IRISH CHAROLAIS NEWSLETTER

Irish Charolais Cattle Society
Irish Farm Centre · Bluebell · Dublin 12 · Ireland
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EDITORIAL

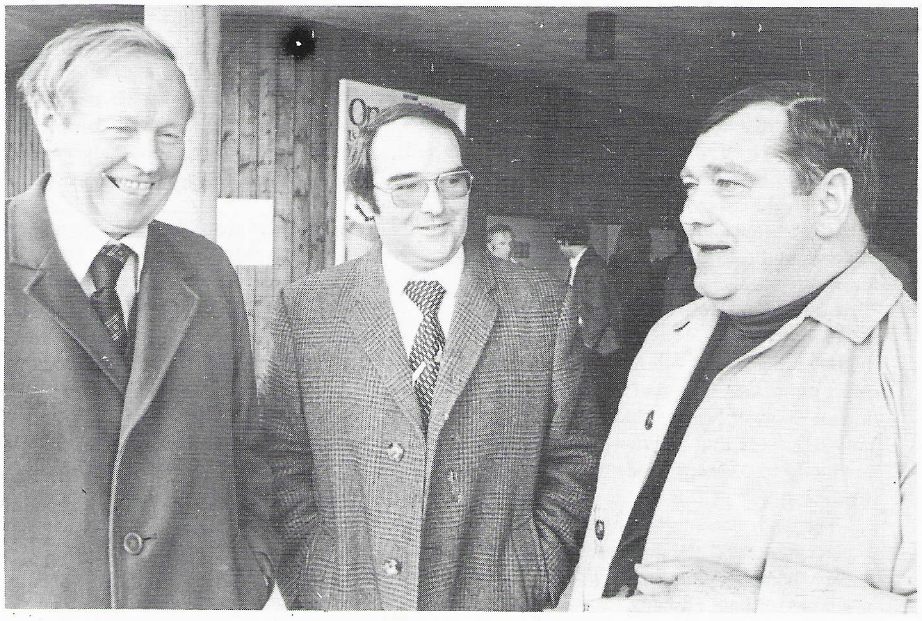
Reporters', through the various news media, reporting on livestock prices, invariably quote **Charolais** as top of the market. Why, you may ask, is this so? The answer is simple – **Charolais** cattle are the most economic converters of animal feed into lean meat.

The General Manager of a large meat processing plant recently stated that the time had come for the introduction of a classification scheme for all animals entering Irish meat plants. This is essential from the producers' point of view and will encourage them to breed the type of animal best suited to this classification system. As the market now stands an overfat animal realises a price equal to that of a well finished **Charolais.** Surely, a big lean **Charolais** that does not have to rely on intervention should make more money than the predominant British breeds. I therefore urge each member to use their influence in every way possible to ensure that a bonus of at least 7p per kg. should be paid on all **Charolais** animals reaching the factory. Why should we stand idly by and accept unrealistic prices for lean meat acceptable to every housewife in Europe? The Continentals demand lean meat, why should we try and market inferior meat when we can so easily satisfy this demand with **CHAROLAIS.** I have no doubt that farmers will respond as soon as a definite premium is announced. This premium will give the processing plants a credible reputation with their buyers and a built in confidence will then emerge between the producer, processor and consumer. This is what marketing is all about and we urge each member to become actively involved in bringing about the necessary changes.

Recent results from the National Testing Station at Tully demonstrates the efficiency of the **Charolais** as a converter of food into meat. In these times of high production costs this factor is of the utmost importance.

A complete calving survey has been carried out by the A.I. Stations in conjunction with the Dept. of Agriculture, on at least six **Charolais** bulls and further data on the remaining bulls is presently being compiled. A number of these bulls have shown up extremely well in this survey. With a dystocia incidence as low as 1% in some bulls, this compares very favourably with any other breed. Discuss with the Manager of your A.I. station the merits of using a **Charolais** bull and he will advise you on the particular bull best suited to your herd.

A joint approach by all interested parties will certainly make **Charolais** the most sought after breed in this country.



Department of Agriculture Officials Mr. D. O'Driscoll and Mr. N. Ryan with prominent Charolais Breeder Mr. P. Pentony of Swords at Goffs Charolais Sale. Photo: S. Treacy.

PEDIGREE IMPORTATION FROM FRANCE

Unfortunately, due to an outbreak of foot and mouth disease on the Continent, the proposed importation of pedigree cattle from Europe has been deferred. Should you be interested in importing pedigree Charolais please contact the Dept. of Agriculture (Section 7) and they will let you have full details. The infusion of new blood lines is welcomed and must be encouraged.

CHAROLAIS COUNCIL MEMBERS — 1977

President:	Mr. J. J. Kelly, The Twenties, Drogheda.
Vice-President:	Mrs. E. Gardner, Ministown, Laytown, Co. Meath.
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	Mr. P. Doyle, Glencarrig, Oldbawn, Tallaght, Co. Dublin.
	Mr. B. Monaghan, Staffordstown House, Navan, Co. Meath.
	Mr. E. McCullough, Elmgrove, Gormanstown, Co. Meath.
	Dr. F. Austin, 19 Calderwood Rd., Dublin 9.
	Mr. F. Harte, Legnakelly, Clones, Co. Monaghan.

THE PERFORMANCE OF BEEF CROSSES FROM THE DAIRY HERD

Dr. F. J. Harte.
Agricultural Institute, Grange.

