

TRANSPORTED SEMEN HANDBOOK FOR THE MARE OWNER DID YOU KNOW THAT THE MARE IS THE LEAST FERTILE OF ALL DOMESTIC ANIMALS?

That the percentage of live foals in the breeding population is only 55%?
That many of the mare's reproductive problems are caused by man?

The mare is a seasonal breeder, naturally cycling from April or May to early fall. The mare's estrus behavior is usually erratic and extended in the early spring. During this transition period, the mare may appear to have strong estrus behavior but in fact, is not yet ovulating.

It is easy for the breeder to be deceived by the mare's behavior and to breed the mare on these early non-ovulatory heats. Another reason for the mare's low fertility is the difficulty in detecting ovulation. The breeder wishes to determine the optimum time to inseminate, but ovulation can occur at any time (normally ovulation occurs toward the end of estrus). The mare's behavior is often deceptive. 30% of all mares may show estrus behavior during pregnancy, many continue to ovulate during pregnancy and 20% of the mare population has silent heats (with no visible signs of estrus). Still other mares will appear to be in foal and show no heats when they have actually suffered an early fetal loss or were never in foal at all.

HOW TO SUCCEED WITH TRANSPORTED SEMEN

The mare owner must perform at home some of the tasks that would ordinarily be done by any good breeding farm.

Breeding is an expensive proposition; good mare management is your best investment. Good mare management at home requires some diligence on your part, but it will save you a lot of money and enable you to breed to the stallion of your choice.

When using cooled transported semen, the success or failure of the breeding is largely YOUR RESPONSIBILITY. The most fertile stallion cannot get your mare in foal if she has reproductive problems or is bred at the wrong time.

**DO YOU WANT A 55% CHANCE OF A FOAL OR DO YOU WANT A 90%
CHANCE?**

Good mare management is one of the keys to high conception rates.

If you want to give your mare a 90% chance of getting in foal, you will have to assume the responsibility to give her some conscientious attention for the next few months. You must assume the responsibility to work closely with the stallion owner so that he can schedule your shipments. Long distance breeding is a partnership; a partnership where you and the stallion owner must work together.

WE MUST TEACH YOU TO BE A DETECTIVE

The stallion owner cannot get your mare in foal, for instance, if he doesn't know that she did not conceive in one breeding and needs to be **rebred**. The situation is even worse if YOU don't know that the mare needs to be rebred. The stallion owner must have information or long distance breeding becomes a game of blind man's bluff: A game where you are the loser, when your mare is not in foal by September! The mare owner must take time to learn a little about equine reproduction. We Must teach You To be A detective...

PART ONE

ESSENTIAL INFORMATION

YOU CAN HELP YOUR MARE BEAT THE NATIONAL AVERAGES

Your mare will have the best chance of getting in foal and staying in foal if she is in really good physical condition, regularly wormed at least every two months and up to date on all her inoculations. Some mares may have difficulty getting or staying in foal if they are under stress caused by such activities as a rigorous showing schedule and extensive traveling. It is very important that your mare is not too thin. Grossly overweight mares are difficult to get in foal, but the thin mare will often appear to cycle, yet will not **ovulate**. Ideally a mare should be gaining weight at the start of the breeding season.

WHAT CAN I DO TO HELP MY MARE BEAT THE ODDS?

Good mare management is the key to success in long distance breeding. Proper mare management includes choosing a stallion suited to you and your mare, good health and veterinary care and a reliable method of teasing and record keeping.

WHAT ABOUT VETERINARY CARE?

Contact your veterinarian about your plans to breed your mare by transported semen. Ask them any questions that you may have. Discuss the logistics of timing inseminations and fees involved. Check with them to be sure that your mare is in good health and is up to date on all necessary inoculations and worming.

