# The Role of the Bull in Dystocia

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## Introduction

It is always somewhat surprising that members of a profession who spend almost eighty per cent of their lifetime at the back end of the cows they treat, do not always have the back-up information on the problem of dystocia. While we are all in our own way expert in reproduction, practitioners in particular have the expertise to extract calves from extremely difficult situations, I am fairly sure that we do not know, for example, the exact level of economic loss that dystocia causes to the farming community.

I am sure that we can all hazard guesses based on calf losses, but do we really know what the financial implications are in loss of yield, problems associated with retained placenta, infertility following a difficult calving, problems associated with the health of calves born as a result of difficult calvings and so on.

We do know of course that farmers use bulls such as Aberdeen Angus or Sussex on maiden Friesian heifers in order to ease the calving problems. This in itself can result in some fairly severe financial losses because of the difference in value, for arguments sake, between a cross-bred Aberdeen Angus calf and a cross-bred Hereford calf from the same dams. Workers overseas have tried to put figures to this particular problem, but of course their conditions are somewhat different from our own, and are obviously not strictly comparable.

## Data Collecting

Before we really consider what the bull's role is in this problem, I think we should just ask ourselves what is meant by "dystocia", and discuss the problems of classifying the various stages of difficulty which seem to occur. Dystocia itself means a difficult, painful birth, but it is this subjective term "difficult" which creates our main problem. Associated with this terminology we have the method of data collection, whether this is done by people actively engaged in survey work, or whether we rely on the card system sent to farmers for them to complete and return. One can ask questions at a visit which are impossible to put down clearly on paper, and obviously there can be differences in results between the two methods of data collecting.

The MMB have used the card system for collecting data over many years, and copies of these are available for you to see. No one pretends that these are the ideal method, but on the other hand, they do give some degree of screening which would otherwise be lost.

As you can see under question 5 we have calving experience. The terminology has been simplified as far as possible into, normal, some assistance, and serious difficulties. By assistance, we suggest to farmers that if two or more men are required to pull on calving ropes, then the classification should come under serious difficulties. One realizes that this of course does still seem to be unsatisfactory, because quite obviously I could pull on the rope with all my might and muscle and think I had used tremendous amount of energy, whereas farm workers who are more likely to be used to lifting hundred-weight sacks have a muscle power which makes life on the end of a rope seem so much like child play. It is interesting to note also, that when veterinary assistance is required, it is nearly always considered to be a serious difficulty!

Under the MMB card system we send out about 800 cards per bull, and normally have 35-40% return. When we allow for discarding a small percentage of those returned, we have an adequate number left on which to base our dystocia percentages.

## Effect of Sire V. Effect of Dam

To move on to the main subject of the paper, I think there are probably two aspects of dystocia which are commonly considered. First of all, the effect of the sire of the calf, and secondly, the effect of the dam of the calf. It is always with some degree of surprise that I note the effect of the dam is not usually considered to be of great importance, and in most cases the sire of the calf tends to get the blame. There is a slight movement away from this entrenched position however, in that I note that there are a few papers appearing in which the role of the maternal grand-sire is being questioned. This however is not really my subject for this paper, and I intend to concentrate almost entirely on the effect of the sire of the calf. This really is a lazy way out, because not only has so much of this information been published in various ways but it is also the most documented aspect of the dystocia story.

### Effect of Sire

Under the effects of the sire on dystocia levels I think I must, with apologies to our Irish colleagues, be a little bit Irish in my first heading.

### Parity of Dam

First of all we must consider the parity of the dam. Many surveys have been carried out in various countries, and I have listed some of them in order to give comparison between the difficult calvings seen in heifers and cows of various breeds.

**Table 1.**

Here is is shown quite clearly that in all cases listed that heifers have a higher percentage of difficult calvings when bred pure, ie., to sires of the same breeds as themselves than do cows bred under the same conditions. I realize that one could appear to be knocking the Friesian breed, but I think this is the breed that, because of its numerical superiority, highlights this particular problem.

### Weight of Calf

The second factor one must consider is the weight of calf.

