

## **Frequently asked questions - Donors**

### **1) How many embryos will I get from my cow?**

An impossible question to answer. Our record from a single flush on a Bonsmara cow was 65 grade 1 embryos, but we have also flushed many cows with no viable embryos.

Be aware of people who try and impress breeders by telling them only about their successes.

There is a difference between flushing various breeds, old versus young cows, heifers and most importantly between individuals within a breed.

Our advice is to work on a conservative average of 4 to 5 embryos per flush when making your calculations; our average is probably around 7 embryos over all flushes in time. The more you flush, the closer you should get to the average.

### **2) Can you flush heifers?**

The answer is yes, but there are a few things you have to keep in mind.

- Heifers generally give fewer embryos than mature cows. Where certain breeds such as the Boran average 6-7 embryos per mature cow, their heifers only average between 3-4 embryos. This also has to do with the conservative doses of super ovulation drugs used when flushing heifers.
- Heifers have not proven their breeding ability. In beef breeding, it is common knowledge that the show champion does not necessarily breed champion calves. Flushing a beautiful female to discover later that she does not breed true to type can be a costly exercise. In dairy animals, however, this is much less of a factor with all the production data, breeding values and extended pedigrees to their disposal.
- You do not know which bull is a good match to that heifer yet. It may be safer to repeat a specific or similar mating that has produced good offspring in the past.
- Heifers cannot be flushed too many times before there is a real risk that she may not get pregnant again afterwards. We try to use a conservative dose as not too over stimulate heifers, and there are always exceptions to the rule, but I would not recommend flushing a heifer more than twice before getting her pregnant again. If they get too old, become “stale” and over fat, you have problems. The various breed societies also have regulations on maximum age of heifers at first calving which you need to keep in mind in order not to have her lose her registration.
- You cannot flush a heifer at too young an age. It is difficult to determine the best age at which you can start flushing. There is a lot of variation between the different breeds, between individuals within a breed and between different systems of raising calves and nutrition made available to calves. You also need to consider whether animals were moved from one breeder to a next with the resultant time lost with adaptation periods. It is important to always first have a heifer weighed, inspected by a veterinarian to determine if she is reproductively active and has an adequately developed reproductive tract to be physically able to be flushed.

### 3) **What is the best time of the year to flush?**

Again not a straight forward answer. This will be determined by

- Location of farm
- Breed to be flushed
- Fodder flow, availability of extra feed during winter, budget for concentrates
- Availability of recipients, breed
- Best time of year for calving

In general, spring and autumn are good times because of more moderate weather. However, it is better to flush for example in July when it is constantly cold, than to flush in September when you've had warmer weather and then have a cold front with snow etc. suddenly coming through. These are impossible things to predict. In general, "extensive" farms in areas with very harsh winters should not flush in the middle of winter, whereas farms in the hot semi-desert areas may be too hot and dry in mid-summer.

Your Zebu and other tropically adapted types of donors generally flush better than the European types over periods of extreme heat, and vice versa if you get extremely cold periods.

If you have for example maize stowage or oats or rye pastures available, July can be a very good month, especially if this coincides with the start of your winter breeding season and the availability of recipients.

Many farmers complain that their calves born in December are always poor doers, and then they prefer not to flush and transfer in March, however if you're going to flush and freeze the embryo's, March is a very good time.

The only time we really try and discourage people to flush, is the week prior to and immediately after June 21. We found that this is a bad time, but then soon after June 21 the animals start to respond to the increase in daylight length again and we get better results.

### 4) **Should I flush on the farm or send the cow to a centre?**

This all depends on:

- The level of management on the farm. If you're not able to follow the program precisely, AI properly and have the necessary facilities to flush, it is better to send her to a centre where the whole operation is focused on flushing animals.
- If you want to export the embryos, the donor cow must be flushed in a quarantine facility.
- Lactating or not. At Embrio Plus, we prefer not to take in lactating dairy animals, we prefer them to continue her lactation on the farm and be flushed there as well, or be dried up and then sent to our centre.
- Number of times you want to flush. If you live in a remote area and want to flush a single cow every 2 months, it is more cost effective to rather flush her at a centre and freeze the embryos.

When you flush at the farm, it is a good idea to get as many of your neighboring breeders involved as well and organize to flush as many donors as possible on one location at the same time. This divides the travel fees between more people; you can utilize the same good facilities and it puts you on another level on the sliding scale for total number of flushes, which lowers the cost per flush.

