7 Secrets to a Super Star Stud Dog

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1. **Semen Analysis:** 4 parameters – motility, morphology, count and longevity.

2. **Semen Delivery:** Vaginal AI versus natural/surgical/TCI

3. **Scratching the Surface:** Managing parasites. Preventives for flea/tick/heartworm

4. **Stud Dog Variation:** Change is the Spice of Life – varying the stud dog by trading or using fresh chilled semen, Frequency of use & overusing the same stud in a breeding program. Age to stop using – AKC or Indiana?

5. **Screening:** Health/ testes, prostate, penis, scrotum, temperament, libido, OFA, DNA. Supporting aging changes in the testes and prostate, how old is “too old”?

6. **Supplements, Dinner and Snacks:** Nutrition and nutritional supplements to aid fertility.

7. **Surroundings and Shampoos:** Environmental influences – housing, temperature, disinfectants, shampoos and coat care.

1. ***Semen Analysis – 4 Parameters***

A complete semen analysis includes evaluation of the semen volume and gross appearance, sperm count, sperm motility, sperm morphology and longevity. The mere recognition of sperm in the ejaculate is not sufficient to determine if the dog is fertile or sub-fertile. Assessing for semen viability using the Nucleocounter as well as testing sperm longevity in semen extender, refrigerated, is also important when assessing a male dog's fertility.

The semen analysis should be performed as soon after collection as possible. While the semen is awaiting analysis, it should be maintained at room temperature. If there is a delay in using the sperm, it should be covered with Parafilm^{R}, kept away from any chemicals, centrifuged if necessary, extended and refrigerated. The semen motility evaluation must be done when the semen is still fresh and warm or has been carefully rewarmed. Although the semen should not be kept warm for an extended time prior to evaluation, it is best to keep it at a constant temperature and to rewarm at least 1 drop on a microscope slide prior to evaluation. There are several techniques for warming the semen. These include a slide warmer (free-standing or on the microscope stage), a water bath, a heating pad set low with a towel over it, or holding the sample against a body surface such as the evaluator's wrist.

Semen volume

The volume of the ejaculate is simple to determine, particularly if the semen is collected in a sleeve with a clear plastic graduated centrifuge tube attached. When possible, only the sperm-rich fraction should be collected. The typical dog's sperm-rich fraction varies from 0.5 ml to 4.0 ml. Some dog's total ejaculate volume, when all of the prostatic fluid is saved, can exceed 30 ml. A larger volume of ejaculate does not correspond to greater fertility. Many clients expect to see a greater volume and are disappointed that their stud dog "didn't do very well" if only the 1ml of sperm-rich fraction is collected. The volume should be recorded on the semen evaluation form to use for calculation of the total sperm count.

Gross appearance of the ejaculate – appearance to the eye

The normal sperm-rich fraction of the ejaculate should be a dense milky white color. It should not be thick or viscous. A faint cloudiness suggests a low sperm count; clear yellow suggests urine; cloudy yellow suggests white blood cells; and red, brown or copper color suggests blood. Blood can be the result of trauma to the penis, prostatic disease, or cancer in the urogenital tract. Blood in the ejaculate of the dog does not interfere with fertility, but the underlying cause such as prostatic disease can.

a. Sperm Count

This is an essential part of the semen evaluation. The presence of sperm is not sufficient to determine fertility; an actual sperm count with motility and morphology is necessary to assess the male's fertility. On the other hand, the absence of sperm

in a single ejaculate is not sufficient to classify a male as sterile; he may have had sperm at a previous time or in the future.

There are several techniques for performing a sperm count: manual with a hemocytometer, by spectrophotometry using a sperm counter, and by computer assisted technology. A trained veterinary assistant can perform the entire analysis with a centrifuge, microscope, Unopette[R] and hemocytometer or a sperm counter.

The **iSperm** is a portable computer-assisted semen analysis system. It is cost-effective enough to make it a purchase to consider for a breeding kennel. This equipment may exceed the capability of your local veterinary clinic to assess semen quality – analyzing sperm count, motility, and morphology.

