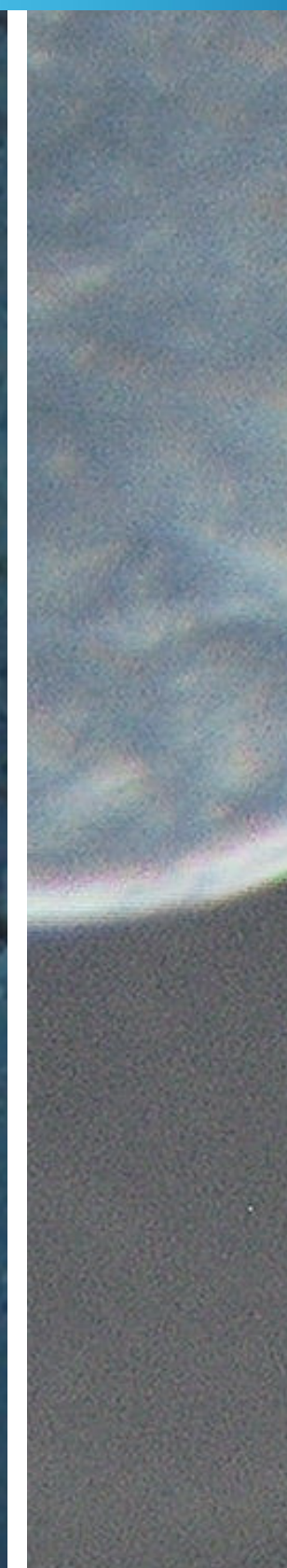
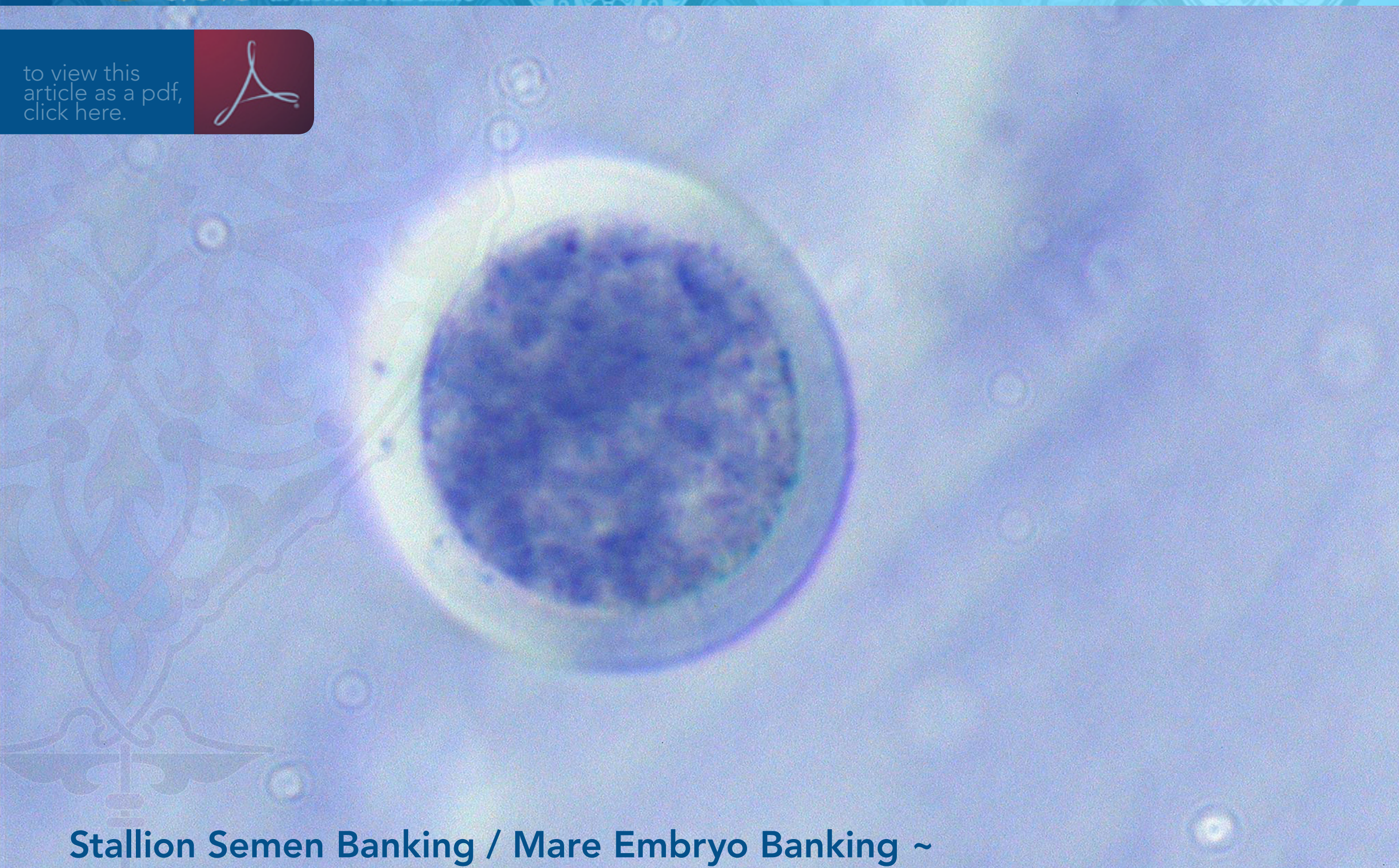