**Table 2.**

Here I have given a summary of calf birth weights as seen in MMB data, with different breeds of sire used on Friesian cows. The first column, headed 1975, shows the variations that occurred in that year, and under the column 1977 we have a similar effect for that year.

As sub-headings of this particular aspect of the study there

**Table 1.**
**Factors Affecting Dystocia Levels.**
**Parity of Dam**

| Breed of Cow | % Difficult Calvings | |
|---|---|---|
| | Heifers | Cows |
| German Friesian (1965) | 19.2 | 6.1 |
| German Friesian (1966) | 26.6 | 8.0 |
| Dutch Friesian (1963) | 13.5 | 1.8 |
| Dutch Friesian (1963) | 18.0 | 5.0 |
| Dutch Friesian (1965) | 19.2 | 6.8 |
| Israeli Friesian (1972) | 6.4 | 1.5 |
| M.R.I. (1963) | 13.5 | 1.8 |
| Swedish Friesian (1976) | 15.7 | 4.8 |
| British Friesian M.M.B. Data | 9.2 | 2.7 |

**Table 2.**
**Calf Birth Weight.**
**Friesian Dams (Cows)**
**Effect of Breed of Calf**

| Breed of Sire | Calf Birth Weight (Lbs.) | |
|---|---|---|
| | 1975 Survey | 1977Survey |
| British Friesian | 88.98 | |
| Hereford | 90.02 | 89.71 |
| Limousin | 91.80 | |
| Simmental | 96.80 | 97.89 |
| Charolais | 101.70 | 104.70 |
| South Devon | | 98.50 |
| Blonde D'Aquitaine | | 98.11 |
| Chianina | | 109.50 |

are four factors which can be listed:

1. The gestation length
2. The effect of sex of calf
3. The effect of season
4. A regional effect on calf birth weights.

These effects are shown in the next four tables:

**Table 3.**

**Gestation Length**

This shows the variation which occurs in gestation periods, given in days, with the various breeds of sire used on Friesian dams, which for all breeds except the Aberdeen Angus, are Friesian cows. In brackets opposite the breed of bull I have put the breed position on the birth weight table shown previously. It is somewhat interesting to note that the Limousin has the longest gestation period, and yet its calves are only slightly heavier than the Hereford, and certainly lighter than the Simmental, Charolais, Blonde D'Aquitaine, or Chianina. I believe it is true to say that all surveys show that bull calves weigh heavier than do heifer calves of the same breeding.

Table 3. **Factors Affecting Dystocia Levels.**
**Calf Birth Weight**
**Friesian Dams (Cows)***
**Effect of Breed of Calf**

| Breed Of Sire | Calf B/W Table | Gestation (Days) |
|---|---|---|
| Aberdeen Angus | | 278.8 *Maiden Heifers |
| British Friesian | (1.) | 281.0 |
| Hereford | (2.) | 282.1 |
| Charolais | (7.) | 284.2 |
| Simmental | (6.) | 284.3 |
| South Devon | (4.) | 284.9 |
| Chianina | (8.) | 286.1 |
| Blonde D'Aquitaine | (5.) | 287.3 |
| Limousin | (3.) | 287.4 |

Table 4.

**Serious Calving Difficulty Effect Of Sex Of Calf**
**Friesian Dams (Cows And Heifers)**

| Breed of Sire | % Difficult Calvings | | | |
|---|---|---|---|---|
| | Heifers | | Cows | |
| | M | F | M | F |
| Hereford | 4.66 | 0.00 | 1.31 | 0.45 |
| Bonde D'Aquitaine | 16.00 | 2.67 | 0.00 | |
| South Devon | 4.17 | 6.98 | 3.26 | 1.43 |
| Simmental | 5.00 | 0.00 | | |
| Chianina | 13.33 | 2.63 | 9.61 | 2.23 |
| Charolais | X | X | 7.90 | 2.20 |
| Limousin | 11.80 | 5.00 | 3.00 | 1.71 |

### Table 4.: Sex of Calf

This shows the effect of sex of calf on birth weight, again this is using various breeds of sire on Friesian dams. The table also shows the differences between calvings from heifers and cows. With but one exception, and that is the case of the South Devon used on heifers, the heifer calves were apparently causing less trouble at birth than were the bull calves. In the case of the Charolais breed, the recommendation has always been strongly held not to use that breed of bull on heifers, and so the figures are not adequate for inclusion in this table.