A normal dog should have approximately 10 million sperm per pound of body weight in the total ejaculate. The concentration is dependent on the volume of the ejaculate and does not correlate with fertility. The average semen dose considered to be adequate for a fertile breeding is 100 to 250 million progressively motile, normal sperm. There are anecdotal reports of lower doses successfully achieving a pregnancy.

b. Sperm Motility

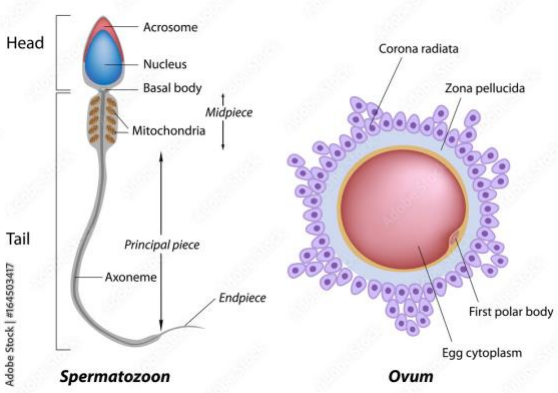
To assess sperm motility, place on drop of semen on a warm glass microscope slide, apply a warm coverslip, and evaluate under 100 x magnification with a microscope using a low light setting. Perform as soon as possible after collection with a warm slide and coverslip. A normal evaluation should show 80% or more sperm moving forward. If the slide begins to cool, it should be rewarmed and re-examined. If the slide dries, repeat the process with another drop.

There are 2 components to the motility evaluation. The first is the percentage of sperm that are motile in a direct forward motion. This should be done as a percentage. Sperm that are coiled or otherwise abnormal but moving should not be included. If a high percentage of the sperm appear to be gently curved and are moving in a circular pattern, the semen should be rewarmed and reevaluated because this is often the motion of cool sperm. The second component is based on how fast the sperm are moving forward. This is frequently done on a scale from 1 to 5, with P1 moving slowly forward and P5 moving rapidly and deliberately forward. If the semen is very concentrated on the slide, diluting the sample with the dog's prostate fluid or 0.9% saline will improve visibility of individual sperm. Live-dead stain can be used to help distinguish between dead and immotile sperm.

Computerized technology such as the iSperm has been developed for evaluating sperm count, motility and speed of progression.

c. Sperm Morphology

Morphology is the description of the shape and appearance of the sperm, including the cap (acrosome), head, mid-piece, and tail.



Morphology of the sperm cells is an important component of male fertility evaluation. A stud dog is considered “normal” if his sperm cell morphology is 80% or more normal. When the percent of normal sperm drops below 60%, fertility is impaired. The morphology should be performed on unstained semen allowed to cool enough to render them immotile. Unstained semen is best evaluated for morphology using phase-contrast microscopy. Staining the sperm cells may cause some artifacts but will allow the examiner to detect defects not visible in an unstained sample. Eosin-nigrosin stain is preferred for this application. Once the sperm are immotile, 100 sperm cells should be counted with the following defects noted: head abnormalities, acrosome abnormalities, midpiece abnormalities and tail abnormalities.

Sperm cell defects can be classified by either the area of the testicle in which the defects develop or by the significance of the defect. Major defects interfere with fertility and minor defects do not impair fertility. Defects that occur in the testicle during sperm cell production are considered a primary or major defect. These include altered head size or shape, bent midpieces, and detached heads. Defects that occur as the sperm are maturing in the epididymis, during transport through the vas deferens, or in sample handling are considered secondary or minor defects. These defects include bent or coiled tails, and distal cytoplasmic droplets.

A normal dog’s spermatozoa should be straight or gently curved with an acrosome, normal head, midpiece and tail. Sperm with proximal droplets may be immature sperm or may represent a morphological abnormality. If the dog has been recently collected and the sperm motility appears normal, there may be no reason for concern. The dog should have another semen analysis after sexual rest. If the proximal droplets are still present in large numbers, the motility is slow and deliberate, or the dog has a history of infertility, these droplets probably represent a defect and not a lack of time in the epididymis to mature. Semen that is abnormal

at collection but motile may not chill and ship or freeze well but may still produce a pregnancy in the bitch when used as a fresh breeding.

A rapid Wright's Geimsa stain (DiffQuik^{R}) is used as for a blood smear – the semen is placed on the slide, a second slide is used to smear it, and it is stained in each of the solutions for 5 minutes. After rinsing and drying, the slide may be evaluated under oil emersion. When the Wright's stain is used, sperm will appear purple on a clear background.