The breeding structure of the Irish cattle population is different to that of most European countries in that, the proportion of beef to dairy cows and the extent to which beef bulls are used on dairy cows, is higher than elsewhere in Europe. Just short of one-third of our national cow herd are single sucklers. It is estimated that 64% of dairy cows are now Friesian or Friesian type. The change from a mainly shorthorn national herd of some years ago to a Friesian or Friesian type herd is now almost complete. The overall breeding policy in the country is important when we realize that all or almost all animals in the national herd are eventually slaughtered for beef be it prime or cow beef. It will be necessary to breed well over 50% of the dairy cows back to Friesian in order to provide sufficient herd replacements. Indeed various disease eradication schemes could result in even more replacements being required. Friesian steers (and/or bulls) and culled cows (particularly with the trend towards high feeding levels) will therefore remain a most important source of beef. If we use higher levels of feeding than heretofore, we can expect that Friesian male progeny are likely to be increasingly acceptable in Europe.

The dairy cows not being used to provide replacements and the cows of the national suckler herd are therefore the only ones available for beef crossing.

In single suckling, it is now well accepted that decreasing nutrition immediately before calving eases and mostly eliminates any calving problems that might occur. We, therefore, can expect and should hope for a major increase in the use of continental breeds in our single suckler herds. This could make a major national contribution to our beef supply. In particular, it would produce the type of animal that is in good demand in Europe and would improve producer income due to faster growth and improved quality of the continental cross cattle. Reducing nutrition while acceptable in the suckler cow is not acceptable in the dairy cow and consequently, the ease of calving problem is greater in dairy than in beef herds.

Breed of Bull

What breed of bull are we likely to cross on that portion of the dairy herd which is not needed to produce replacements? I fully realize that in dairying, difficulties in calving – however slight – can outweigh any advantage in performance when it comes to a farmer choosing a bull.

Table 1 gives the performance of some of the breeds and crosses we have compared at Grange.

Liveweight Performance

The earlier experiments were concerned with the performance of the progeny of Hereford (H) and Aberdeen Angus (AA) bulls while in later experiments, Charolais (Ch) and Simmental (Simm) bulls were used. The dam breeds were Friesian (Fr) and Shorthorn (Sh).

There is obviously considerable variation in liveweight gain in these particular experiments but when my colleagues in the Institute, More O'Farrell and Cunningham analysed these figures together with some others produced at Grange and presented them relative to each other, the following picture emerged: (Table 2)

The approximate 7% advantage in growth rate in favour of Charolais crosses is, I think, now well accepted and of course if we are killing at higher weights in the future, something which is probable, the advantage in favour of the continental breeds is likely to be considerably greater.

Table 3 shows the effects of not castrating the bulls.

These results are the means for different bull versus steer experiments at Grange and cannot be used to compare breeds and crosses – they show the effects of castration on liveweight performance. We can see that in all breeds, there is very considerable extra gain to be obtained by not castrating bulls. Greater liveweight gains can be obtained by leaving the bulls entire than by changing the breed.

Dressing-out Percentages

Sometimes, producers put a lot of emphasis on dressing-out percentage. It is really only important when the returns are compared to what might have been paid for the animal alive. As long as there is an alternative live trade, the relationship between dressing-out percentage and the liveweight is obviously most important. If the day comes when there isn't an alternative trade, as is more or less the case in pigs, then dressing-out percentage would be of less interest to the producer. Then factors like lean meat production and efficiency of feed conversion would be the important ones.

Where animals are killed at a constant degree of finish and this is not always easy to determine, then there is not much difference between breeds and crosses in dressing-out percentages. There is a tendency for the beef crosses to dress-out better than the dairy breeds. An example of dressing-out percentages of 'finished' breeds and crosses are given in Table 4.

The figures in Table 4 should only be looked at relative to each other. The final slaughter weight was based on that taken at slaughter house immediately before slaughter (not the "farm" weight) and hence the high dressing-out percentages. They also include the kidney and channel fat in the weight of carcass. These fats are now removed at the slaughter house before the carcass is weighed and this has the effect of reducing dressing-out percentages by about 1½ percentage units (kidney and channel fat weights vary considerably and can range from 2 to 5% of the hot carcass weights).

Carcass Composition

Carcasses are broken into 3 components – bone, fat and the remainder lean. It is the latter that is the expensive part. The average price of lean at the factory is 24 times the price of bone and 6 times the price of fat. So it is the amount of lean in the carcass that is the important criterion in the long run. Breeds, and in particular the stage at which they are slaughtered, influence carcass composition. In experiments we carried out some years ago, there were very big differences in percentages of lean and fat in the different breeds (Table 5).

The animals were slaughtered when they were considered to be 'finished' and the term lean meat is everything other than pure fat and bone. The figures should therefore be looked at relative to each other.

The composition of Friesian, Charolais and Simmental crosses are given in Table 6. The lean cuts were trimmed as for the American Box Beef trade and the results cannot be compared to those given in Table 5 both because of the dissection and because the animals were on different experiments.

It is worth looking at the effect of leaving the animal entire on carcass composition (Table 7).

It can be clearly seen that leaving the bull entire decreases the fat content and increases the lean content very considerably in both the Friesian and Charolais crosses.

The ability of the continental crosses to produce lean meat is extremely important. Because of their faster growth rate and leaner carcasses at the heavier weights, the extra yield of lean can be very significant. This point is clearly demonstrated in Table 8 when we expressed the yield of lean meat in absolute terms.

In the calculations in Table 8, I have made various assumptions. I started with a Friesian carcass of 280 kg – a quite achievable weight for a Friesian steer from a 2 year old beef system. I have made the assumption that the Charolais steer would be 7% heavier than the Friesian steer and the bulls 10% heavier than the steers. Looking at our various experiments, I have concluded that a Friesian steer carcass contains 66% lean and a Charolais cross steer 68%. The Friesian and Charolais cross bull carcasses I concluded would contain 71 and 74% lean respectively. Finally, I have assumed a price of 150p/kg for lean meat (approx. 68p/lb). Obviously, if the price of lean meat was higher, then the difference in favour of the Charolais crosses would be much greater and of course, if the animals were slaughtered at higher weights as is likely in the future, this would also further favour the continental crosses.