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Stallion Semen Banking / Mare Embryo Banking ~

Preserving Genetics for the Future

by Jack & Kim Farmer

photos by Jack Farmer, Stuart Vesty and Jeff Little

What does a Stallion or Mare have in common with an Artist such as Picasso?

See Stallions and Mares as Artists in the business of breeding horses, creating, if you will, their offspring lineage. Their Foals are the results of combining stallion genetics with a suitable mare genetic match, similar to an artist mixing and putting paint to canvas. As we know, many Artist and Horses do well within their lifetime. Some Artists that do well yet become legends among artists and art collectors, unfortunately, only after they are gone. Collectors of Fine Art, Antiques and oh yes Horses, know that things of the past in history can be highly prized and sought after in life today. How would you like to have a Picasso to hang on the wall in your home's living room? How would you like to have a young "Bask - AHA" or "Harlem Globetrotter - ASB" or "Doc Bar - AQHA" mare or stallion in your barn today? Would an owner of such a young breeding stallion or mare think they could breed highly sought after horses from these horses? U-bet-cha in a heart beat!! I am sure those horses would be worth their weight in gold and pride of ownership that would not be for sale cheaply today.

Ok. So how do we get there??

Let's think out of the box for awhile. Most registries today, no longer have any time limits on registration time when using frozen semen or transferring a frozen>thawed embryo. Most horse registries now allow registering foals sired by stallions or mares that have passed on to greener pastures. Think years into the future about your stallion or mare and their offspring with their accomplishment record and sales. We know that most stallions or mares are not considered good producers until they are older having a proven record. Why? Good question. It takes about 10 years of breeding to get enough offspring

out there to say if the stud or mare is a good producer and on what breeding blood lines. It can be very frustrating in deciding which mares to breed to what stallion, plus advertising, sales and long term health care of the horse, just to get there. (I know as we have done it twice.) So Now you're at about 14 years old for your horse. Let's think the horse is in the best health and best horse care with a continued successful breeding career for another few years. Now your horse is 15 to 20 years old, or is he/she? Do you still have this prized sought after horse?

The average age of a horse is around 14 years old. Unfortunately, a lot of us no longer have the horse for many reasons. For those of you that do make it 15 to 20 years and beyond, give yourself a big pat on the back. You are within a small group of breeders that have the older productive horses. The rest of us lost to Mother Nature, accidents, over medicated with steroids and some of them sold before you knew your horse was a great one plus the many other things that can go wrong in the breeding business and ownership of horses. We have all experienced some sort of disappointment in the horse breeding business with things that go wrong. Well enough of the "negative aspects" in the horse breeding business. Let's look at

things that can go right and be a business life saver.

What to do to preserve your business and the stallion's or mare's continued lineage and legacy?

Answer:

- Freeze Stallion Semen for storage, future use, security and sales.
- Freeze Mare embryos with significant offspring genetics for storage, security and sales.