To evaluate the stained sperm, 100 spermatozoa should be counted using oil immersion. The abnormal sperm should be classified by defect: primary defects including defects that occur during sperm (defects in head shape, bent midpiece, persistent proximal cytoplasmic droplet, and doubling of any portion of the spermatozoa) and secondary defects including defects that occur during epididymal maturation or staining (detached heads, persistent distal cytoplasmic droplets, and bent tails). There is a poorly defined correlation between specific defects and fertility in dogs.

The semen should also be assessed for the presence and quantity of red blood cells, white blood cells, and bacteria. Epithelial cells are often normal.

d. Sperm Longevity

How long does the semen live after collected? Once the semen is collected and extra prostatic fluid is removed, semen extender can be added in a ratio of 1 part of semen to 4 parts of extender. This sample should be sealed and refrigerated, then every 12 to 24 hours, a small portion can be warmed, and examined under the microscope. Upon warming, the sperm cells should start swimming forward at nearly the same % as prior to chilling. This will assist the breeder in determining the male dog's ability to successfully achieve a pregnancy.

2. ***Semen Collection and Delivery***

There are 4 ways to deliver semen at a breeding: natural breeding, vaginal artificial insemination (AI), transcervical insemination (TCI), and surgical insemination. There are 3 kinds of semen – fresh (collected and used immediately), fresh chilled (collected, extended, and held or shipped for use within 48 hours), and frozen semen (semen collected and frozen in straws or pellets using very specific protocols, and stored in liquid nitrogen for an extended period of time, up to decades). Freezing semen requires special solutions, training, processing, and storage. Your kitchen freezer won't work.

Timing the breeding with progesterone testing, vaginal cytology, and male and female interest is essential in maximal fertility outcomes. Using frozen semen requires very specific timing with progesterone testing. This discussion is covered in Canine Reproduction and Neonatology and in our other materials on breeding.

a. Semen Collection and Vaginal AI

Exam gloves, either latex-free or rinsed to be free of powder on the outside of the glove are needed for the person collecting the semen. These should be donned prior to the stud dog entering the room. Provide 2 collection sleeves, top rolled back, labeled with the stud dog's name. Check the brand of non-spermicidal lubricant with a fresh collection to assure it will not be detrimental to sperm motility. We recommend the use of soft, disposable semen collection sleeves.

The comprehensive veterinary examination of the stud dog should be completed AFTER the semen is collected. The only evaluation that should be done in advance is to be certain the collection will not be detrimental to him or the bitch. Work in a quiet room with 1 to 2 assistants and 1 collector, 1 Brucella canis negative, in-estrus bitch, with good footing.

The bitch should be positioned in the room prior to the male dog's entrance. She should be facing away from the male, near the front of the rug used for footing so as to leave enough room behind her to allow the male to have all 4 feet on the rug as well. She should be held by an assistant who is kneeling beside her, 1 arm gently restraining her head from under her neck and the other arm under her abdomen to support her in a standing position. This is best done with the bitch between the assistant and the wall; this aids in keeping the stud dog from wandering during collection. If the bitch is likely to object to the stud dog's approach or mount, she should be muzzled.

If the stud dog is trustworthy and unlikely to swing his head around to the person collecting him, the dog may now enter the room with the stud dog on a loose leash to approach the restrained bitch. IF the stud dog does not allow easy handling of his genitals, an experienced assistant should handle him. This assistant should direct the stud dog's attention to the bitch and protect the person doing the collection. Although it is unusual for most stud dogs to object to this type of handling, there are some that are potentially harmful to the person kneeling beside or behind him. Care should be taken to protect the bitch, the owner, and the assistant.

The semen collector should quietly approach the rear of the stud dog as he approaches the bitch. The stud should be given the opportunity to sniff the bitch. At this point, the confident dog is easily aroused. The stud dog can then be made aware that the collector is present beside or behind him by a gentle touch to his rump; then the sleeve can be slipped onto the penis as the bulb of the penis begins to swell. If this process is delayed, it may become difficult or painful to slide the prepuce caudally to expose the bulb. In most cases, dogs are more comfortable during ejaculation if the prepuce is slid caudal to the bulb of the penis prior to full erection. If his erection is too advanced to allow exposure of the bulb without

causing pain, the stud dog should be walked away from the bitch, allowed to calm down, and then handled more quickly on the second approach.