A good reproductive examination is a smart investment. Make arrangements to have an exam performed on your mare. Regular veterinary checks are your smartest investment both before and after your mare has been bred. Before your mare is bred, the vet will want to check that she has no reproductive abnormalities, that she is cycling normally and is free of genital infection. Rectal palpation and ultrasound can be used to discover if your mare is cycling normally and **ovulating**. They can also be used to determine whether or not your mare is in foal. Many veterinarians feel that you should get a uterine culture taken when your mare is in heat. One culture is not completely reliable. The swab can easily miss colonies of bacteria, therefore you must **reculture** if your mare does not get in foal in 2 heats. You can also get a false positive from contaminants in the environment. If her uterus is not in good condition, a mare is more likely to contract uterine infections which can hinder conception or cause abortion. Barren mares and older mares are often less resistant to bacteria than the young normal mare.

Your Mare should be cultured.

Your veterinarian may decide that hormone therapy might improve your mare's chance of getting in foal. Some of the possibilities that you and your vet may consider include **prostaglandin** - commonly used to shorten the mare's cycle, synthetic **progesterin (Regu-mate)** - to regulate the mare's cycle and human **chorionic gonadotropin (HCG)** - to stimulate **ovulation**.

WHAT ELSE DO I NEED TO KNOW ABOUT GOOD MARE MANAGEMENT?

TEASING IS THE BASIC FOUNDATION OF GOOD MARE MANAGEMENT! You must be religious about teasing your mare - Teasing holds the key to successful conception - and it only takes 5 minutes per day! Most normal fertile mares will come into heat every 19 to 28 days and the heat will last 5 to 7 days. You must establish the normal cycle for your mare. It is the great variation among fertile mares that makes teasing so important.

You must also establish the characteristic **estrous** behavior of your mare. Although different mares exhibit different behavior, this behavior will usually remain constant for each mare. Typical estrous behavior includes raised tail, frequent urination, winking (**eversion** of the ventral vulva to expose the clitoris - mares also may wink after normal urination), squatting posture and just a passive acceptance of the attention. Sometimes signs of rejection such as kicking and squealing may be followed by acceptance. **BE PATIENT!** Remember, behavior varies enormously between mares. It is your job to learn to recognize your mares estrous behavior.

KEEP WRITTEN RECORDS! MEMORY IS UNRELIABLE!

The mare is a seasonal breeder. Cycles will vary and be irregular in the early spring. Many mares exhibit strong heat behavior in March but are rarely **ovulating**. By the time the mare has shed out her coat, she will probably be cycling every 21 days (the first day of heat is day 1). Her heat will probably last 3 to 7 days. If after mid-May your mare has very long heats, you must consult your veterinarian. Prolonged **estrous** sometimes presents breeding problems. Teasing is just as important after the mare has been bred as it is before insemination. It is essential to whether or not the mare needs to be **rebred**. On average only 50% to 60% of mares get in foal on the first heat bred. Why waste a year and a lot of money because you did not discover that your mare was not in foal and needed to be rebred?

WHAT IS THE BEST WAY TO TEASE MY MARE?

Safety for the handler and the horses is the first consideration. This means a solid wall or door between the mare and the teaser. This means the handlers standing in a safe position. Please exercise the utmost caution! Both the mare and the teaser can act **unpredictably**.

You must make sure that you have a stallion to tease your mare. Sometimes you can use a gelding (he may need to be treated with testosterone) for teasing. It is a good idea for the mare to be in some place where she is relaxed, but is also essential that she be put in a real teasing situation where the teaser's head can touch her hindquarters. It is a good idea to tease at the same time every day. Horses are creatures of habit and mares are more likely to show well if they are in a routine that they expect.