I call this your "Safety Net" horse business saver including an extended marketing plan.

For Stallions and their Owners:

Reasons to Freeze Semen:

- Stallion Loss, yet a need to continue his lineage for a limited / extended time.
- Stallion breeding interruption due to Lameness, illness or loss of breeding soundness.
- Stallion unavailable due to horse shows.
- Stallion over booked on a particular day, being short of semen Vs missing a mare.

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Preserving Genetics

continued...

- Sale of the Stallion with retained breeding (s) for yourself.
- Sale of the Stallion with retained breeding (s) for your business geographic area or country.
- Stallion semen Bank / Peace of mind, knowing your \$ investment has a small "Safety Net" reserve for the unexpected.

The Stallion Semen Freezing Technology has improved greatly over the last several years. It is becoming a more acceptable practice in the breeding business. I have even experienced and seen improvements myself within the past years, (plus my own trade secrets). If you discuss freezing semen with University Professors in the equine breeding department, they will tell you that breeding with Frozen Semen in the near future will become as common as breeding with Cooled Semen is now. If you consider that to be true, Frozen Semen Breeding will be the standard within 15 short years! Here at Santolina Farm we are at 10% frozen semen breeding 3 years ago and now at 50% or more.

Semen Freezing is not for every breeder nor do all Stallions freeze within acceptable parameters. Most Vets and technicians will tell you that 40%+ motility is acceptable if not great. However, I see higher % motility's in my business than the standard target of 40%. I attribute this consistent higher percentage to our processing procedure. The Semen Freezing at Santolina / Equine Cryogenic Service is processed at 7 degrees centigrade, not room temperature, as many others process. The "7 degrees" is what most containers cool semen too. To the best of my knowledge, Equine Cryogenic Service is the only one processing (cold equine semen) for freezing. We have learned that it is the up and down temp change(s) that can cause sperm damage plus centrifuging at almost twice the G force at room temp or higher. When Semen is Fed Ex-ed to me or brought to me, I receive it at about 7 to 10 degrees in the semen shipping container-extended-cooled. If we collect the stallion, we cool it to 7 degrees. My in-lab processing, refrigerated centrifuging, refrigerated packaging straws / goblets, start of freeze programming; is all at 7 degrees centigrade. We never allow the semen to warm up again

or process any semen at body or room temperature. This processing is a modified cattle (Bull) semen process commonly used in cattle; a much larger, more advanced breeding industry than Equine.

Why cold processing?

A Good Question.

Answer = A Simple biological rule of thumb is that for every 10 degrees you reduce a biological product, a 50% reduction in biological activity occurs. So to show you the math, take body temp 37 degrees, -10 to 27 = 50%, -10 to 17 = 50% x 50% = 25%, -10 to 7 = 50% of 25% = 12.5% at 7 degrees. Simple math tells me that I am processing semen at about 7 to 10 degrees or (approximately one sixth to one eighth) biological activity Vs everyone else at 50 to 100%. Somewhat different approach to semen freezing, a pain in the butt to process the small equine quantities, more costly, yet seems to produce better consistent results. OR More bang for your \$ buck getting pregnancies. There are a few other unmentionable processing techniques too, such as the Computer Controlled Freezer Curve Rates and time. I generally see post thaw motility similar to the cooled shipped semen motility, 60 to 70%. I know it has to be less, but looks very similar as if the frozen semen thawed was only 1 day old cooled semen, which will work well in the breeding barn. If your stallion ships good as cooled semen, then he should have good, if not better than the average frozen semen. Just think, you could have one day old semen at your finger tips 360 days a year, if needed, within a few minutes, plus the security of having a semen bank reserve. Freezing semen is something to seriously consider for your future business in today's newer technology and marketing concepts. In 2004 Colorado State University – Equine Department (Drs. T. Backman, J.E. Bruemmer, J.K. Graham, and E.L. Squires) published their study comparing "Pregnancy rates of mares inseminated with semen cooled for 18 hour and then frozen" for breeding, reporting pregnancy results "did not differ significantly from mares bred with control frozen/thawed sperm". The study also used the egg yolk based SMEY type extender (Skim Milk Egg Yolk) similar to the same extender as most recommended and used at Equine Cryogenic Service. A complete copy of the study is listed on our web site at www.santolinafarm.com. In sum-

mary, what we do with our somewhat different cold semen freeze processing may work even better.