### Table 5.: Seasonal Effect

This shows a seasonal effect on calf weights. This data is taken from movement of calves into Warren Farm at approximately 10 days of age, and is for calves born after the use of the Hereford bull on Friesian cows. Although it is obviously not strictly comparable with previous records, I think it does give an indication of the rise in weights which occur towards the summer months. The figures are given in pounds because most of the other information on the charts are in pounds, and they will be very approximate because the information I had was given in kilogrammes, and my conversion methods are maybe not too accurate.

### Table 6.: Regional Effect

This shows a regional effect on calf birth weights. This was something we had noticed in the early Charolais trials, and the Friesian figures shown are particularly interesting, in that this was semen used from one bull spread throughout all regions of the MMB service. Even so, I think that the other figures will also indicate that the South West of England has a fairly marked level of superiority on birth weights compared with the other regions. The figures along the bottom show the average weight of calves from the different breeds, and the figures in the table show the deviations from that average in the various regions. I do wonder however, what effect regional breeding policies might have on calf birth weights.

**Table 5.**
**Factors Affecting Dystocia Levels.**
**Effect of Season**
**Hereford Sires**
*** Weights at 10 Days**
**Warren Farm Data**

**Calf Birth Weight ***
**Friesian Dams (Cows)**

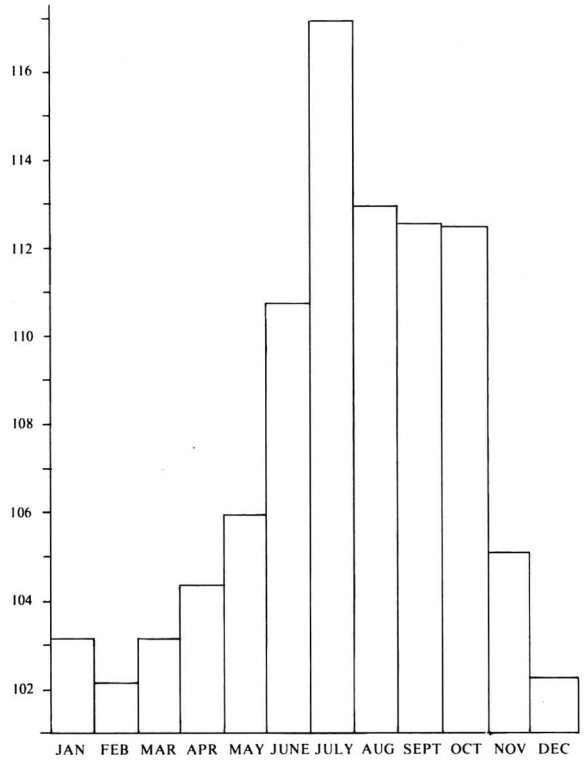



**Table 6.**
**Factors Affecting Dystocia Levels.**

**Calf Birth Weight**
**Friesian Dams (Cows)**
**Effect of Region**
**Deviations From Breed Average (Lbs.)**

| | SIRES | | |
|---|---|---|---|
| REGION | CHAROLAIS | HEREFORD | FRIESIAN |
| NORTH | - 5.21 | - 1.22 | + 1.29 |
| WALES | + 0.86 | - 4.87 | - 4.42 |
| MIDLANDS | - 0.59 | + 0.29 | + 0.94 |
| S. EAST | - 1.27 | + 0.07 | - 2.37 |
| S. WEST | + 6.21 | + 5.73 | + 4.56 |
| AVERAGE WEIGHT OF CALF | 101.67 | 90.02 | 88.98 |

**Table 7.**

Almost in form of summary — shows data from surveys using various breeds of bull on Friesian cows and details gestation length and average birth weights of calves in the various dystocia classifications. Now we move on the the sire effect on serious calving difficulties.