Don't be fooled. Under no circumstances should you rely just on the mare's behavior in the field unless she lives out in a herd with a stallion. Don't turn your teaser gelding out with your mare. Many mares will show well to a gelding however, they may not show to a gelding or sometimes even to a stallion if they are next to him every day. For the small breeder who does not have a teasing chute or wall, a simple solution is to bring the teaser to the door of the mare's stall and let him tease her over the door of a half door or through the bars of a full door. If the mare seems to be responding favorably, she can be backed up right to the bars to further check her response. One or two bars can be removed from the stable partition so that the teaser can actually touch the mare if she seems at all receptive. It is important that the teaser be able to touch the mare's hindquarters if she does not seem hostile.

If you are alone, it is possible to lead the mare to the teaser's stall or paddock if some common sense safety rules are followed. The partition between the mare and the stallion

should be 5 to 6 feet high and solid. It must be high enough so that the stallion won't jump over and solid enough so that a striking horse can't put a foot through. Do not tease over a dutch door if there is no one to hold the stallion. Unless the door is very high, you may have unexpected company on your side of the door! You can lead the mare to a small window (a window much too small for him to squeeze out of but large enough for him to put his head through) and let him tease her there. You may run in to some problems such as mares that will not respond to a pony teaser, will not respond to a familiar teaser, will not respond to a gelding or may have silent heats and will not respond to any stallion or outside stimulus. Trying a different teaser may solve your problem. If not, consult your veterinarian. Your vet may choose to try hormone therapy or put the mare on a course of **Regu-mate** and keep track of the mare's cycle by rectal palpation or ultrasound.

WHAT KIND OF RECORDS DO I NEED TO KEEP?

Good written records are another essential element of good mare care. Do not rely on memory to track heat cycles. Dedicate a calendar or make a special chart for breeding records. Record her heat cycles, teasing behavior, breeding dates and pregnancy checks.

KEEP THE STALLION OWNER INFORMED OF YOUR MARE'S STATUS. Your records and information are also essential for your veterinarian to make a proper assessment of your mare's breeding condition.

It is important to note when your mare first starts to cycle in the spring and to write down the length of her heats and any behavioral characteristics when she is in heat. The first and last day of heat should be noted on a calendar or chart so that you will recognize when her heats begin to arrive on a regular 21 day cycle. Most mares have heat periods that last from 5 to 7 days.

WHEN SHOULD I BE ABLE TO BREED MY MARE?

Plan to be able to breed your mare in April, May or June if all goes well. The mare's reproductive system is started up by the increase in hours of daylight. To be more specific, it appears that the governing factor is the actual time of sunrise and sunset, and not whether it is sunny or cloudy.

Even the warmer parts of the United States, where mares shed out early, are only about 3 weeks ahead of Montreal. For example, February 1st in Florida has the same hours of daylight as February 23 in Montreal. By April, the hours of daylight are equal in Montreal and Florida.

WHAT DO I DO IF I WANT TO BREED MY MARE EARLY?

Increased hours of daylight inactivate the pineal gland so that it no longer **supresses** the **hypothalamus**. The **hypothalamus** then sends **gonadatropin** releasing hormone (**GNRH**) to the pituitary gland at the base of the brain. The pituitary releases follicle stimulating hormone (**FSH**) to stimulate **follicular** growth and **luteinizing** hormone (**LH**) to induce **ovulation** when there is sufficient **estrogen**. Many breeders, therefore, put their mares under lights to stimulate increased daylight and induce regular cycles. Lighting must be done systematically and religiously or it will have a negative effect. It takes a minimum of 45 to 60 days to induce ovulation with artificial light. To breed on February 15, a farm must start the light program by December 1. One proven system is to put your mare under 16 hours of light per day starting December 1 and maintain that level until the natural daylight reaches 16 hours per day. Consult your veterinarian for additional methods.

WHAT DO I NEED TO DO TO PREPARE A FOALING MARE FOR BREEDING?

Detecting heat in the foaling mare is easier since you know roughly when she will be in heat. The foaling mare usually comes into her foal heat 7 to 14 days after the birth of her foal. Her next heat will be about 30 days after foaling. Mares with foals are sometimes hard to tease and may not show heat well. Your **veterinarian** may have to follow your **mares** heat by rectal palpation or ultrasound.

