EMBRYO TRANSFER TECHNOLOGY. IS KENYA AND THE REGION READY FOR THE NEXT BIG THING IN DAIRY?

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INTRODUCTION

Have you ever wondered where to get good dairy animals? Chances are, as a dairy farmer you have had to search far and wide to find a good replacement animal or just another animal to increase your herd size! If you succeed to get a good one in a reasonable time then consider yourself a very lucky person. A great number of farmers have had to make do with being on long waiting lists or have to contend with low quality animals as such replacement animals are hard to come by.

The situation is also no better among the main breeders of dairy animals. The high demand for dairy animals is such that breeders have to turn away farmers wanting animals on daily basis. The few animals that become available have to sell at high prices as potential buyers compete against each other for the animals on offer. This has seen the prices of dairy animals rise from less than Ksh 100,000 in the early 2000 to prices of over Ksh 200,000 currently. The good milk prices being offered by the milk markets, the availability of credit to purchase animals have combined to push the demand for animals in Kenya to very high level. The regional markets have also played a significant role in the price increases. As many of the regional countries settle to undertake more development, the dairy sector is being revived and, considering the potential that dairy could have on their farmers, priority is being placed in dairy development.

Whereas Kenya has the largest population of dairy animals compared to the other regional countries the factors for favorable dairy production locally combine to make it even harder for farmers in the region to buy dairy animals in Kenya.

The above challenges along with those inherent in the breeding of animals by way of artificial insemination is forcing dairy breeders to look outside the box for an answer to the ever rising demand for dairy animals. They have recently settled on Embryo Transfer Technology to accelerate the production of good heifers from the good dams/cows they have.

WHAT IS EMBRYO TRANSFER?

Embryo transfer also called Multiple Ovulation and Embryo Transfer (MOET) is a Process which involves hormonally stimulating a donor cow to produce many ova from its ovaries. The ova are then fertilized through Artificial insemination but instead of the resultant embryos being allowed to develop they are flushed and transplanted to heat synchronized recipient cows to carry the pregnancy to term. The process makes it possible for the selected donors to produce over 30 embryos and hence as many calves over a period of one year as compared to the natural process where a dairy animal produces only one calf in a year. The process is superior to artificial insemination in that whereas with AI the superior genetics being multiplied is limited to the bull, in Embryo Transfer the genetically superior female also gets its superior genes multiplied. The process enables a fast build up of superior dairy animals in a period as short as one year compared to over fifteen years if one is to go the upgrading process that is feasible using AI. The fact that animals of low quality genetic value can be used as recipients or surrogates makes the process more feasible among farmers who do not have good genetics to start with. Although the Boran animals are the preferred choice as recipients for the dairy embryos, crosses or in extreme cases the small East African Zebu can be used as recipients.

HOW DO THE FARMERS ACCESS THE SERVICE?

The service is currently being offered under the auspices of the East African Semen and Embryo Transfer Association (EASETA) and is being supported by the regional World Bank Project East AFRICAN Agricultural Productivity Project. (EAAPP). The association which was formed in 2006 is spearheading the adoption of the technology not only in Kenya but in the region as a whole. Whereas the technology has been available locally since the early 1990's the lack of support and poor success rate contributed to its low adoption.

The Association which was formed by Sector Corporates and key individuals has been finding ways and means to make the adoption a reality by pooling resources and enabling Embryo Transfer personnel train on a regular basis. The Association has now competent personnel available for farmers wishing to undertake Embryo Transfer in their farms.

The farmers are first assisted to assess their facilities for the suitability for Embryo transfer. Secondly the farmers are assisted to identify suitable animals both donors and surrogates for the embryo transfer work. An ET program tailor made especially for the particular farmer is then developed and availed to the farmer complete with the financing options available for the farmer.

The Association recommends that at least three donors and five recipients be availed by the farmer for an Embryo transfer program.