**Table 8.: Effect of Breed of Sire on Dystocia Levels**

This table shows the percentage of serious calving difficulties from various breeds of sire used on British Friesian dams — in all cases except the Aberdeen Angus Friesian cows.

It is interesting to note the comparatively low figures for Hereford sires, which is in line with normal findings. The Simmental figures are unusually low in this survey, and in spite of the assurances that their calves "came out like

**Table 7.**
**Gestation Lengths and Actual Birthweights**
**Overall figures (Normal + Some Assistance + Serious Difficulties)**

| | GESTATION LENGTH | | | ACTUAL BIRTHWEIGHT | | |
|---|---|---|---|---|---|---|
| | No. Obs. | Mean (days) | S.D. | No. Obs. | Mean | S.D. |
| CHIANINA (3.2.77) | | | | | | |
| Male | 635 | 287.2 | 5.6 | 207 | 113.0 | 15.4 |
| Female | 583 | 286.3 | 5/6 | 150 | 104.5 | 13.5 |
| Overall | 1,218 | 286.8 | 5.6 | 357 | 109.5 | 15.2 |
| BLONDE D'AQUITAINE (17.2.77) | | | | | | |
| Male | 449 | 288.4 | 5.4 | 170 | 103.6 | 15.5 |
| Female | 391 | 286.8 | 5.3 | 135 | 91.2 | 13.1 |
| Overall | 840 | 287.7 | 5.4 | 305 | 98.1 | 15.7 |
| SOUTH DEVON (8.3.77) | | | | | | |
| Male | 705 | 285.6 | 4.9 | 191 | 101.9 | 17.0 |
| Female | 629 | 285.0 | 5.7 | 170 | 94.6 | 13.4 |
| Overall | 1,334 | 285.3 | 5.3 | 361 | 98.5 | 15.8 |
| SIMMENTAL (21.3.77) | | | | | | |
| Male | 1,305 | 285.5 | 5.3 | 260 | 102.6 | 15.7 |
| Female | 1,085 | 283.9 | 5.0 | 211 | 92.1 | 14.1 |
| Overall | 2,390 | 284.8 | 5.2 | 471 | 97.9 | 15.9 |
| HEREFORD (12.4.77) | | | | | | |
| Male | 1,756 | 282.6 | 4.8 | 147 | 94.2 | 13.7 |
| Female | 1,558 | 281.7 | 4.8 | 136 | 84.8 | 12.8 |
| Overall | 3,314 | 282.2 | 4.8 | 283 | 89.7 | 14.1 |
| CHAROLAIS (12.5.77) | | | | | | |
| Male | 689 | 286.3 | 5.2 | 107 | 109.3 | 16.1 |
| Female | 572 | 284.7 | 4.9 | 69 | 97.5 | 16.6 |
| Overall | 1,261 | 285.6 | 5.2 | 176 | 104.7 | 17.3 |

ferrets", the Chianina breed obviously caused their share of problems.

The mortality figures for each breed are given and some make interesting reading and leave some questions unanswered. The Aberdeen Angus figures are not comparable because the bulk of these figures relate to Friesian maiden heifers.

**Table 9.**

An additional piece of information based on the effect of various breeds of sire on serious calving difficulties from British Friesian maiden heifers. These figures should be used with caution, some of the numbers of calves in certain groups are on the small side, but I feel they are worth noting.