**5) How soon after calving can you flush a cow?**

We usually flush a cow for the first time 3 months after calving down (beef) or 70-100 days into lactation (dairy), and thereafter they can be flushed every 7-8 weeks.

If you want to send a cow to our centre that has recently calved, the best time to do so is about 6 weeks after calving. Then she has 2 weeks adaptation period, before the program starts (which lasts 33 days), resulting in her being flushed 3 months after calving.

**6) Do you prefer flushing cows with calves at foot/lactating cows, or dry cows?**

Cows without calves give more embryos than cows with calves, which is an acknowledged fact. The problem with only flushing dry cows is that you end up with a very bad ICP and production records in the case of dairy animals and usually they tend to become very fat very soon because there is not a calf suckling her down or a lactation that is draining her reserves.

I would only recommend drying a cow up especially for flushing purposes if she is old and has had her good productions, and the stress of another calving or lactation/raising of a calf may inhibit her from producing embryos altogether.

If you plan to send your cow to a centre to be flushed for a long time, we can accommodate the calf easily. It is however better if you want to send cows with older calves to keep the calves back, give them concentrates so you won't lose growth on the calf, and get more embryos from the cow.

**7) What is the difference between a grade 1 and a grade 2 or 3 embryo?**

A grade 1 embryo (sometimes referred to as A grade embryos) is basically the best grade embryo with more than 85 % of the total cellular material inside the embryo being alive and normal.

A grade 2 embryo (B grade) has between 50 % and 85% living cells and a grade 3 embryo less than 50% live cells.

Grade 1 embryos give better conception rates (about 15% better) than grade 2 embryos. Grade 1 embryos also freeze better than grade 2's. During the freezing process, some cells get damaged, that is why embryos transferred fresh also do better than frozen embryos. If you freeze an already compromised embryo (grade 2 or 3), the number of living cells can become so low that you get poor conceptions.

When buying embryos, be specific about the grade of embryo. If you buy grade 2 embryos, they usually should cost less than grade 1's, or you can ask to pay per confirmed pregnancy at 2 months.

**8) How many times can you flush a cow?**

This depends on the cow and the number of embryos you need.

On average, we flush most cows 3 times, before their embryo production starts to become uneconomical, and we make them pregnant again.

After the pregnancy, their ovaries have normalized and they tend to repeat the same cycle. Some cows keep on producing embryos for years, if there is a market for her embryos or progeny; it makes sense to just keep on flushing her.

The biggest reason why some animals battle to get pregnant again after flushing is the fact that they become too fat, so turning the cow out to pasture and have her run with the bull normally is a good idea.

9) **Can I use a bull to serve the donor cows, what are the dangers? What about fresh semen?**

You can use bulls to serve the cows, but there are several risks involved that you must keep in mind.

The bull's semen may still be of a low quality, especially old bulls, bulls that have not served for a long time or bulls that were sick with a febrile reaction. Because the semen is then not checked at any stage, it is very risky to only rely on the mating. Also ensure that the bull does "thrust" when serving. Some breeds are shy breeders and it can be frustrating to sit through the night waiting for a bull that won't mount.

Use Kamars on the donors as well. It is a good idea to do A.I. as well as letting the bull serve, because usually the donors will not stand for the bull for the full 24 hour period. Do hand mating, let him serve the cow and then take him away, by doing this you will be able to give him more than one donor as well.

The other important risk is that the bull may introduce infections to the cow because of the huge volumes of semen that he deposits and the fact that the uterus from a super-ovulated cow is more susceptible to infections than a normal cow's. Prior to letting him serve, do a proper sheath wash on the bull with clean water, as well as washing the vulva and perineum of the donor.

We are of the opinion that freshly collected semen remains your safest option. We got on average 1.5 embryos more when using fresh semen compared to using frozen semen. It is especially effective when flushing multiparous old cows that have got huge uteri with long uterine horns.

There are antibiotics in the diluent used that minimizes the risk of infection if good hygiene is practiced. It is more concentrated than frozen semen and survives for longer within the donor, ensuring better fertilization.