For Mares and their Owners:

Reasons to Freeze Mare's Embryos:

- Mare embryo banking of significant proven offspring full siblings.
- Mare embryo banking of significant proven offspring full siblings, w sales from storage tank.
- Mare embryo banking should mare be sold, with retained foals for yourself, also saleable.
- Mare embryo Banking / Peace of mind, knowing your \$ investment has a "Safety Net" reserve for the unexpected.
- Mare loss, yet a way to continue her lineage for a limited / extended time.
- Mare breeding interruption due to Lameness, Illness or loss of breeding soundness.
- Mare breeding during off season to foal out the year or so later in the spring time.

Mare Embryo Freezing is the newest procedure in the breeding shed. As of just last year in 2008, Frozen Embryo foals were approved for 2009 registration by AQHA. The AHA rescinded their "must transfer within 3 days" rule, thus granting all existing / previous 2008 Arabian frozen embryos registration, including the > First Ever < registration of a Purebred Arabian foaled 3-30-06 "Eyce KL" from an embryo harvested / frozen 9-2004 done at Santolina Farm. This is 19 months after breeding mare, foaling in the spring rather than fall. A late summer / fall breeding/embryo flush > embryo

freeze, can foal out in 20 months during the spring that can show as a futurity horse. The embryo freezing will generate new marketing ideas, better foaling times and genetic preservation for the future.

Things I have learned since starting a Semen and Embryo Freezing Business with changing technologies and marketing.

Mare Embryo Marketing and Embryo - ET sales / Embryo Rights or Reservations (fresh embryos) being sold today is new in the horse industry within the past couple of years. Frozen Embryo Banking of significant offspring with embryo sales coming in the future, is on the horizon if not here now. At Equine Cryogenic Service we still freeze using the established human state of the art embryo freezing procedure / equipment that is expensive and somewhat more demanding in technical abilities, limiting the providers. The embryos must also be smaller in size - 6 to 6.5 day about 250-500 microns, similar to human embryos, to freeze without damage. Just in the past year, new embryo freezing kits are having some success and will surely improve as the demand increases. Freezing embryos is > just here< with horse registries making the changes in rules 2008 and on.

Breeding mares with Frozen Semen has received a bad reputation due to problem extenders basically causing inflammation in the uterus, resulting in lower conceptions. Most semen frozen seems to be processed in a lactose/ DMSO/EDTA/EG base freezing extender, as it is an easy procedure, much faster in time for the processor and does not require sophisticated freezing equipment, only a Styrofoam box. We believe it is the wrong extender to use for the mares uterus as it generally causes a uterine flair up resulting in lowered conception rates. The Motility Rates observed on the microscope glass slide do appear to be about the

same. Simply put, the semen freezing for a +pregnancy breeding result in the future, is all about the semen freezing extender used.

Equine Cryogenic Service uses the Modified French formula or Ghent freeze extenders, which has a more demanding 2+ hour freeze process, as our first choice extender. Our Planer MRV Computer - Control Rate Freezing Chamber complements this demanding freeze process, with quality temperature control processing, yielding what we see as a more viable semen freezing result. We no longer process lactose/DMSO/EDTA/EG base extenders.

We believe that breeding with frozen semen, semen banking and embryo banking will be a way of the future and become significant in marketing horses. For those Horse Breeders that are in the breeding business for the long haul, I would strongly suggest to you, start freezing your stallion's semen now or very soon and consider freezing mare's embryos having significant offspring, so as to be in the position to raise those offspring from horses that may no longer with us in 15 years or sooner. This also creates a new market to sell frozen semen and/or frozen embryos out of your storage tank, now or in the future. Once frozen, the biologic time clock is suspended until needed. If your stallion or mare turns out to be one of the great producers, you could be the one to bring the "Picasso's" back into the genetic pool to make a difference in the future. A lot of Life is about making a difference for the betterment of the world and society. If you consider your stallion or mare to possibly be one to make a difference, semen freezing / embryo freezing will help you continue a legacy to make that difference plus help to protect your investments.

