting and if you wish you can write to Cedara and we will do our best to answer any inquiry.

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At the conclusion of his address Mr. Fisher was enthusiastically applauded.

CHAIRMAN: If you have enjoyed Mr. Fisher's lecture as much as I have then I am sure you have been spending a very pleasant time this monring. Mr. Fisher will be pleased to answer any questions now.

Dr. HEDLEY: I have enjoyed Mr. Fisher's lecture enormously, quite as much as Mr. Dymond and everyone else to whom I have spoken. It has been a logical sequence of argument and he worked it out to the end. I wrote down question after question but he has answered them as he went along, all, except one. What does he do with the manure that the cow drops on the sections? He tells us that when the cow sees that she holds her nose and goes elsewhere. There are going to be a lot of droppings; has he a tin can on the tail of the cow or what does he do? (Laughter).

Mr. FISHER: We have something better than a tin can on the tail! We have those dung beetles, and no sooner is the dung dropped when up they come and get busy and bury it as quickly as possible. So we get rid of the dung and it is not allowed to waste. But there is that little fact all the same. If you are going to force your dairy cows, to so starve them in the pasture until they round off those mounds, then you are going to reduce yields. If you have, as you generally do on the coast, a number of mules you put them in that pasture and they have not the same objection to grazing round those dung heaps. You will then get quit of that rank grass in that way by utilizing the mules as followers behind the dairy cows and they clean up that growth which is rather rank for the dairy cow, and therefore you have an even pasturage ready for the cows when they come round again next time.

Mr. LADLAU: How long afterwards will the cow be able to eat off that?

Mr. FISHER: Possibly the second or third time in the rotation of grazing.

Mr. PALAIRET: I am sorry that time is so short as a paper like this gives so much scope for the matters that arise out of it. So I am hoping we shall hear more from Mr. Fisher possibly next year. One point I would like to mention: Mr. Fisher pointed out that he has to cut his Kikuyu grass to keep it down. What can be done with that? I would very much like to hear from Mr. Fisher of their experiments which they are carrying out in connection with the German silage process known as the A.I.V. process, whether there is a possibility of economically using that grass by this process to provide a winter feed for the few months left, thereby enabling us down here to work all the year round. I do not know if many of our members

are aware of that process and possibly Mr. Fisher could give a couple of minutes on that. Another point is this: Mr. Fisher indicated the question of ploughing out and replanting. What would be the effect of a light sub-soiling with no ploughing or anything else say every second or third year in that field?

Mr. FISHER: The first point is a most interesting one, and of course to go into the whole question would take too long. But I might say that at the moment we have something like 40 to 50 tons of grass silage in our silos at Cedara made this year according to the A.I.V. process. We used treacle in the one case and we have used sugar in another. We have not used the acid process. In the meantime we have not been able to get any analyses of it as I have had one Chemist go on pension and we have had to do all the examinations of butter, but I hope very shortly we will be able to get a Chemist busy analysing that material and find out what success there has been with it. I personally think that the easy way to get stock feed through the winter is to conserve summer surplus; produce in the summer time and conserve it for use in the winter. I would just like to say that that phase of it is engaging our attention at the present time. With regard to the other question, we have not as it were just sub-soiled this Kikuyu grass but have run over it with a lucerne cultivator to loosen it up, and so far I have never been able to see the difference between the grass that was done and that which was not. Other people may have had different experience, but where we have fertilised steadily and maintained conditions I have not been able to see where the cultivator has gone and where it has not gone. There is this point of course when you plough up you destroy a lot of the roots which decay in the soil and there is a certain amount of fertiliser which becomes available which the living plants feed upon, but it is simply a case of assisting the running down of the clock, it is hastening the exhaustion.

Mr. PALAIRET: Why I mentioned the A.I.V. process is because it is particularly interesting to us owing to the fact that we have treacle available at practically no expense at all.

Mr. FISHER: We hope the thing will be a success, and if it is it will be conservation of summer surplus for the winter.

CHAIRMAN: If there are no more questions I ask you to accord Mr. Fisher a very hearty vote of thanks for his most interesting address this morning. I am sure we all agree that we should endeavour to get Mr. Fisher with us again next year. (Hear, hear and applause).

Mr. FISHER: If I have been able to say anything or suggest anything to give you a line of thought to work on in the future I have been only too happy to do it. I have enjoyed coming down and cracking a joke or two with you. (Loud applause).