SUMMARY

The emphasis is likely to be on lean meat in the future – as meat becomes more expensive we are unlikely to be able to afford fat – because it is too expensive to produce through the animal and certainly, it is too expensive to sell at a low price. As the processing industry develops, fat will become unacceptable at the factory. The data in Table 8 really emphasize the ability of the continental breeds compared to the traditional beef breeds to produce lean meat. Since we are likely to be killing even heavier cattle in the future (as is at present the case in France) in order to spread high calf prices over bigger carcasses and due to high killing and processing costs, we can expect still greater emphasis on the use of continental beef crosses. The calving problem could, however, be the big obstacle standing in the way of the greater use of these big breeds on the dairy herd. The survey being undertaken by the Department of Agriculture should, however help to pinpoint "easy calving" bulls.

TABLE 1

Liveweight performances (kg) of different breeds and crosses

Exp. No.	BREEDS Fr.	H x Fr	Ch x	AA x Sh	Simm x	H x Sh	Age (days)
1	469.6	–	–	439.0	–	474.7	740
2	409.9	–	–	–	–	393.3	595
3	399.5	–	–	376.4	–	392.3	588
4	–	483.6	498.2	–	–	488.1	600
5	551.0	–	546.0	–	–	–	720
6	–	–	522.0	–	515.0	–	720
7	–	318.0	312.0	–	–	–	330
8	486.4	464.9	514.0	–	496.1	–	600
9	455.5	451.1	453.6	–	462.3	–	500

TABLE 2

Comparison of growth rate for different breeds and crosses on a relative basis

Relative daily gain (kg)					
Fr.	H x Fr	H x Sh	Ch x	Simm x	AA x Sh
100	100	98	107	103	94

TABLE 3

Final liveweights (kg) and percentage difference between bulls and steers slaughtered at 2 years of age

	Bulls	Steers	% growth rate in favour of bulls
Friesian	562	514	10.1
Ch x	605	546	11.2
Simmental	558	515	9.0
H x Sh	471	441	8.13

TABLE 4

The dressing-out percentages of different breeds and crosses – all considered to be 'finished' at slaughter

	Fr	H x Sh	AA x Sh
Wt. at slaughter	537.7	498.1	450.1
Age at slaughter	723	695	659
Dressing-out percentage	57.7	57.3	57.9

TABLE 5

Hot carcass weights (kg) and lean, fat and bone as percentages of carcass weight

	Fr	H x Sh	AA x Sh
Hot carcass weight (kg)	309.7	283.8	260.5
Lean %	71.1	65.8	67.0
Fat %	15.3	22.8	21.0
Bone %	13.6	11.5	11.9

TABLE 6

Hot carcass weights and lean, fat and bone as percentages of carcass weight

	Fr	Ch x	Simm x
Carcass weight (kg)	289	296	285
Lean trimmed cuts %	64.1	68.7	67.6
Fat %	18.6	14.4	16.5
Bone %	16.3	16.8	15.5
Lean to bone	3.93	4.08	4.36

TABLE 7

Carcass composition of Friesian and Charolais cross bulls and steers

	Friesian		Charolais x	
	Bulls	Steers	Bulls	Steers
Lean %	71.8	64.1	74.3	67.2
Fat %	10.7	18.6	10.4	17.0
Bone %	15.7	16.3	15.3	15.8

TABLE 8

Carcass weights, estimated yield of lean meat and financial returns from Friesian and Charolais crosses as bulls or steers.

Breed	Carcass weight (kg)	Lean meat % in carcass	Absolute yield of lean meat (kg)	Returns @ 150p/kg
Friesian (steer)	280	66	185	£277
Charolais (steer)	300	68	204	£306
Friesian (bull)	308	71	219	£328
Charolais (bull)	330	74	244	£366

NEWS ITEMS

COMMERCIAL CLASSES SPRING SHOW 1977

With a record entry of almost 100 commercial Charolais cattle the judge, Mr. Basil Donnelly and the Secretary had a difficult task in choosing the fifteen animals to be catalogued. A final selection of nine animals to represent the breed will be made immediately prior to the show.

The overall standard was extremely high and our thanks are due to all those people who put cattle forward for selection.

The cattle will be judged by the British Judge at 3.45 p.m. on Wednesday 4th., by the Continental Judge at 2.30 p.m. on Thursday 5th and will be sold, in the Simmonscourt Extension, R.D.S., on Friday at 10 a.m.

SPECIAL CHAROLAIS COMMERCIAL SALES

Already this year a number of special Charolais commercial sales have been held in various marts, with outstanding success. We have received reports from Tulsk, Gort Tipperary and Ashbourne and all have been most satisfactory. We would encourage this type of marketing and urge all our members to support these sales.

BULLS SALE – R.D.S. – 1st MARCH, 1977

Class 36: Charolais bull born on or between 1st Oct. 1975 and 31st January, 1976.

1st: FARMLEIGH MICHAEL, bred and exhibited by The Earl of Iveagh, Farmleigh, Castleknock, Co. Dublin.

2nd: MEATH MAHARAJAH, bred and exhibited by Mr. B. Monaghan, Staffordstown House, Navan, Co. Meath.

Class 37: Charolais bulls born in 1976 on or between 1st February and 30th April.

1st: FARMLEIGH MONTAGUE, bred and exhibited by The Earl of Iveagh, Farmleigh, Castleknock, Co. Dublin.

2nd: FARMLEIGH MATTHEW, bred and exhibited by The Earl of Iveagh, Farmleigh, Castleknock, Co. Dublin.

3rd: FARMLEIGH MORGAN, bred and exhibited by the Earl of Iveagh, Farmleigh, Castleknock, Co. Dublin.

4th: MINISTOWN MAXIMILIAN, bred and exhibited by Mrs. E. Gardner, Ministown, Laytown, Co. Meath.