If there is excess contamination in the prepuce, quickly wipe the penis with a non-abrasive saline-moistened towel to cleanse the area.

As the prepuce is slid caudally, exteriorizing the penis with one hand, the collector can slide the collection sleeve over the penis with the opposite hand. Care should be taken to avoid traumatizing the penis as this can cause superficial hemorrhage. Gentle but firm stimulation of the shaft of the penis proximal to the bulb will increase the stimulation of the male and retain the prepuce caudal to the bulb, helping him to maximize his erection and ejaculate. Once he is stimulated, the collector should firmly encircle the base of the penis proximal to the bulb with the thumb and fingers, simulating a tie, allowing him to complete his ejaculation. Some dogs will thrust vigorously as they ejaculate while others are quietly non-demonstrative.

When possible, only the second portion of the ejaculate, the sperm-rich fraction (the milky-white portion) should be collected. The collection sleeve can be changed between fractions if the dog is standing steadily enough to avoid losing a portion of the sperm-rich fraction. In many cases, the first and second fractions may both be collected. The second fraction containing the sperm is typically between 0.5 ml and 4.0 ml in volume. The first and third fractions vary widely in volume, and may exceed 20 ml in larger dogs. At this point, the dog will often swing his leg over the arm of the collector, directing his penis backwards between his rear legs, as in a normal tie. The third fraction of the ejaculate is usually clear (unless the prostatic fluid is bloody or purulent). As this portion containing only prostatic fluid does not need to be collected, the sleeve should be removed or changed. Be assured that this fluid does not contain any valuable sperm.

Once the sleeve is removed from the penis, a water-soluble non-spermicidal lubricant should be applied to the penis to prevent drying because this is painful. Slow walking of the dog away from the presence of the female may aid in retraction. The dog may be allowed to lick himself to accelerate retraction of the penis into the prepuce. In some cases, particularly with long-haired or thick-bodied dogs, they may need assistance retracting the penis into the prepuce. The collector should visually assess the dog to assure that his penis is fully retracted and he is comfortable.

Shy dogs should be allowed more time to introduce themselves to the female. Sometimes, off-leash courting can help his confidence. Care should be taken though that the female is not so outgoing as to frighten him. This is when a temperament mis-match can be a problem.

After the less confident stud dog has had the opportunity to familiarize himself with the female, she should be steadied by an assistant, and he should again be allowed to approach her. In some cases, the assistant can assist the male by holding the female with an arm under her rear legs; but in other cases, this is a deterrent to the male to approaching or mounting her.

Some stud dogs are easily collected with no female in the room – these are the dogs who are confident and familiar with the routine. However, the sperm count will generally be much higher if a female is present. Some stud dogs are content to sniff the female and collect well this way. Other stud dogs must mount the female once or multiple times before they will collect. This often requires patience on the part of the people collecting. There is a fine line when too little or too much patience becomes a deterrent to the stud dog to collect so there are times the collector's experience will signal that it is time to end these efforts. Everything possible should be done to prevent the stud dog from having a negative experience that will interfere with his next efforts at collection.

Occasionally, there are dogs with shy temperaments, those who have been trained not to collect, and those with an associated medical condition that causes them discomfort when they mount or ejaculate, that are difficult or impossible to collect. There are several options for dogs with reluctance to collect. These include: having the owner leave the room, and changing the collector or way the staff is assisting, including the person doing the collection. A more experienced collector may be able to finesse the dog into relaxing and ejaculating. Consider using a different female, in case the female used is not to his liking – dogs do have preferences.

b. Fresh Chilled/Cooled Semen

This is a method by which you can have semen collected a long distance away from where the female to be bred is and shipped overnight on ice packs with extender for a breeding done the day following collection. AKC allows pups resulting from this type of semen and breeding to be registered without veterinary intervention. This does take advance planning to order and prepare the supplies necessary for this breeding, so plan ahead!

c. TCI and Surgical Ais

These both allow for semen delivery directly into the uterus. By putting the semen closer to the ovary, the likelihood of pregnancy is improved, particularly when using compromised semen, frozen semen, or in females with questionable fertility. These both require a veterinarian and a veterinary team to provide this medical procedure.