Your mare's condition should be thoroughly checked by your veterinarian at the time of her "9 day" or foaling heat. If your veterinarian thinks that she is in really good shape, she should have a uterine culture and could be bred later in the heat as she/he sees fit. Many farms culture the mare on the foal heat, give her any necessary treatment and shorten her cycle with **Prostaglandin**. This puts her in optimum condition after foaling and means that her foal will be due on the same date next year if she conceives. Be sure to notify the stallion's farm of your mare's foaling date and whether you plan to breed her on the "9 day" heat, short cycle her or breed her on the 30-day heat.

WHAT DO I HAVE TO DO WHEN MY MARE IS READY TO BREED?

Be sure that you have completed and returned any forms sent to you by the stallion owner, such as the contract, Health History Form or copy of the Mare Identification Passport along with any payments due prior to breeding. Call your veterinarian on the first day of your mare's heat. Your vet will examine the mare and decide what day or days would be best to breed her. Palpations are critical to select optimum breeding time and to maximize chance of pregnancy. Be prepared to have to breed your mare at least twice per heat cycle. Mares **ovulate** on their own schedule and it is often best to breed a little early rather than risk missing her altogether. **KEEP IN CLOSE TOUCH WITH THE STALLION FARM.** Call and let them know the dates your veterinarian has chosen. Be considerate when

calling - remember you may be calling a different time zone. Verify shipping arrangements - get the flight numbers and time of arrival if shipping by airline - or confirm date of arrival of semen if using FedEx or UPS. Collect your shipment from the airport or from UPS/FedEx, etc. There is no great hurry, but you should use the semen within 48 hours of the time that it was collected from the stallion. Be sure that no one opens the container until your veterinarian is present and ready to inseminate.

SOME IMPORTANT POINTERS FOR INSEMINATION

Do not open the container until the veterinarian is present and ready to inseminate your mare. If your veterinarian does not have a copy of the Transported Semen Handbook for Stallion Owners and Veterinarians, be sure that he reads the insemination instructions accompanying the shipment or contained in this handbook.

If the stallion's farm has not enclosed the directions for insemination, call them at once. You have a big investment in breeding your mare. It is unfair to you and to your veterinarian if they have not been given the essential information. If you are using cooled transported semen, your veterinarian should simply inseminate the mare with a syringe that is slightly warmer than the semen. **DO NOT WARM THESEMEN.** The mare is the best warmer and offers the ideal conditions for the semen.

PROCEDURE FOR INSEMINATION

- 1) Make a positive identification of the mare by comparing her to the mare identification passport.
- 2) Do not warm the semen. The mare provides the best environment to warm the semen.
- 3) Prepare the mare for insemination. Wrap her tail and clean her thoroughly. If soap is used, be sure to rinse her well.
- 4) Set up all items needed for insemination such as sterile pipette, sterile syringe (see appendix for recommended syringes), gloves, and sleeves. Remember that many types of syringes and pipettes may have a toxic effect. If yours does or you are not sure, leave the semen in contact for as short a time as possible.
- 5) All of the above items should be kept at room temperature (15-20° C).
- 6) Open the **Equitainer** and remove the packet of semen. Rotate to stir gently and carefully draw into the slightly warm sterile syringe.
- 7) The mare should be inseminated as soon as possible. She provides the best environment for the semen and is the best warmer.

PROCEDURE TO EXAMINE SEMEN AFTER INSEMINATION

- 1) This method of estimating **motility** will give you a rough estimate of survival.
- 2) The temperatures must be accurate. It has been well documented that the motility will vary greatly with temperatures much higher or lower than 37°C.