Top price of the sale, 840 gns., went to The Earl of Iveagh, for his bull 'Farmleigh Matthew'. This was a very useful type of bull he had grown extremely, well even though he was not yet one year old. The bull was bought by Mrs. O. Mills, Culdaff House, Culdaff, Co. Donegal, who has a large grading-up herd as well as pedigree.

BIRTH NOTIFICATIONS – A.I. DOCKETS

You are all aware that all animals, male and female, pedigree and grading up must be birth notified within 14 days of birth. The birth notification must be accompanied by the appropriate A.I. docket. In future the A.I. dockets will not be accepted unless the following details are filled in:

(1) Date of insemination
(2) Name of owner of cow
(3) Name and tattoo number of cow (tag number will not suffice)
(4) Name and code letters of bull

NO CALF WILL BE ACCEPTED FOR REGISTRATION UNLESS THE DETAILS ON THE A.I. DOCKET ARE COMPLETED AS STATED ABOVE.

ANIMAL QUARANTINE STATION FOR AUSTRALIA – source "Country Life" of Australia.

Because of financial priorities Federal Government is deferring construction of an off-shore quarantine station. It hopes to go ahead with the idea soon, maybe next year, according to primary industry Minister, Mr. Ian Sinclair.

There are several informal suggestions that private interests who want to import stock might finance a high security import station.

The Government would co-operate technically so long as quarantine specifications were met.

Proposals have been floated around for Cocos Island, the New Hebrides and some less likely places. The Government would not restrict private enterprise and would co-operate with any worthwhile proposal.

In Canberra recently Mr. Sinclair said "All livestock industries seem prepared to pay the charges to put animals of all types through the station. For sheep, cattle, pigs and horses, importers seem interested all round and it might well be that private enterprise can get this going before the Government.

I would be all in favour of private interests action. The wise thing would be for them to put up a proposition. I think the capital cost would be about $2 million. There is a lot of money to be made in multiplying for re-export as well as in upgrading flocks and herds in Australia. The profit is there and any commercial operator with the know-how and capital could be assured of Government co-operation.

Mr. Ian Cameron-Stephen, the Assistant director-general of animal quarantine, is anxious to have a quarantine station established as soon as possible. Full cost of quarantine for animals from Europe (except the United Kingdom) Canada and the United States through a Government-owned station is about $4,400 for adult cattle, $2,200 for calves and $500 for sheep or pigs.

Quarantine costs through a station owned by private industry would be higher than these.

Direct imports from Britain, Ireland and Northern Ireland would be substantially less, especially as there are no exotic animal disease tests required.

In any event it would take about 2½ years to complete the station once the go ahead was received for its construction and it could be receiving livestock six months later.

GRADE A FEMALES

As and from 1st January, 1978, Grade A (half-bred) females will no longer be accepted for registration.

To-date approx. 2,500 Grade A females have been accepted for registration and it is felt that this is a sufficient number on which to build a national pure-bred herd.

CHAROLAIS SALE AT GOFFS

The first Spring Sale of pedigree and grade register cattle held at Goffs, Kill, Co. Kildare was an outstanding success. In just over 12 months the price of pedigree Charolais bulls has doubled. Three-quarter bred bulls sold very well with a top price of £945. This was paid for a yearling bull sired by Shamrock Commodore (IC 9) out of a half-bred Charolais cow, the property of Mr. Joe Gilfillan, Kilmore House, Carrick-on-Shannon, Co. Roscommon.

The top price pedigree bull, also a yearling realised a price of £1470. This bull 'Farmleigh Myles' the property of the Earl of Iveagh, Farmleigh, Castleknock, Co. Dublin, was sired by his own stock bull 'Farmleigh Edouard' out of a full French imported cow 'Farmleigh Fecule'.

Three bulls from the Farmleigh herd found new homes in the Highlands of Scotland.

Top price female 'Glencara Io' bred by Mr. J. Bellingham of Glencara, Rathconrath, Co. Westmeath, exhibited by Mr. F. McInerney, Kelston, Bray Rd., Foxrock, Co. Dublin, sold to Mr. T. W. Taylor, Fyfin, Strabane, Co. Tyrone for £3,675. This was an extremely good cow and is typical of the stock now being produced by our Irish breeders.

Pedigree bulls averaged £1020 with a price range of £600 to £1470.

Pedigree females averaged £1770 with a price range of £1000 to £3675.

Three-quarter bred bulls averaged £740

One three-quarter bred female entered and sold realised a price of £525

Footnote:

In the interests of good marketing absenteeism cannot be accepted except on veterinary advice.

CENTRAL PERFORMANCE TESTING AT TULLY

S. A. O Leary, Manager Tully Bull Testing Station.

INTRODUCTION

Central performance testing of beef breed bulls is a key element in beef cattle breeding programmes in many countries. It is a procedure whereby animals from several herds are brought together and evaluated on the basis of their own performance under uniform conditions of feeding, housing and management. Central performance testing commenced in Ireland in 1973 and there are facilities for the individual testing of 96 bulls at the Department of Agriculture's testing station at Tully, Co. Kildare. To date a total of 359 bulls have completed performance tests at Tully.

Differences between bulls are due to two main sources:— their genetic make up and variation in the environments in which they are raised. Genetic differences are to a great extent passed on to their offspring while environmental differences are not. The selection of a genetically superior bull — the one that will breed the best — is a hazardous process when bulls are reared on many farms because the differences observed between bulls are due mainly to feeding, housing, management, etc. and to a much lesser extent to the genetic make up or breeding values of the bulls themselves. Central performance testing of bulls at Tully from a relatively early age in uniform conditions of housing, feeding and management minimises variation between bulls due to environmental factors and permits more accurate determination of genetic differences and hence of breeding value of bulls.

Selection of Bulls for Tully

The young bulls are selected from herds participating in the Department's on-Farm Recording Scheme. Only the better bulls in these herds are considered for performance testing. Those eventually chosen are on average about 10 per cent superior to their contemporaries in growth rate; they must also have a high standard of conformation.

