# The merits and benefits of ultrasound and herd fertility visits

#### by John Dawson, BVMS, MRCVS, Cert CHP, Dutch Dip Cattle Footcare.

The information gathered from the use of the ultrasound examination during a routine herd fertility visit for early detection of problems and early diagnosis of pregnancy can contribute thousands of pounds to the overall profit of the modern dairy farm. It has never been more important to get cows in calf and know they are in calf as early as possible to ensure profitability and for sustained income.

The use of ultrasound to gather information can help you achieve these goals. In this article we shall discuss one aspect of the information – early pregnancy diagnosis.

# The examination

The ultrasound examination gathers a large amount of additional information which, when combined with all other conventional examination procedures and information,

The Easi-Scan from BCF Technology is an ideal solution for successful ultrasound examination.





34 day pregnancy. This is too early to accurately identify twins. Very little fluid is present and the embryo is very small making it difficult to even find one embryo.

enhances dramatically the diagnostic ability and therefore the treatment choices which can be given to the problem cow.

The enhanced treatment regimes can help reduce the number of open days in the herd. Ultrasound examination reduces the time, by 12 days, from insemination to confirmed pregnancy. This allows earlier effective treatment to reduced numbers of cows culled.

Many herds recognise the benefits of regular routine herd fertility visits where early detection of problems and pregnancy diagnosis pays dividends.

The incorporation of the ultrasound into these fertility visits further enhances the benefits.

### The savings

An example of the savings on a dairy herd, calculated using the benefit of earlier pregnancy diagnosis alone, can be considerable.

In a 400 cow herd with a 400 day calving interval there is, on average, one cow per day calving – this equates to 1.25 cows per day reaching pregnancy diagnosis stage, this accounts for the number diagnosed empty during the examination.

Herd fertility visits are conducted every two weeks where there will be on average 18 cows for pregnancy diagnosis. During the diagnostic ultrasound examination a 25% average of cows will be found empty – this is from a herd which has good conception rates. This equates to 87 cows per year diagnosed empty.

The use of ultrasound has allowed us to diagnose these cows empty 12 days earlier than if manual examination was used. An extra 12 days earlier on 85 cows equates to 1020 open days saved per year compared to manual palpation.

In the UK one day extra open costs around  $\pm 5$  which equates to an overall saving of  $\pm 5,100$  per year on a 400 cow herd.

These savings are from the benefits of early pregnancy detection alone, extra savings are gained from better targeted treatment regimes applied to problem cows and the less time an ultrasound examination takes.

## The second examination

An ultrasound examination takes less time than a manual examination contributing to additional savings.

However, instead of pocketing this saving it is wise to conduct a second ultrasound pregnancy diagnosis at around 60-70 days. This is prudent as there is a high percentage of embryonic death occurring from conception to 70 days (13.5%).

Approximately half this figure occurs before the first ultrasound examination (which takes place at an average of 35 days in calf), but approximately half occurs after the first ultrasound examination up to 70 days in calf.

The second ultrasound examination is prudent to identify the later loss. If this second ultrasound examination is performed between 60-70 days it can be combined with examination for foetal gender determination.

An accurate foetal gender determination examination does take longer to perform but the information can aid culling decision *Continued on page 16* 

#### Continued from page 15

or general cow management. Drying off times may be shortened if it is known to be carrying a heifer calf.

The cow may be culled if she is known to be carrying a bull calf. Insemination with dairy semen may stop if the required numbers of heifers have been diagnosed for that season. The benefits of the features diagnosed with the help of the ultrasound examination compared to manual go far beyond the discussed pregnancy diagnosis.

Once the cow has been diagnosed empty the treatment or in some case advice only, is tailored to the individual cow to enable a quick return to a fertile service.

Tailoring the treatment to the individual cow helps to a more effective drug usage and it can, in many cases, eliminate the need for use of drugs all together. The information gathered by the ultrasound examination is invaluable for effective treatment and subsequent pregnancy.

## **Twin pregnancy**

Consistent, accurate diagnosis of twins can only be done by ultrasound. Manual palpation in the early pregnancy cannot detect the features which are diagnostic of twins.

These features include copious amounts of foetal membranes and the detection of two embryos.

Manual examination for pregnancy is based mainly on the size of the extended uterus but the amount of fluid surrounding the embryos is very similar and the amniotic sacks are very delicate which do not allow detailed manual examination.

Ultrasound which does not need manipulation of the uterus allows detection of the features without manipulation or harm to the gravid uterus.

### Avoid misunderstandings

Caution has to be applied to the detection of twins because after diagnosis many lose one embryo. Reports suggest that up to 40% of twin pregnancies diagnosed early result in one embryo dying and the subsequent birth of one calf.

The birth of a single calf from an ultrasound examination of twins can be misunderstood by the farmer as an initial misdiagnosis therefore this fact needs to be discussed at the onset of twin diagnosis.

Alternatively, a remote screen can be used during the ultrasound examination which allows the farmer to see the embryos which confirm the diagnosis of twins. This helps make sure no misunderstanding arises when the subsequent twin pregnancy delivers one calf. If ultrasound examination is to include twin diagnosis it is performed at the first ultrasound examination and does take a lit-



Twin nine week embryos (above) and twin 38 day embryos (below). Note the characteristic divergent amniotic membrane. This is near the lowest limit twins can be diagnosed accurately. These are side by side which is not always the case.



tle longer to accurately diagnose. However, it is very difficult to diagnose twin pregnancies in pregnancies of 30-35 days.

The amount of uterine horn containing the embryo and its associated fluid is so small and the embryo is so elusive and small that accurately diagnosing twins at this stage is very difficult.

Twin diagnosis is best performed from 35-60 days. The upper limit of 60 days is defined because the foetus and its fluid extend the uterus to such an extent it becomes very difficult to examine it quickly, and in an easy fashion to determine twins accurately.

There are of course times when twin are easily determined at the lower and above the upper limits when the embryos and uterus are lying perfectly for the examination.

However, the perfectly presented pregnancy for twin diagnosis is only found in a small percentage of examinations therefore the accuracy falls dramatically outside the preferred window. Ultrasound examination of the bovine reproductive tract provides invaluable information for the best diagnosis and treatment.