**Table 8.**
**Factors Affecting Dystocia Levels.**

**Serious Calving Difficulty**
**Friesian Dams (Cows) ***
**Effect of Breed of Sire**

| SIRE | DYSTOCIA % | RANGE % | MORTALITY % |
|---|---|---|---|
| BRITISH FRIESIAN | 2.7 | 0.6 - 6.0 | 2.4 |
| HEREFORD | 1.2 | 0.0 - 6.4 | 2.3 |
| CHAROLAIS | 3.4 | 0.9 - 5.7 | 4.7 |
| CHIANINA | 6.1 | 4.2 - 7.1 | 6.5 |
| BLONDE D'AQUITAINE | 2.0 | 0.6 - 2.8 | 3.6 |
| SOUTH DEVON | 2.7 | 0.5 - 5.1 | 5.6 |
| SIMMENTAL | 1.0 | 0.6 - 2.6 | 3.8 |
| LIMOUSIN | 2.4 | 1.2 - 5.2 | 3.3 |
| ABERDEEN ANGUS * | 1.9 | 0.4 - 3.7 | 5.3 |

* FRIESIAN MAIDEN HEIFERS

**Table 9.**

**Serious Calving Difficulty**
**Friesian Dams (Maiden Heifers)**
**Effect of Breed of Sire**

| SIRE | DYSTOCIA % |
|---|---|
| ABERDEEN ANGUS | 1.4 |
| HEREFORD | 2.7 |
| CHAROLAIS | 5.7 |
| LIMOUSIN | 8.2 |
| SIMMENTAL | 8.8 |
| BRITISH FRIESIAN | 5.7 |

## Discussion

**I think all this information shows quite clearly that certainly the breed of sire has a marked effect on the potential of the calf born to the dam. One can quite easily list out the various bulls and by studying the dystocia levels and mortality levels from each, we see that these sets of figures run very closely in parallel.**

It would also seem to me that some of the effects are caused by management. The regional effect and seasonal effect are two such items, and it is probably for this reason that many people who have carried out surveys of this nature throughout the world are a little wary in saying that the sire of calf effect is quite as strong as was once believed.

Indeed, it is the effect of the sire which is now coming under closer scrutiny, and which is leading many research workers to say that although the sire does have a noticeable effect, there are other factors which seem to be in the background and which can be thought of as pre-disposing factors to dystocia. One has only to read the theses written by Phillipsson in Sweden, and by Pollack in the USA, to realize that these workers, having put an enormous amount of study into the dystocia problems in their countries, are still not entirely satisfied with the method of assessing the sire's responsibility. Indeed, Pollack suggests that the effect of sire on his daughters as far as their subsequent calving problems are concerned is something which should be studied further. As many of you will know, this is something I have been suggesting for some considerable time, and hopefully during the next year or so we may have some additional work to bring before you, and help to either substantiate or disprove this theory.

**Because of potential influence of sire on dystocia levels, many of our colleagues abroad have introduced information into their service giving details of sire dystocia levels. In Israel and the Netherlands this aspect of service has been looked at in some detail. More recently in the USA at least two centre groups have introduced a sire calssification for dystocia levels into their service. Emphasis is made however, on the need for surveys in great detail to be carried out on each bull through his AI daughters so that the classification can be meaningful.**