Management at Tully

Each bull having been checked on entry is penned individually. The first 3–4 weeks is allowed as a "settling in" period. In general, the young bulls have only been weaned for a very short period before entry to the station, and problems which occur during this period are due mainly to the change in management, handling and feeding. Experience to date is that bulls which are weaned for some time prior to entry to Tully and halter trained, adjust to their new environment and feeding fairly readily.

Having passed through this "settling in" period the bulls go on test and are fed to appetite three times a day. The diet consists of equal parts of rolled barley and unmilled grass combined together in a single cube with required minerals and vitamins. About 2½ pounds of hay is fed at morning and evening feeds to help rumination. Bulls are regularily treated for external and internal parasites.

The bulls are exercised on a regular basis by both hand and mechanical methods. Some of the exercise is done in the field which encourages the animals to use their muscles and the remainder on concrete which helps to maintain their feet in good condition. The feet are also inspected regularly and trimmed if necessary.

Milled Peat is used for bedding and has proved very satisfactory. In the past straw was used for bedding but a certain quantity of this was consumed and it interfered with the intake of concentrates.

Since the animals are fed to appetite one of the main problems is that of bloat. A careful watch has to be kept particularly after feeding for symptoms of the condition. Other problems which are associated with this type of feeding and management are Pneumonia and Stomach Upset. If for any reason veterinary attention is necessary a Veterinary Surgeon is available at very short notice.

Data taken during the Test Period

Measurements taken during the test period are designed to provide information on the genetic merit (breeding value) of bulls in respect of important economic characteristics. Thus bulls are weighed at the start of test, at 28 day intervals during test and at the end of the test period. Daily feed intake is recorded for each animal and several height and length measurements are also taken. The results are circulated and made available at the annual sale which follows the completion of each test.

Interpretation of Data

Sensible interpretation of the data presented at Tully can be of real benefit to potential purchasers of bulls. One should be careful not to over-emphaise the importance of either pre test weight gain or of weight gained on test. Bulls "very well done" prior to test often have relatively low weight gains while on test; the reverse is also frequently true. Weight at the end of test should always be studied in conjunction with these figures. Scale in beef breed bulls is highly desirable and withers height is generally accepted as a useful guide to it.

Length of Test 168 days (1976–77 results)

Name of Breeder	*Name of Bull*	Age at start (days)	Average Daily Gain Pre-Test	Test	Adjusted 365 Day Weight	Food Conversion Efficiency	Withers Height (300 days)	Price paid
The Earl of Iveagh	Farmleigh Mervyn	236	2.91	2.74	103	115	99	920
Mr. B. J. Monaghan	Meath Maestro	234	2.48	2.94	96	104	97	740
Mr. J. J. McGrath	Curragrange Marshal	232	2.58	3.38	101	114	107	1000
Mr. H. R. North	Northbrook Martin	225	2.30	2.00	84	67	101	Withdrawn
Mr. B. J. Monaghan	Meath Major	223	3.05	3.38	112	119	100	1500
Mr. J. J. McGrath	Curragrange Matelot	221	2.74	2.71	100	101	101	970
Mr. J. J. Kelly	Moneymore Michael	214	2.56	3.00	101	107	99	1050
Mr. J. S. Bellingham	Glencara Milo	203	2.39	2.96	98	98	100	750
Mr. P. A. Pentony	Murragh Milo	201	2.46	2.44	93	97	93	770
Mr. D. Gold	Knappagh Major	196	2.36	2.55	95	87	100	720
Mr. H. R. North	Northbrook Manny	185	2.53	2.94	102	107	100	760
The Earl of Iveagh	Farmleigh Marquis	182	2.76	2.38	96	89	101	780
Nancy Countess of Dunraven	Kilboggin Majestic	182	3.31	2.65	111	101	102	720
Mr. F. McInerney	Scarriff Milo	179	2.48	3.43	110	107	103	850
The Earl of Iveagh	Farmleigh Edouard	178	2.72	2.48	97	92	98	740
Mr. J. S. Bellingham	Glencara Midas	170	2.42	3.39	108	102	101	900
Mr. F. McInerney	Scarriff Mark	153	2.28	2.78	96	92	101	780
	Average	201	2.61	2.83	1,070 lb	4.89	115 cms	872

BRUCELLOSIS

Frank Austin
19 Calderwood Rd., Dublin 9.

Brucellosis is an important disease of cattle that is also known as Contagious Abortion. The first name indicates the kind of bug that causes the condition whilst the second name tells us the main effect of the disease, i.e. abortions that spread rapidly within the herd. Brucellosis results in grave Economic consequences through the loss of calves and reduced milk production. The disease is transmittable to man where it causes a severe recurrent flue-like condition known as Undulant Fever. Most advanced countries have considered it necessary to eradicate the disease and many have successfully done so. These countries are now rightly reluctant to buy our stock and thus risk the reintroduction of the disease.

Brucellosis eradication began here in 1965 and the country can now be divided into three designated areas:–

(1) A Brucellosis free area in the north comprising counties Donegal, Sligo, Leitrim, Mayo, Monaghan and Cavan. All herds in this area have passed at least three blood tests.

(2) A Brucellosis Clearance area in counties Louth, Meath, Dublin, Westmeath, Roscommon, Longford, Clare, Galway and parts of Offaly and Limerick. Compulsory blood testing and disposal of reactors is currently under way with restrictions placed upon the movement of cattle of lower status into the area.

(3) The reaminder of the country is classified as a pre-intensive area and blood testing is carried out on a voluntary basis without compulsory disposal of reactors.

It is in the national interest that the disease be eradicated and the country be declared Brucellosis Free as soon as possible. In the meantime it is possible and indeed highly desirable for an individual farmer to proceed to full attested status before the country as a whole can be declared free of the disease. Every serious Charolais breeder will appreciate the financial advantages attached to having an attested herd when he goes out to sell his stock. It is hoped that sufficient Charolais breeders will be attested to enable the Society to hold a fully attested sale of cattle early next year. A sale of this nature will attract large numbers of buyers from Northern Ireland, England, Scotland, and even further afield with undoubtedly higher prices being paid for stock.

