

*In vitro* Production (IVP) commonly known as IVF and Multiple Ovulation and Embryo Transfer (MOET) are the optimal methods for accelerating genetic improvement in cattle. Each technique offers unique advantages and drawbacks, making the choice between them dependent on factors such as breeding objectives, convenience, cost and logistical considerations. Whether you're aiming to maximise genetic gain, improve embryo yield, or work with challenging donors, understanding the pros and cons of IVP vs MOET can help you make the best decision for your breeding program.

## In Vitro Production (IVP)

### Advantages

- More embryos can be produced each year
- Can be performed on pregnant & non-cycling cows
- Up to 25 donors can be aspirated in a single day (vs approx. 8 with a MOET flush)
- Can be done without hormone treatments/super stimulation
- Oocytes can be collected every 2 weeks
- Works well in all breeds but is particularly successful in cattle with *bos indicus* content
- More flexibility around joinings & semen usage
- Different sires can be used on the same batch of oocytes
- IVP requires fewer sperm cells - 1 straw can be used across 10 donors
- Sexed semen works better with IVP
- OPU can be done cost-effectively on ovaries sourced from processing plants
- Genetics (oocytes) can be sourced from deceased or injured cows
- May work on cows with fertility issues.

### Disadvantages

- Min 20-25 head for each OPU collection
- *Bos taurus* females may produce fewer embryos
- Frozen IVP embryos can have lower pregnancy rates than frozen MOET embryos
- Time sensitive – logistics can be challenging, particularly with fresh programs
- Export protocols are in development



Photo by Jenny Underwood

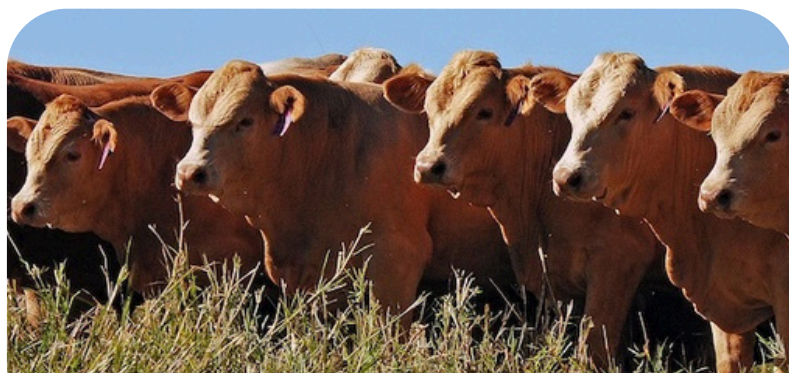
“ **In 2023, 87% of embryos produced in North America were *in vitro* derived, an increase of almost 16% from 2022** ”

Source: 2023 IETS data

### Multiple Ovulation & Embryo Transfer (MOET)

#### Advantages

- Proven, reliable and well-understood
- Carried out on-farm – no need for a sophisticated laboratory and associated logistics
- *Bos taurus* can produce more embryos per flush
- Slightly higher conception rates, particularly with frozen embryos
- More export protocols currently available.



#### Disadvantages

- Dependent on Follicle Stimulating Hormone
- Number of handlings, cost & availability
- *Bos indicus* cattle can be sensitive to hormone treatments
- Time consuming and time-sensitive for producers (approx. 15-17x through yards over 3-week period)
- Critical shortage of skilled MOET vets
- Attention to detail paramount
- Unsuitable for pregnant or non-cycling cows
- Donors likely to drop out of herd's regular breeding cycle
- Ovaries take time to recover from FSH
- Experienced technician required for Artificial Insemination component.

Can we say one is better than the other? It depends on many factors, particularly your breeding objectives, the breed in question, the value of your donor's genetics, the value of the semen being used, the complexity of the matings required and the desired rate of genetic improvement. It also depends on the availability of skilled technicians and where you live relative to an airport or bovine IVP lab.

While MOET has been a valuable tool for decades, IVP offers greater flexibility, efficiency and a faster rate of genetic improvement. The ability to regularly collect oocytes from processing plants, pregnant or high-value cows, use problem donors and optimise semen use is now making IVP the preferred method of embryo production around the world.

Once the Nbryo Platform of technologies makes IVP viable for commercial producers, we expect IVP will supersede MOET in Australia and New Zealand too.

#### STAY AHEAD OF THE HERD

follow "Leading the herd"