3. ***Scratching the Surface – Managing Parasites***

Not all parasite control products have been shown to be safe in breeding dogs. You can speak to your veterinary professional, but there are so many products on the market that

he or she may not know what is tested and what is not. You can do an internet search for the package insert. You can call your Revival Animal Health Animal Care Specialist for help or you can use Revival's Flea and Tick Finder (www.RevivalAnimal.com/flea-tick-finder) to help guide you to safe products for breeding dogs. Remember breeding dog means a dog intended to be included in a breeding program, not "pregnant" dog. Plan carefully for your next generation of breeding males and females.

Scan to use Revival's Flea & Tick Finder

a. **Preventives for external parasites** – fleas, ticks, and mites. These come in 3 versions – oral, topical applied to the skin, and collars. Bravecto™ is the only one of the 4 oral flea and tick preventives/treatments on the market with testing done to assess its safe use in breeding animals. There is a 1 month Bravecto™ on the market for use in puppies under 6 months of age. Some topicals have published safety data and some do not. Check all products carefully before use. The collars are generally not recommended in breeding animals. Natural parasite control products may also not be tested so read and follow label directions.

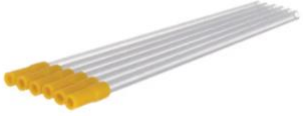
b. **Preventives for internal parasites** – heartworm, roundworms, hookworms, whipworms, Giardia, Coccidia, and tapeworms. These products come come as 2 versions: oral and long-acting injectables. The topical selamectin does not provide adequate intestinal parasite control in the dog. The injectable ProHeart 6 and ProHeart 12 have been tested and shown safe in breeding animals. Most oral products are safe in breeding dogs, with the exception of Trifexis. Fenbendazole is safe in pregnant and nursing dogs. Metronidazole should not be used during pregnancy and lactation, nor in young pups under 6 weeks of age. See the "Parasite Control" handout from the Intestinal Parasites in Dogs Webinar for details on which parasites are managed with which medications, doses, and more information.

4. ***Stud Dog Variation***

Change is the "Spice of Life." Stud dogs should be carefully selected and replaced to avoid breeding too closely. Breeding too tightly into a line can lead to smaller litter sizes or missed breedings, making variety essential. There are several ways to increase the outcrosses and maintain or return to improved fertility.

a. Varying the stud dog by trading dogs. If there are others in the community with well-bred stud dogs, consider swapping dogs for a generation or 2, then come back into the line.

b. Using fresh chilled or frozen semen. Fresh chilled semen can be shipped across the country overnight, allowing for an easy way to improve genetic diversity. AKC does not require a veterinarians' involvement when registering litters from fresh chilled semen. Fresh chilled semen can be inserted by vaginal insemination (AI). This can be done simply with a **Breeder's Edge Collect Him Disposable AI Pipette** and a non-latex syringe. Frozen semen requires a more sophisticated approach in timing the breedings, coordinating shipping, increased costs of shipping



compared to fresh chilled semen, and must be inserted directly into the uterus for successful outcomes. Frozen semen can be used with either TCI (transcervical insemination) or surgical insemination, both requiring the advanced skills of a veterinarian experienced in this type of procedure.

c. Frequency of use exhausting semen quality. Using the same male dog to breed multiple females over the course of a few days can exhaust his sperm reserve. Use him wisely, allowing him to recover between breedings. Overuse can mean smaller litters or missed breedings. By timing the breedings using progesterone tests, you can maximize his ability to produce multiple litters by only mating him when the time is most suitable.
d. Overusing the same stud in a breeding program. A male dog should not be used to sire pups from his daughters. Line breeding this closely is likely to uncover unexpected genetic traits you may find undesirable or fatal. A male dog can be used on grand-daughters and great grand-daughters if done carefully and thoughtfully. Additionally, overuse of a stud dog can limit your options on where to go for the next generation of pups so use wisely. One rule of thumb is to only use a male to produce the number of pups a female could produce in her lifetime to avoid the "frequently used sire" syndrome.
e. How old is "too old" to breed? This depends on many factors, some of which are not the ability to produce sperm. There are organizations who dictate when you need to retire a stud dog. As stud dogs age, they tend to have a decline in fertility associated with prostate problems and depleted sperm numbers. For this reason, the AKC does not have an upper limit on age to breed, but any dog over age 12 needs an "Overage Sire" letter from your veterinarian that shows the stud is still producing sperm and capable of siring a litter.