Brucellosis is caused by a bacterium, **Brucella abortus.** Infection is picked up by eating or licking contaminated material such as aborted foetuses and cleansings, or contaminated bedding or fodder. The most common way of introducing the disease to a farm is by purchasing infected cattle. Trespass from adjoining infected herds as a result of bad fencing is also a means of spread of the disease. Dogs, foxes and vermin can carry infection from one farm to another. Infection can be picked up in dirty cattle trucks, salesyards and showyards. Finally humans can carry infection on their clothes, boots and even their hands.

Abortions usually take place between the sixth and eighth month of pregnancy. In most cases abortion takes place with little or no warning. The first indication of trouble may be the finding of a foetus in the field or cattle shed. In most cases calves are already dead or very weak when born and die shortly thereafter. An infected cow may calve normally at full term whilst at the same time spreading millions of Brucella germs which infect other cows and incalf heifers. This animal is particularly dangerous as the disease is spreading without the knowledge of the owner. A clean herd is particularly vunerable to an outbreak of Brucellosis, thus each farmers' objective must be firstly to achieve a disease free status and then maintain this by taking all practical precautions to keep the disease at bay.

In eradicating and controlling brucellosis on a national basis a systematic programme of blood testing of animals is carried out. Blood tests for brucellosis are highly accurate. However, whilst they will idenfity infected animals, more than one test is necessary to reveal all infected cattle. The reason for this is that animals exposed to infection a short time before the test may not react to that test but will do so when tested later. For this and other reasons that are more complex it is necessary that a herd pass three clear tests before it can be classified as accredited.

Achieving attested status is relatively simple for the Charolais breeder if he is not involved in dairying. This man's problem is simply one of contacting his veterinary surgeon and arranging to have a blood test carried out on all female animals of twelve months or over and all bulls over nine months. Once his herd is clear he applies to the Minister of Agriculture, within 28 days, requesting acceptance as a supervised herd with a view to registration under the Brucellosis (Certified) Herd Scheme. An Agricultural Officer will then visit his premises to inspect the boundary fences, to ensure that animals from neighbouring farms cannot trespass onto your land and thus carry in the disease. He will also want to see what facilities are available for isolation of bought in stock. Once this is approved the farmer is required to give a written undertaking that he will abide by the rules of the scheme and that no animals will be moved onto the premises without a movement permit which can be obtained from the local veterinary office. The supervised herd will then be subjected to two or more official tests at roughtly 60 day intervals before registration is complete and a certificate of registration given to the herdowner.

The dairyfarmer/Charolais breeder has a somewhat more difficult task in so far as he must test and eradicate the disease from a much greater number of animals and his dairy herd must also be subject to the rules of the scheme. The problem is greatest where replacements are not supplied from within the unit itself since these will have to come from approved sources once eradication is embarked upon. However this man has also most to gain from the eradication programme. Once these problems are understood then the scheme is similar to that outlined above.

Once an attested status has been achieved it can be maintained by playing the game strictly isolating all bought in stock and testing as required after 60 days. The boundary fences must be maintained in a state of first class repair and immediate neighbours encouraged to be responsible in helping you to keep the disease at bay and best of all to join the scheme themselves. Workers should be instructed not to have contact with outside cattle that could harbour the disease. In this respect it is highly desirable that protective overalls and rubber boots be provided on the farm and not taken home by workers. Visitors should be permitted on to the farm only if wearing their "Sunday clothes" and a disinfectant foot bath should be placed at the place of entry to ensure that all visitors are made aware of the potential disease risk that exists.

Vaccination of cattle against Brucellosis may interfere with their sale on the export market this should not be undertaken without full consultation with the District Veterinary Surgeon and the Charolais Society.

Attested cattle make more money for YOU.

VICHY SHOW 1977

This three day event, held in the latter half of September, is a showing of quality cattle, exhibited by the top Breeders in France.

If you are interested in attending this Show, which I feel is a must for all Charolais Breeders, please contact the office as soon as possible.

SPECIAL CHAROLAIS TIES

Charolais ties, designed especially for Irish Breeders are now available from the office at a special price of £3.25, inclusive of postage.

Hereditary Defects in Cattle

by Professor Bede Morris

The expression of genetic information in cells is controlled and regulated by highly complex interactions that occur in different organs of the body and within the individual cells themselves. Alterations in the nutrition of the mother, shifts in the composition of the internal environment, changes in body temperature during pregnancy, infections by viruses or bacteria have all been shown to be capable of producing changes in the way genetic instructions are interpreted by cells. This leads in turn to changes in the form and function of the animal when it is born.

It is important to recognise that a variety of congenital defects can occur in cells without these defects causing any visible abnormality. For example, a defect in the cells of the pancreas may cause diabetes but this condition can not be detected except by a biochemical test.

A deformed calf may be a very spectacular demonstration of a defect in the developmental process but it must be seen as just one way in which gene expression may bring about an undesirable outcome in the offspring. From an economic point of view a gene that produces a seriously deformed caf which is born dead or dies soon after birth may not be nearly so important as genes that reduce fertility, lower milk production or render an animal more susceptible to parasites.

Significance of artificial breeding in affecting the genetic makeup of the cattle population

The technique of artificial breeding ensures that relatively few bulls will produce very large numbers of offsprings. An important principal in artificial breeding is that bulls with highly desirable genes are used to bring about an improvement in the economic efficiency of the cattle population at large. It goes without saying that as well as selecting bulls for their desirable economic characters, selection should be directed against undesirable characters as well. However, it cannot be known what particular components of the genetic material are responsible for desirable or undesirable effects and we are continually faced with the problem of manipulating "good" and "bad" genes to produce offspring that are, in an economic sense, better than their parents. This is a very difficult proposition, for not knowing the specific nature of the genes we must accept the fact that we cannot produce animals composed exclusively of "good" genes.