Keep the fresh semen refrigerated at 4-8°C, it may never reach freezing point! Test the refrigerator in advance. Organize with the person collecting the semen for you to keep a sample under similar conditions with him. Before each A.I., he can check a drop first to see if the semen is still OK to use.

10) **What do I do if the donor shows no heat at all, or if she comes onto heat late?**

You must still do the A.I., especially the second A.I. on the program, even if you observe no heat. It has happened many times that donors have reacted without any visible signs of heat.

You may however decide to use cheaper semen or more readily available semen than what you originally wanted to, because there is always the risk of a poor response.

If you see no signs of heat at the time of the first AI on the program, and you intend using expensive semen, you may skip the first A.I. Always do the 2<sup>nd</sup> A.I., and if the donor does show heat later, you can do an additional 4th A.I. 12 hours after the 3<sup>rd</sup> A.I. as indicated on the program.

11) **How many doses of semen should I use per donor cow?**

We AI 3 times during the program. When using rare or extremely expensive semen of a very high quality, 3 straws will suffice. To use 4 straws is better, and then you can do the 2<sup>nd</sup> A.I. on the program with 2 straws.

When using cheaper semen, use 6 straws and A.I. with 2 straws per A.I. for each of the 3 A.I.'s.

To use more than 6 straws does not really give any added benefit, plus with every A.I. there is a risk of introducing pathogens through the cervix or damaging the uterus.

## 12) Why do some cows flush poorly?

When you are looking for reasons why a cow did not flush well, there are 4 main areas that are equally important in order to achieve success, if you have a problem in any of these 4, it will ruin the whole program (“a chain is only as strong as its weakest link” idea)

### ➤ **The cow factor**

- ✧ Some cows (estimated at about 10-15%) do not react to the super ovulation drug. This does not mean that they are infertile, but we’re dealing with a biological system of which every fine detail is not yet understood.
- ✧ Some cow produce dead oocytes when super-ovulated.
- ✧ Injuries, disease (clinical or subclinical) with a fever may affect the donor.
- ✧ Body condition (too thin, or too fat and losing weight)
- ✧ Some cow lines within a breed flush well, some do not.
- ✧ Some cows only flushes well after her calf is removed or being night weaned, especially if she is battling to gain condition during the embryo program.

### ➤ **The bull factor**

- ✧ You need really good quality semen for embryo flushing. Semen that may be good enough to use in normal AI programs can give unfertilization when used for flushing. The reason for this is that the uterine conditions in a cow that has been super-ovulated is much more demanding on the semen’s ability to swim up the uterus , plus the fact that the cow may ovulate over a period of time and the semen must survive long enough to achieve fertilization. It is a good idea to have a straw of the batch you intend to use, checked before the program, or quickly have a vet check the first drop of semen before A.I.’ng with the straw.

### ➤ **The human factor**

- ✧ If you made mistakes during the program, like not giving the correct dosages of the correct drug at the correct time, this will influence the result of the flush.
- ✧ If there is a problem with the management on the farm (unbalanced diet, over robust handling of the animals etc) you cannot expect the animals to react well. Cows need to be in a rising plane of condition and be handled in a minimum stress environment.
- ✧ If the person doing the AI battles to get through the cervix, or damages the wall of the uterus with resultant edema and blood, this will also cause unfertilization. Always use a sanitary sheath when AI’ng to prevent the introduction of infection into the uterus.
- ✧ The hormone program that we formulate for each cow is a calculated guess, especially if we flush her for the first time. We base this initial estimate on her breed, age, weight, dry or lactating etc. If a cow does not react as one expected, we can change the program to try and get a better response on a subsequent flush.

### ➤ **Environmental factors**

- ✧ Cold fronts, unusual rain patterns, heat waves etc can affect donor animals severely. See the discussion on “best time of the year to flush”.
- ✧ Always try and give the animals in the flushing program the camps with the best grazing, underfoot conditions and protection against the elements, make sure that they still maintain adequate feed intake during inclement weather.

**13) When is the best time to get a cow pregnant again after flushing?**

The first heat after a cow has been flushed is usually a very fertile heat to use, because her uterus has been effectively flushed out by the flushing procedure and the ovaries should be activated by the hormones used. Most cows show heat between 4-14 days after the flush.

It is also a good idea, if possible, to have the cow mated by a bull rather than to A.I. her, and give the cow an ovulation-inducing drug such as Fertagyl at the time of mating/A.I.