5. ***Screening for health***

a. **General health.** Only male dogs with superior health and traits should be used in a breeding program. Have the male evaluated by your veterinarians to check for alignment of the teeth, hernias, eye problems, and many other traits that can be found on a comprehensive physical examination. Consider allowing him to produce a small number of litters and let those pups grow up a bit so be certain you like the pups he is producing. He should also be fed a superior diet and kept at an ideal body condition to maximize his ability to produce pups. Dogs with inherited traits such as allergies, seizures, thyroid disease and other life-time health problems should not be included in a breeding program. If you don't like having to manage his health problems, assume puppy buyers will feel the same way about being saddled with chronic health conditions and the associated time and expense this will require.
b. **Genetic diseases**. OFA, Eyes, Hearts, DNA. OFA is a centralized database for many health screenings including the results of hip, elbow, shoulder, spine, trachea and other x-rays. OFA also manages the data for heart and eye exams. DNA is now available for a multitude of health conditions and other traits.

Choose the DNA lab carefully based on your breed and the traits you are looking to test for.

c. **Reproductive organs**. Young and old dogs alike can have abnormalities of their reproductive organs.
    i. The scrotum is the skin covering the testicles. Temperature extremes, contact with irritants including kennel disinfectants, and trauma can cause damage to the scrotal skin.
    ii. The prepuce is the sheath of skin that covers and protects the penis. Frequently, a yellow to green discharge can be seen at the opening of the prepuce. This does not represent an infection but can be gently cleaned and removed prior to breeding.
    iii. The penis should be inside the prepuce except during urination and mating. If your male has difficulty with his penis, this and the prepuce should be examined by your veterinarian for abnormalities.
    iv. The testes are where the semen is produced, stored, and released from during breeding. Male dogs in a breeding program should have 2 normal testes in the scrotum. Older males can develop a tumor or tumors in one or both testes.
    v. The prostate is the organ in the abdomen of the dog that produces much of the fluid that is ejaculated during breeding. Older male dogs, over age 5 (younger in Bernese Mountain Dogs) may have an enlarged prostate (BPH), particularly during breeding season. Symptoms can include blood in the ejaculate or blood dripping from the penis. Left untreated, this can progress to an infection of the prostate. Prostate disease can be diagnosed by your veterinarian on rectal examination or imaging with x-rays or ultrasound. Both BPH and an infected prostate can be managed medically in most cases.
    vi. Take good care of your male's reproductive organs. You can check his scrotum, prepuce, penis and testicles periodically to assure he will be capable of breeding. Leave the prostate exams to your veterinary professional.

d. **Temperament.** The personality and behavior of your male dog should be carefully assessed prior to and while he is included in a breeding program. He should be easy to live with, get along with other dogs, and be the kind of dog you would want in your home. As above, if he is a dog you would not like to be around in your home, assume others will feel the same and do not use him to sire pups.

e. **Libido.** Libido is the sex drive. Some males have low libido and can be difficult to breed or collect. Be careful that you don't suppress his willingness to mate by telling him no too often, so he is willing and able when you need him to perform.

f. **Structure.** Structure is the way the dog looks. This includes breed type (does he look like the breed he is?), head, coat, tail, and legs (size, length, and angulation). Study your breed or breeds for appearance. This is not about a beauty contest –

it is about maintaining the breed type so he and his pups can function to do the job they were developed to do. There are many good resources to use – the AKC website, the breed club website, and Pat Hasting's books and videos called "The Puppy Puzzle".

g. **STDs in dogs**. Sexually transmitted diseases – canine brucellosis, strep, mycoplasma. Bacteria should be present in the reproductive tract of both male and female dogs. This normal bacterial flora is meant to protect the dogs against bacterial invaders that can cause diseases. Do not use antibiotics frequently or routinely to try to eliminate all bacteria or you are likely to cause more harm than good.