We must compromise continually within a breeding programme, balancing desirable characters against undesirable or less desirable ones to achieve some gain in genetic potential in each generation.

Undesirable genes in cattle

All breeds of cattle carry within their genetic makeup genes which, when they do express themselves, may cause deformed calves. Such genes are not peculiar to cattle but are present in all species of animals.

The birth of a deformed calf is very often attributed to some genetic defect in the parents but it is always difficult to say with certainty that this is in fact the cause. The reason for this is that defects of this sort occur quite infrequently and there are many other causes, apart from hereditary ones, which lead to deformities.

It is crucial not to assume that a deformed off-spring is the product of genetically unsound parents unless the pathology of the condition is certified, properly controlled breeding experiments done and tests made to exclude other possible causes.

The only congenital deformity of any significance in the Charolais breed of cattle is the condition of Arthrogryposis. This condition is not confined to Charolais and it occurs in most other breeds of cattle. It seems certain that one form of Arthrogryposis is determined by hereditary factors but the situation is not just this simple. Calves with deformities indistinguishable from genetically determined Arthrogryposis have been born to cows grazing lupines and to cows infected with certain virus diseases.

In the Southern Tableland, South West Slopes and South Coast during 1973-74, badly deformed calves with contracted tendons and facial deformities were born on many properties. Several different breeds of cattle were involved and it has now been shown that these outbreaks were almost certainly due to a virus (Akabane virus) infecting the foetus.

Arthrogryposis occurs with a pathology that ranges from minimum amount of deformity to gross monstrosity. At one end of the scale calves may be born with slightly contracted tendons which become normal within a few days of birth while at the other end, the legs may be completely deformed, the face and jaws undeveloped and the palate missing. A similar genetic condition also occurs in man.

The conclusion has been reached that Arthrogryposis is due to a single recessive gene that is located on a chromosome other than a sex chromosome. As it is a recessive gene, its effects are not evident unless two of these genes come together at the time of fertilisation.

Both the cow and bull must carry the gene for the offspring to be affected. As animals showing obvious deformity are most unlikely to be allowed to survive to a breeding age, the condition will appear in calves who are the offspring of parents who carry the gene in the heterozygous state and who because of the recessive nature of the gene show no evidence of deformity themselves.

The genetics of Arthrogryposis

An analysis of the incidence of Arthrogryposis in Charolais cattle in France highlights some interesting facts about this condition. The frequency of the gene in a population of Charolais cattle was studied recently in the district of Allier, France.

It was found that the recessive gene was present in about 16 per cent of the bulls in the AI centre and in about the same proportion in the cows. This frequency of the recessive gene should have meant that about three per cent of all Charolais calves born would be homozygous for the Artrogryposis gene and would in consequence be expected to be abnormal. However, the actual number of abnormal calves that are born in the Allier district was found to be less than 0.5 per cent and this seems to be a fairly constant figure from year to year.

The degree of deformity within these abnormal calves varied from a minor tendon contraction to completely deformed limbs and cleft palate. It was deduced that as only about one in six of those calves "pure" for the Arthrogryposis gene show abnormality, the expression of the gene is prevented in most cases by some other events taking place during development.

In genetic terms the gene has incomplete penetrance. The reasons why the Arthrogryposis gene produces deformity only in about one in six cases is not known and it may well be

A cross section of the large crowd at the sale of Performance Tested Bulls, Tully, Co. Kildare. **Photo: S. Tracey.**

that under different environmental circumstances in other countries this figure could be higher or lower.

Elimination of recessive genes

It is an old saying that no one is perfect and this applies just as much to cattle as it does to humans. In humans around one in every seven children have some detectable developmental deformity probably of genetic origin and it has been assessed that all bulls carry something of the order of 6-8 undesirable recessive genes. This is the background material on which any cattle breeding programme must be based irrespective of what breed of cattle we are dealing with.

The steps required to reduce the frequency of a recessive gene or to eliminate it altogether from a cattle population seem at first sight to be straightforwards enough. But it needs to be said at the outset that that there is no method available which will enable us to eliminate Arthrogryposis from Charolais or any other breed of cattle by bull testing programmes.

We can never, therefore, guarantee that a bull or cow does not carry the Arthrogryposis gene unless we can come up with some laboratory test to identify the carrier state in both male and female cattle. Such a test is not available at the present time.

At best we will only be able to say that a particular bull has a certain probability of not being a carrier of the gene and the level of confidence that we can place on such statement in relation to a particular bull will depend on many factors.

If we consider the problem of testing a bull for the Arthrogryposis gene, we can calculate the number of normal calves that would have to be born to that bull to enable us to predict that there is say only one chance in 100 that the bull himself is a carrier. The number of normal calves needed (and this assumes we are able to detect any calves with minor degrees of abnormality) will depend on the frequency of the gene in the cattle population, on the genetic history of the cows to which the bull is mated and on the degree to which the gene expresses itself in the progeny.

If we can mate the bull to known carrier cows then with the information avilable from the Charolais breed in France, some 40 normal calves would be required to say the bull has only one chance in 100 of being a carrier.

The problem becomes more difficult however, if we do not have known carrier cows to test our bulls and we have to mate them to unrelated cows as in a normal AI programme. If the incidence of carrier cows was around say 10 per cent in a cattle population we would need in excess of 500 normal calves to be 99 per cent certain our bull was not a carrier.

Even should a deformed calf be born to a bull tested in this situation it still remains to decide whether or not the deformity was due to the recessive gene before we could be justified in classing the bull as a carrier of the Arthrgryposis gene.