### Table 10.

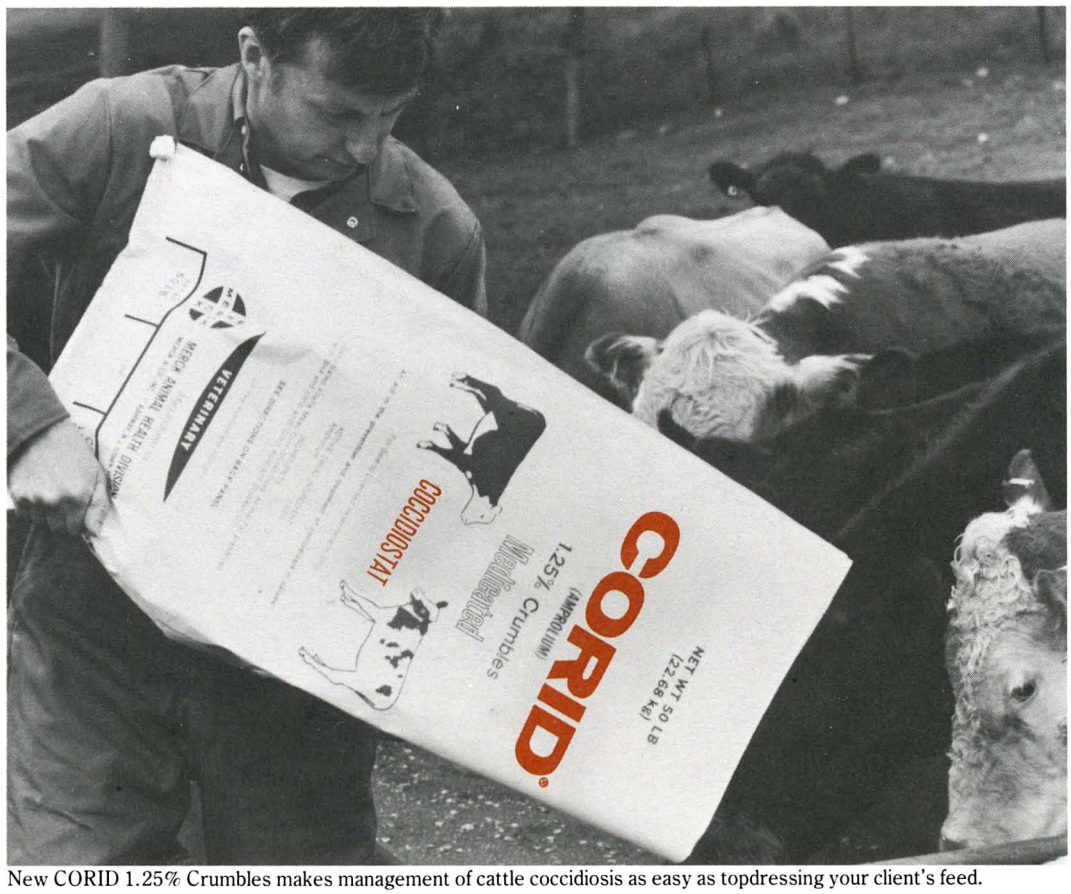
I would like to show you one more table for which I make no apology. This is based on the work done at Cold Norton, and I am certain that many of you will have seen it before. From the research work at Cold Norton using various crosses of cow and the Friesian bull as sire, the information given in the table was produced. It shows quite obviously that both the Jersey and the Ayrshire were better able to cope with a greatly increased birth weight of calf over the normal pure-bred weight of calf in those breeds, than could the Friesian cow with pure-bred calf. Just in case anyone says that the Jersey usually has a rabbit sized calf, then just look at the ratio of birth weight of calf to dam's body weight (these were actual weights), and one will then see that the Jersey was indeed able to cope with what one might term, "a grossly oversize calf", in comparison with her own body weight.

Quite obviously as we all know, the problem of dystocia is summed up as the problem of ratio between calf size and **shape,** and the size and shape of pelvic canal through which that calf must pass.

**Table 10.**

**Calving Difficulties**
**Friesian, Ayrshire, Jersey Dams (Cows)**
**Friesian Sire**
**Comparison of Calf Birthweight/Cow Weight/and Calving Difficulties %**

| BREED OF SIRE | BREED OF DAM | CALF WEIGHT LBS. | COW WEIGHT LBS. | RATIO | DYSTOCIA % |
|---|---|---|---|---|---|
| FRIESIAN | FRIESIAN | 88 | 1070 | 1 : 12.1 | 40.0 |
| FRIESIAN | AYRSHIRE | 81 | 937 | 1 : 11.5 | 25.7 |
| FRIESIAN | JERSEY | 68 | 759 | 1 : 11.1 | 15.9 |



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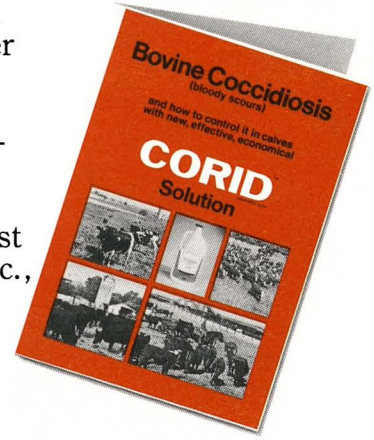


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