   The only bacteria we know is not supposed to be in the reproductive tract is *Brucella canis*, the cause of canine brucellosis. All new dogs introduced to your kennel should be kept isolated, in quarantine for a minimum of 30 days, and tested for brucellosis. If brucellosis ends up in your kennel, it will permanently damage your breeding program, so don't take chances. There is currently no FDA approved brucellosis test available for use in your veterinary clinic, so testing must be sent out to diagnostic labs. This will require 1 or more weeks for get results back. Plan ahead and be aware of delays, so be patient with your veterinary team while waiting for test results.

   Other bacteria including Strep, and mycoplasma are harder to manage. Both can be seen in normal and infertile or sterile dogs.

6. ***Supplements, Meals and Snacks***

a. **Nutrition.** We can't expect to have great fertility if we are not feeding an optimal diet to the machine that produces the sperm. This is not the place to scrimp on dog food. Royal Canin and Purina have diets with great track records of having the micronutrients necessary for top fertility outcomes, for the males and females. If you are struggling with fertility, the first 3 questions I ask is what do you feed, what else do you feed, and how long have you been feeding this diet.

   Macronutrients are the fats, carbohydrates, and proteins in the food.
   Micronutrients are the vitamins and minerals in the diet. These are much more difficult to assess by reading the outside of the dog food package.
   If you want to determine if diet is impacting your breeding program, start with changing 25% of the males and females to Royal Canin or Purina and test this theory yourself in your own kennel.

   Additionally, dog food should be stored where it is clean and dry. The food should always be stored in the bag or package it came from the manufacturer in, so don't empty it out into a storage container.

b. **Nutritional supplements** to aid fertility. There are many nutritional supplements on the market that suggest they can help improve fertility. Our line of Revival Animal Health Breeder's Edge® products are widely used by our very successful breeding customers. Supplements are not drugs or medications and do not need a prescription. Supplements support health and body functions and cannot make claims of managing medical conditions. These Breeder's Edge® products include:

i. **Breeder's Edge Problem Male™** contains perna mussel, DHA, L-carnitine and L-arginine to support the healthy production of sperm. Ashwagandha and maca root are there to support libido.

ii. **Breeder's Edge Get Him Going™** contains horny goat weed to help with libido, maca root for vitality, ashwagandha and niacin for energy and health, and sarsaparilla root to reduce inflammation and support hormone regulation.

iii. **Breeder's Edge Oxy Stud™** is a dietary supplement that contains a proprietary blend of vitamins, minerals, and all-natural herbs beneficial for the unique needs of male breeding animals during peak breeding season. Important antioxidants help repair damage to testicles and muscle tissue caused by the environment and aging. Herbal ingredients give males more stamina and make them stronger breeders. This exclusive formulation also promotes the overall reproductive health of normal, healthy males and aids in the improvement of semen production.

iv. **Breeder's Edge In Between for Him™** fills the nutritional gaps that may exist in the diet of male dogs between breeding cycles by supplying him with B vitamins and iron to maintain higher energy levels and cardiovascular function. Vitamin E supports prostate health and provides antioxidant protection. It provides magnesium and potassium for nerve and muscle function. And contains 23 key vitamins and minerals to support his overall health.

7. *Surroundings and Shampoos*

a. **Environmental influences**. Housing, temperature, daylength. The environment for the males and females plays a huge role in fertility. Crowding, being housed next to dominant dogs, excess noise, temperature and humidity extremes, ammonia levels from urine build up, and other factors are important to consider. Exposure to daylight or full spectrum lights at least 12 to 14 hours a day also influence fertility. These are all manageable with some creative solutions.

b. **Disinfectants.** Appropriate use of disinfectants is important for skin health, particularly the sensitive skin of the scrotum. Disinfectants should be used at appropriate concentrations, by measuring the water and disinfectants correctly, using them for the appropriate contact time, and rinsing those that require this step.

c. **Grooming, Shampoos & Coat Care**. When bathing dogs, use a medicated shampoo such as **Vet Basics® ChlorConazole Shampoo** diluted according to label directions, and rinse well. When blow drying, avoid too much time with a warm or hot dryer aimed at the scrotum – too much heat can cause damage to sperm development.

With this information, and help from your local veterinary professionals, you are on your way to having a productive stud dog and breeding program!

Have a question about your stud dog or need help developing a male dog health plan?

Call a Revival Animal Care Specialist at 800.786.4751.

Visit the **Revival Animal Health Learning Center**
to learn more secrets to successful stud dogs.
Scan the QR code!