The problem does not rest there however, for as carrier bulls are eliminated from the population the frequency of the gene in the breed will fall and the indentification of carrier bulls will become more and more difficult. If we suppose that by testing and elimination of carrier bulls the frequency of animals carrying the gene is lowered from 10 per cent to 0.1 per cent then instead of one mating in 100 occurring between carrier animals now only one mating in a million will involve defective animals. Certainly the gene will not now have any economic significance but the difficulty and expense of eliminating it or lowering its incidence further is obvious.

There are other factors too which need to be considered in a breeding programme which is designed to remove a particular character from the gene pool. Genes exert their effects by interacting with one another and those that are present on the chromosome are physically linked together. For this reason both desirable and undesirable characteristics may be transmitted together at the time the egg or the sperm is formed.

Studies on the frequency of the Arthrogryposis carrier animal in the French Charolais population compared with the non-carrier have suggested that cattle carrying the gene in the heterozygous state seem to be inadvertently selected by the French cattle breeders. This could occur because the carrier state for the gene is associated with some favourable characteristics which breeders recognise and select for consciously or because a natural selection process favours the Arthrogryposis carrier because it is more fertile and in consequence a greater number of calves are born to these animals. It could be said that French Charolais breeders may have unconsciously decided to settle for the odd deformed calf to obtain more normal ones.

No selection programme can hope to eliminate all undesirable genetic material in a breed. New mutants are continually arising but these for the most part will disappear if their effects are incompatible with survival and reproduction. For those undesirable recessive genes that persist within a population the best approach may be to establish their frequency and mode of inheritance and develop breeding programmes which will ensure that the expression of these genes occurs too infrequently to be of any economic significance.

The elimination of undesirable recessive genes by extensive breeding and selection procedures may well prove to be too costly an undertaking even if it could be done successfully.

The incidence of Arthrogryposis should be trivial in upgrading programmes in which a large number of different bulls are used. What we must guard against at all costs is the rejection of bulls of real genetic worth on the basis of poorly documented evidence that they are carrying some undesirable recessive gene. To do so may be throwing the baby out with the bath water.

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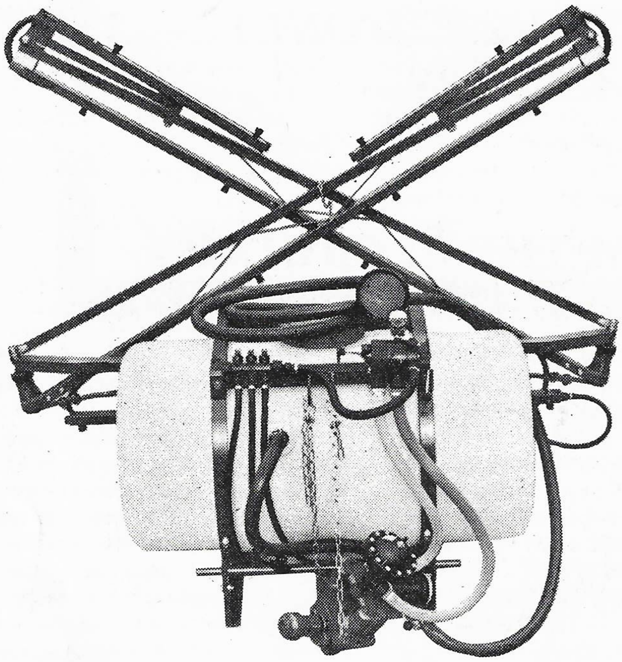

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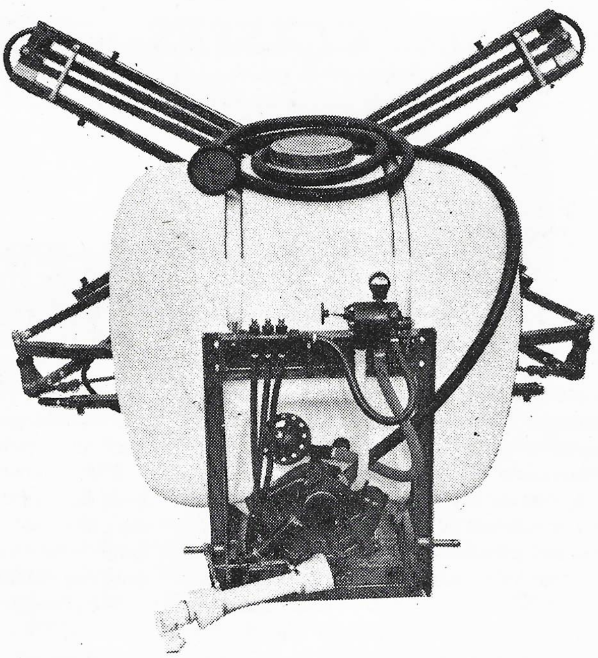

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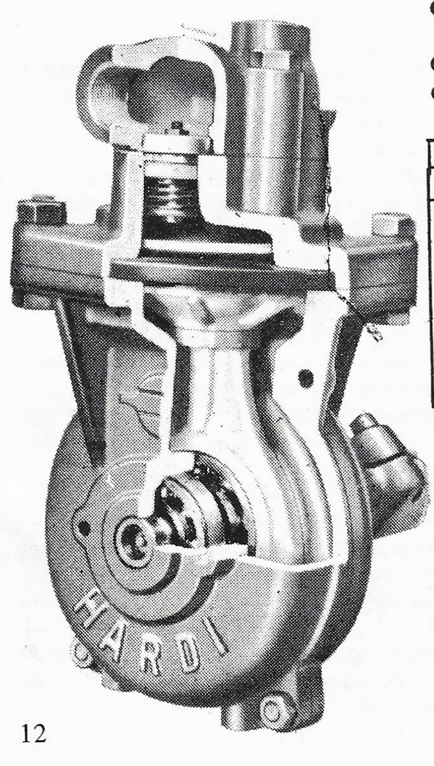

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