***E**mbryo **T**ransfer Services of SA*
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CATTLE IVF - NOW A POWERFUL GENETIC TOOL FOR YOU TO USE ON YOUR TOP FEMALES!

Do you have a top genetic cow who doesn't flush conventionally or you can't get her pregnant but you still want to use the genetics then IVF is for you.

IVF provides you with a way to improve your herd's genetics and a way to rapidly increase your calf rate from your top animals.
IVF allows for pregnancy management, transfers can be scheduled at a time that allows calving at the most desirable time. Using the latest freezing techniques (vitrification) there is no advantage of fresh over frozen embryos.

OPU and IVF
Cows and heifers have 2 or 3 waves of follicle development in every 3 week cycle. Each wave will have between 1 and 30 follicles developing and then regressing until 1 ovulates on the final wave. Ultrasound guided egg (oocyte) pickup (OPU) involves introducing non surgically a needle, attached to a vacuum pump, into the follicles and gently sucking out the oocytes. Roughly half the follicles seen with the ultrasound are collected. Good quality oocytes are put into a holding media. Oocytes from several donors can be pooled and this will lead to higher fertilization rates particularly if the egg yield is low.
Eggs can also be collected directly from the ovary at the time of slaughter or soon after.
Egg yield can be increased with 2 days of FSH prior to collection. Extra charges ($100/treatment) apply.
Eggs are fertilized 24 hours later at the laboratory, in vitro fertilization (IVF). Currently I use SARDI's laboratory at Turretfield, South Australia. This lab is run by Dr Jen Kelly with Dr Simon Walker's assistance. Both are world leaders in the technology.
Very few cows have given no embryos from repeated collections.
Windy Vale Roses' Champion has given a maximum of 20 embryos from one collection, this cow never flushed more than 2.
Blackn White Cecilia was a very poor donor with normal ET but has produced 108 embryos from 18 IVF collections with over 50% pregnancy rate. It is rare not to produce a viable embryo even from an old cow.

SEMEN
One straw of semen is used per fertilization but up to 4 batches of eggs can be done with this semen. Semen must be good quality and there is variation between sires.
After quite a lot of research we are having success with sexed semen. There is a lot of bull variability with some bulls being unsuitable. 7 or 8 days after fertilization good quality

embryos are frozen (vitrified), or transferred fresh. Currently I am averaging 2 embryos per collection with collections done weekly or fortnightly at my facility in Mt Compass.

PREGNANCY RATES

IVF embryos are definitely much more fragile than embryos collected through conventional ET and results have so far been quite variable. However we have been refining our techniques and I believe that, with good dairy heifers and beef cow recipients, rates of 30%- 50% are consistently achievable at a 9 week pregnancy test. Excellent pregnancy results have been achieved in highly fertile beef cows. As with normal ET donors can have a very big effect on pregnancy rates. The pregnancy results in dairy cow recipients have so far proved very disappointing and therefore are not recommended.

DONORS

Heifers can be collected as soon as they are large enough probably about 220+Kg. Cows can be collected at any time from calving to 3-4 months pregnant. However a better embryo yield is achieved while the cow is empty. Rennylea W449 has produced 14 embryos from 12 collections while pregnant. The time limit on collecting a pregnant cow is determined by physically being able to reach the ovaries. As pregnancy advances sometimes only 1 ovary can be collected. Old cows can become menopausal and the yield and quality of the oocytes drops dramatically. Fat cows can be quite difficult to do. Infertile cows can be highly productive and some chronically cystic cows are helped by the procedure.

RECIPIENTS

Only dairy heifer and beef cows should be used as recipients. They should be in store condition and gaining weight at the time of transfer. Their cobalt, selenium and copper status should be satisfactory. They should be vaccinated with 7 in 1 and pestigard and not be a pestivirus carrier (PI).