- 3) All equipment must be warmed to 37°C (slide, cover glass, pipettes, etc.). This can be done in the incubator or on a slide warmer. It is best to also warm the microscope stage to 37°C.
- 4) Gently stir the semen and place a drop on the **pre-warmed** slide. Cover with a cover glass and leave on slide warmer or in incubator for 30-60 seconds.
- 5) Examine under a microscope for forward motility.
- 6) If available, warming the semen in a water bath set at 37°C for 5 minutes prior to estimating motility is ideal.

WHAT DO I DO AFTER THE MARE IS BRED?

You can relax for 5 days after the mare goes out of heat. 5 days after the last day bred it is essential to start teasing your mare again. It is best to tease every day. Again, keep very good records of your mares reaction to teasing. This information is essential to you and your veterinarian. If your mares recycles very early, it could be indication of an undetected infection or other disorder.

If your veterinarian has access to an ultrasound machine, you can get an ultra-sound diagnosis as early as 15 days after **ovulation**. Your mare can be in foal at 21 days and suffer an early fetal loss, so you must have her checked again whether or not she comes back into heat. The ultra-sound can also detect twins and monitor their progress. Many mares are thought to lose one of the twins and carry the other fetus to term. If one twin does not regress, however, your veterinarian may try to abort one fetus. If your mare appears to come back into heat, call your veterinarian immediately. The veterinarian must determine whether or not it is a false heat. 30% of all mares show heat when they are actually in foal. Most mares even **ovulate** during the time that they are pregnant. Most mare owners automatically have their mares palpated at 18 to 21 days after the last day bred to check for pregnancy, unless the mare has been already examined by ultra-sound. If your mare seems to be in foal, and there is no ultra-sound available, be certain to have her palpated no later than 35 days after the last day bred to make sure that she doesn't have twins.

KEEP THE STALLION OWNER INFORMED OF YOUR MARE'S STATUS!

If your veterinarian finds your mare not to be in foal and needing to be **rebred**, call the stallion owner at once so that he can adjust his breeding schedule. If she is not in foal after two full heat cycles, it is very important to get another uterine culture. Some veterinarians feel that a biopsy may be indicated at this time. If you take the culture in the second day of heat there is still time to get the results and breed her in that heat. Keep teasing the mare until 40 to 42 after the last day bred. Chance of early fetal loss are greatly reduced by the time the mare is 60 days pregnant.

SOME METHODS OF PREGNANCY DETECTION

Teasing shows the absence of heat. Teasing is about 60% accurate.

Ultra-sound can show a fetus as early as 12 days after conception, but there is up to a 25% chance of early fetal loss and the mare can come into regular heat having slipped the fetus. This early fetal loss is thought to be normal and not associated with the ultra-sound.

Palpation is the usual pregnancy detection method used by the veterinarian, but it is often

tricky to determine pregnancy by palpation as early as 18 to 21 days. Many veterinarians feel that palpation is more reliable between 35 and 42 days. **Bloodtesting** consists of various tests for hormonal levels in the mare's blood. These tests are generally only accurate between 40 and 100 days post **ovulation**. Talk to your veterinarian about which they prefer.

New technology and rapid advances are being made in reproductive technology. Check with your veterinarian for updates.

SOME MANDATORY EXAMINATIONS

Many farm contracts stipulate that you must have your mare examined for pregnancy by certain dates after the last day bred. Read your contract carefully. Your live foal guarantee may be null and void if this examination is not performed and the results reported to the stallion owner. Remind your veterinarian to sign and notarize the breeding passport and return it to the stallion's farm. **DON'T FORGET!!** You don't want to lose a live foal guarantee if it is in your contract.

Even if your mare is found to have slipped her foal, you must return a copy of the signed and notarized breeding passport. The original breeding passport must be signed, notarized and returned to the stallion's farm in order to have your deposit refunded. If your mare is not in foal, return the original passport to the stallion owner after the mare's last 55 day examination of the breeding season.

PART TWO

FURTHER INFORMATION FOR THE INTERESTED READER

WHAT ARE SOME OF THE REASONS MARES DON'T GET IN FOAL?