Whereas the average yield with every flushing of donors is 5 embryos, up to three donors are required to take care of cases where a donor may not respond to the hormonal treatment. Finding ways and means to make the adoption a reality by pooling resources and enabling Embryo Transfer personnel train on a regular basis.

WHAT DOES IT COST?

The minimum package of Embryo transfer is about Ksh 200,000/=. The package allows for the harvesting of embryos from at least three donors and the transfer of embryo to a minimum of five surrogates. The farmer can chose to avail upto fifteen recipients in the same package to reap maximum benefit from the package. Where the farmer cannot avail all the donors or recipients he can choose to team up with neighbors to get the necessary numbers. Alternatively where the farmer does not have donors the Association is in a position to link with breeders who are willing to avail their animals for embryo flushing. The cost of embryos in this situation will be higher as the breeders would normally add a mark up to the cost of production. The arrangement also works out well where the cooperative members choose to work as a team to undertake Embryo Transfer. The cooperative would then enter into an understanding with the Association and the technology will be availed to the members. The numbers in a cooperative situation make the technology to be cost effective and good successes are achieved with the numbers involved.

IS IT COST EFFECTIVE?

The benefits and returns availed by the technology is second to none. Whereas the investment on the side of the farmer appears high initially the returns are good. The cost of producing embryo for a farmer who undertakes the same on his farm ranges between Ksh5,000/= to 7,000/= per embryo, the same would cost no less than 20,000/= to buy or sell. Although the conception rate for Embryo Transfer is lower at 50% compared to 75% for AI the resultant pregnancy is of a higher value. A well selected Embryo transfer calf at birth go for prices of not less than Ksh 150,000/= each although currently farmers who chose to have calves by way of Embryo Transfer do not avail the same as they attached a much higher value than the amount quoted. If fact it is common practice for farmers who produce embryos to utilize the same on their farm rather than avail the same for sale. The waiting associated with Embryo Transfer is considered reasonable by most farmers as even in situation where breeding animals are being sought many have had to contend with a waiting period of up to two years before being offered to buy.

HOW SUCCESSFUL HAS THE TECHNOLOGY BEEN SO FAR?

From the year 2010 When EASETA was able to receive support with the EAAAP it has been able to flush more than 90 donors and in the process obtained more than 220 embryos. These were undertaken at ADC and also at individual farmers. The deliberate use of sexed semen on the production of embryo has been made by the Association although high numbers of unfertilized ova occasionally result. Sexed semen usually is lower in volume and spread to effectively fertilize ova is usually poor. In the back drop of this is the fact that Kenya hosts one of the largest quarantine facility in the region for the production of embryos. The facility which is located in Ol Pejeta Laikipia County is used to produce Boran embryos for export to South Africa. The facility has been producing over 1000 embryos annually and serves to show that the technology which is working for beef can also adopted to make an impact in dairy. Although the technology is still relatively infancy in Kenya as far as adoption is concerned, Kenya is big business for dairy farmers in the developed world. In fact the production of embryo for export is the dairy component with the highest returns. It is important to note that the Embryo transfer offsprings which have been born intermittently since the late 1990 have some progenies at the Kenya Animals Genetic Resource Centre where the bulls have done well in local semen production.

WHAT S THE WAY FORWARD?

With the support that EASETA has been receiving for EAAPP the Association is seeking to use the technology to avail dairy genetics not only to the Kenyan farmers but to the region as a whole. The Association which is currently working with individual breeders and also Cooperatives is at an advanced stage in acquiring Embryo transfer materials and equipment for use in the program. The materials will see the upscaling of its operations with an aim of producing at least 500 embryos for local use and sale in the region.

For the purpose of improving the local genetics pool the Association is seeking to work closely with breeders and KAGRC to see to the importation of embryos with the intention that the resultant bulls will be taken up by the bull station for purposes of semen production. It is worth noting that almost all renowned bull studs all over the world are populated by E.T bulls. The technology has been adopted fully to produce many bull calves from excellent bull mothers using top sires to accelerate genetic advancement in cattle