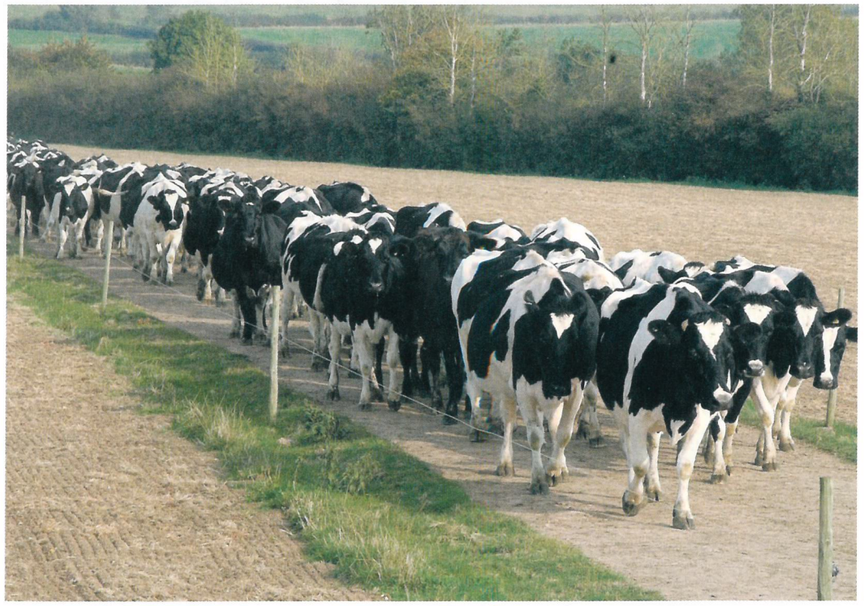
Although embryo transfer may have connotations of being an expensive breeding tool restricted to pedigree herds, more commercial dairy farmers are finding it can be a cost effective route to faster genetic improvement. **Jeremy Hunt** reports.

ET could be viable option for boosting genetic merit

Vet Mike Christie says dairy farmers with both pedigree and commercial herds who have never thought about flushing their best cows should consider how their breeding policy could benefit from an embryo transfer (ET) programme.

"There are plenty of commercial herds who have very good phenotype cows which could produce good heifers as herd replacements," he says.



Embryo transfer can be a valuable tool for commercial herds and pedigree breeders, says vet Mike Christie.

Superior

"Using a high genetic merit bull on a flush from a superior commercial cow is an option well worth considering," says Mr Christie from the Lambert, Leonard and May practice.

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> **Mike Christie**

But he adds: "ET work must be undertaken by experienced operators. Cows for flushing need to be clean inside, cycling and recently calved. Egg production on average is five to six viable eggs per flush – some cows can produce none while some can yield up to 20 or more viable embryos.

"The cost of flushing, including the drugs, is about £290. Freezing eggs and implanting is £69 per transfer plus £20 per egg to freeze.

"So flushing, with five eggs to freeze, is going to cost about £400, and to implant those eggs is going to cost a further £345."

Recipients

But Mr Christie says much of the success of a herd's ET programme relies on the management of the recipients. The main requirements for recipient heifers are to be sexually mature, in good health, on good nutrition and with adequate protection against common diseases.

"Whether buying embryos or flushing your own cows, good planning and care of the recipient is essential, not only to maximize conception rates but also to maintain the pregnancy and ultimately the viability and future health of the embryo calf to be born," he explains.

"Using virgin heifers instead of cows is known to yield better conception rates because they are not under the pressure of lactation and, as such, are more fertile. But if cows are used as recipients it is important they should have resumed cyclic activity early and have been scanned to show a corpus luteum by 20-30 days post calving."

Cows used as recipients should ideally be in good body condition (condition score 2.5) and have no known reproductive problems, such as cystic ovarian disease or endometritis (whites).

Target weight

"Heifers used as recipients should be able to be implanted at any time from 13-months-old, providing they have reached the suggested target weight of 60-65% of the herd's adult cow weight.

"Nutrition of recipients is a topic which generates much discussion but the aim should be to have heifers settled on a consistent diet for at least four to six weeks prior to embryo transfer.

"It is important to try and avoid changes in their diet during this time," says Mr Christie.

Heifers at grass will usually be suitable as recipients providing they receive one to two kilos a day of heifer concentrates, but keeping recipient heifers indoors on consistent forage, such as clamp grass silage and concentrates, is the preferred option for some.

"Overfeeding on high energy forages should be avoided to stop heifers becoming too fat, reducing their fertility. It can also be more difficult to carry out ET procedures on heifers that are carrying too much condition.

"The AI conception rate for heifers in the herd is a good guide. So if 60-75% conception rates are being achieved then embryo transfer in animals from this group should yield similar results," he adds.

Care should be taken over mineral deficiencies or excesses if this is an issue for the herd, and this should be discussed with the farm vet. It may be necessary to take blood samples from recipients and to sample mineral levels in rations being fed.

Vaccinating for the common fertility diseases, such as BVD and leptospirosis, prior to ET at 13-15 months of age should be undertaken to provide immunity and help minimise embryonic death due to these diseases.

"Neospora infection is a common cause of abortion and can be spread to the calf in-utero from the dam, so blood testing recipients in herds where neospora is known to be prevalent should be undertaken.

"Cows identified as suitable donors need to be 50-100 days into their lactation before the ET programme is initiated.

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> **Mike Christie**

"Heifers can be flushed but will produce fewer embryos – say three to four, compared with six to seven from a mature cow.

"Where herds have just one or two cows which could be used to increase genetic progress they can be flushed several times, although some donors will reduce embryo production after three or four flushes," says Mr Christie.

Forages

"Avoid wet, inconsistent forages and have forages analysed as well as the mineral analyses of your donor's diet.

"Cows should not lose too much condition, so aim for consistent diets to achieve good dry matter intake, with good energy density and mineral specification, for at least six weeks prior to flushing."

Cows should undergo ultrasound examination before superovulation and there may be a need for mineral supplementation and possibly lifting the energy of the diet to avoid ketosis.

"Ideally cows should be rescanned a week after the reference heat to ensure there is a corpus luteum and no cystic structures.

"Good dry cow management, an uneventful calving and good appetite post calving will help the uterus involute to its normal size. This will aid the resumption of cyclic activity with healthy follicle populations in the months ahead."

Kexxtone boluses (targeted for at risk cows under veterinary prescription) used in the dry period can also be considered to prevent ketosis post calving.

"If these cows are to be flushed the boluses are very likely to have a beneficial effect on the follicle populations at two to five months post calving – a time when embryo collections are most likely to be carried out."