Breeding too early in the season. The mare is a seasonal breeder. A good rule of thumb is that your mare will **ovulate** regularly when she has shed her winter coat. An exception to this rule is the mare that has been under lights to induce early cycling. The first green grass also signals the mare to start **ovulation**. Genital tract infections. These are common in the mare and are often found in the maiden

mare as well as in the foaling mare. A sloping vulva will predispose a mare to infections in the genital tract. Older mares are more prone to infection and changes in the uterus. Not having a stallion or gelding with which to tease the mare. The mare herself is the very best indicator of when she is ready to be bred. Some mares even produce follicles in between heats, which can be misleading if the vet has to rely only on palpation to determine heat cycles. The mare who cannot be teased is a problem for your veterinarian and expensive for you. Thin mares and grossly overweight mares are always a problem. The best condition is the mare who is in good flesh and gaining weight at the start of the breeding season. Also, mares who are rundown, **overstressed**, full of worms or anemic can be a problem to breed.

Mares that are too fit from racing or **eventing** may need to be let down before attempting to breed them. Mares that have been given drugs for racing or showing may also need additional time before breeding. Hormonal imbalances and abnormal conditions of the mare's uterus are also a problem even for the reproductive expert. Some hormonal difficulties include persistent corpus **luteum** and prolonged **estrus**.

MARES WHO DO NOT GET IN FOAL AFTER 3 BREEDING CYCLES MAY NEED TO HAVE A UTERINE BIOPSY PERFORMED.

WHAT MARES NEED UTERINE BIOPSIES?

Candidates for biopsy include: **Windsuckers**, mares with sloping vulvas, mares who abort more than once, mares who are barren one year, mares who cycle irregularly during the normal breeding season, mares with persistent uterine infections, mares who do not conceive after 3 or 4 cycles.

WHAT DO I DO IF THE MARE SLIPS HER FOAL?

If the mare slips her foal before 36 days of pregnancy you will usually be able to breed her on the next heat. Many mares are pronounced in foal by ultrasound or skip a heat as though they were in foal. They then slip the foal, cycle regularly at 40 to 42 days and can be **rebred**. If she slips her foal after 36 to 38 days of pregnancy, getting her back in heat is more of a problem. After 36 days of pregnancy, the mare develops **endometrial** cups in the uterus and will not return to heat until these cups cease to function which can take up to 120 days after conception. Rather than wait for nature to take its course, most vets recommend **prostaglandin** therapy before day 36 so that the mare can be rebred earlier.

WHY DO SOME MARES SUFFER EARLY FETAL LOSS OR ABORTION?

Infection (**endometritis**) is a common cause of early fetal loss (before 30 days) and abortion: particularly beta **hemolytic** streptococcus organisms, **pseudomonas aeruginosa**, **klebsiella** and **CEM**. Some researchers feel that twinning is the largest single cause of fetal mortality in the horse. Only a small percentage of twins survive. **Rhinopneumonitis**, a disease which causes viral abortion, is very prevalent in the USA and Canada. **Viral Arteritis** is another cause of abortion. Worm medication and injections during the first three months of pregnancy. Stress and trauma. Some researchers think that shipping during the first 60 days of pregnancy can increase the chance of early fetal loss. Shipping between 100 and 200 days is to be avoided. The production of progesterone is switched during this time from the ovaries to the placenta.

Sudden changes in feed, pasture and exercise. All changes in feed, pasture and exercise should be gradual. **Prostaglandin** mistakenly given when the mare is actually pregnant. Pesticides on pastures or other toxic substances. Physical disorders of the uterus and ovaries including cervical or uterine incompetence. Insufficient progesterone. Some researchers feel that some mares have too little progesterone to maintain pregnancy. Your veterinarian may feel that supplemental progesterone is necessary.

Reprinted from Transported Semen Handbook For The Mare Owner. Written by: M.M. Douglas-Hamilton & Kim Vale