

Embryo transfer (ET) in cattle has gained considerable popularity with seedstock producers over the last few decades. Through natural breeding, only a fraction of the reproductive potential of an outstanding female is realized and ET can accelerate genetic improvement significantly in a herd by greatly enhancing the number of offspring a genetically important female can produce in her lifetime.

With the limited genetic pool available, ET is an even more valuable tool for genetic improvement among U.S. Wagyu producers. Once a genetically superior female is identified and selected as a donor or flush cow, a producer always hopes she flushes well with a high number of excellent quality, fertilized, transferable or freezable embryos. The nutritional management and care of both donor cows and recipients can have a tremendous impact on the degree of success experienced in any ET program with the donor cow being the primary focus of this discussion.

Nutrition Basics

Most will acknowledge that nutrition is certainly one of the most critical

areas associated with ET programs. Though Wagyu females are known to be extremely fertile, they like females of other breeds can prove highly inconsistent in any ET program when nutrition and feed management are not balanced and consistent.

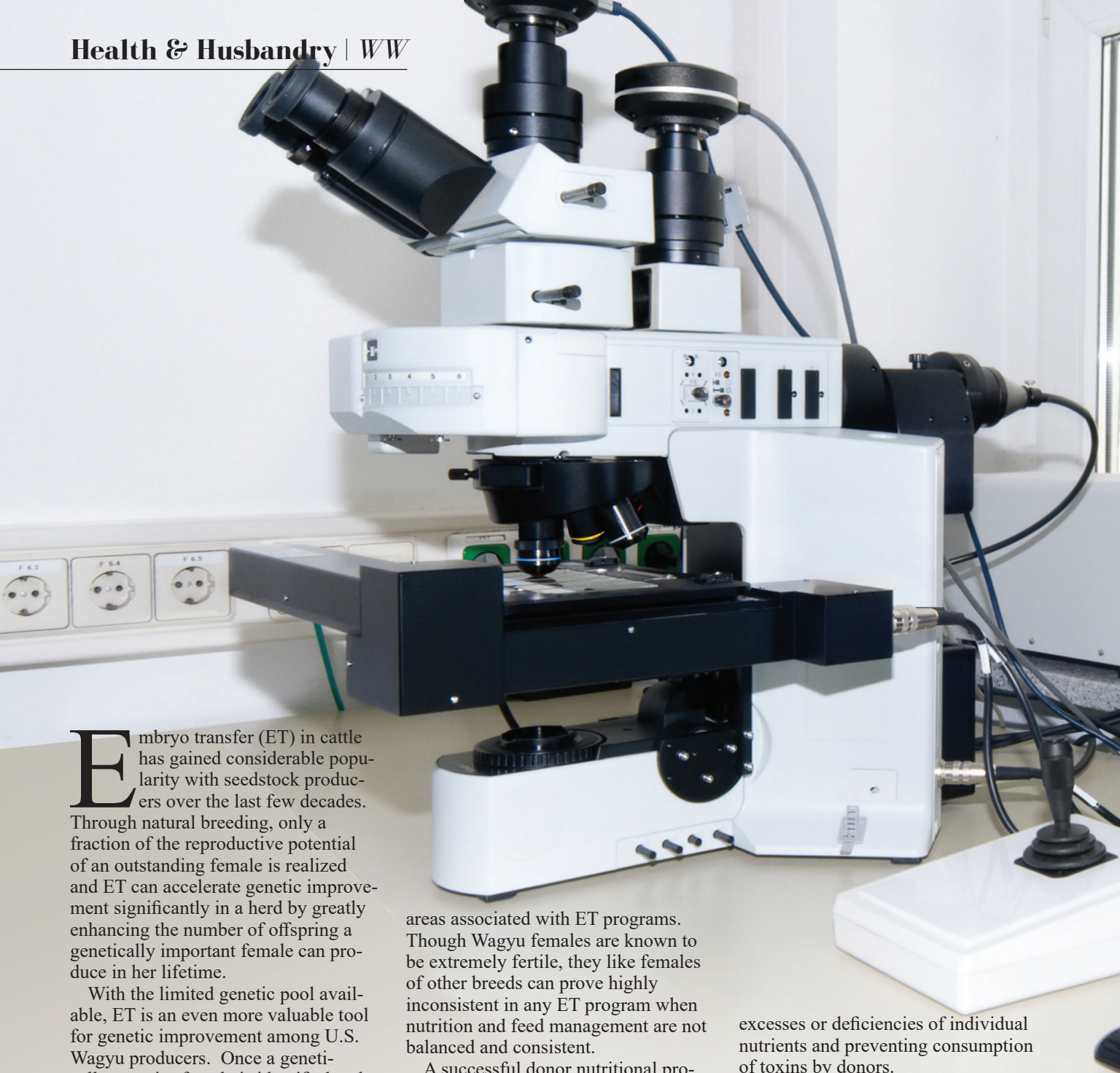
A successful donor nutritional program starts with a long-term mindset on behalf of the producer in contrast to a short-term, 60-90 day mindset. The donor's nutritional management should be a year-round process placing attention on nutritional demands throughout the production cycle.

This process includes maintaining donors in moderate body condition year-round regardless of stage of production, ensuring donors are on a proper mineral program throughout the year and not just a few months or weeks prior to flushing, ensuring donors are not exposed to long-term

excesses or deficiencies of individual nutrients and preventing consumption of toxins by donors.

Either severe undernutrition or overnutrition may diminish the success of a particular flush with associated implications on both the number and quality of eggs produced.

Though donors should always be in moderate body condition, if a producer errs one way or the other, slightly underconditioned cows are preferred over overconditioned cows. It is vitally important to avoid overconditioned, fat donors as both production and programming of reproductive hormones may be impaired which can result in the normal reproductive cycle being





FEEDING YOUR DONOR

By Dr. Jimmy Horner

altered or even stopped altogether. Synchronization of estrous is also more difficult in overconditioned donors. It is important to note that we want to ensure donors are in a positive energy balance during the 30-60 days prior to flushing and that they are not losing weight, but they should not be overcon-

ditioned before or during this time.

A long-term, consistent approach is extremely vital in the mineral nutrition of donors as mineral status cannot typically be impacted on a short-term basis and may even require several months to attain normal status in deficient cattle after proper supplementation takes place. Producers should attempt to select mineral supplements which meet requirements based on other feedstuffs fed while avoiding excesses that not only reduce profits but may also lead to imbalances of other nutrients.

Mineral supplements must be palatable and consumed consistently and they must contain ingredient sources that are highly bioavailable. Supplemental trace mineral sources may need to include organic or chelated forms with oxide sources being avoided due to the drastic differences in bioavailability.

In my own experience over the past 24 years and after discussions with other colleagues, it certainly appears that the Wagyu breed might possess an inherent inefficiency in metabolizing certain trace minerals and vitamins. Because of this long-term observation, I recommend feeding at least 10-15% above minimum requirements combined with chelated and natural sources of certain trace minerals and vitamins such as copper, zinc, manganese and vitamin E. Although the 30-60 days prior to flushing are certainly the most critical, producers should not wait until then to begin their donor's mineral program and in turn expect a successful flush.

A long-term mindset based on consistency is a must. Though free-choice mineral supplements should be available year-round, I strongly suggest that clients force-feed minerals/vitamins for a minimum of 60 days prior to flushing to ensure normal immune status in donors and recipients. There are several good injectable trace mineral/vitamin products and feed supplements available for use prior to breeding and/or flushing which may help provide a temporary boost to immune status, but these products should be well-scrutinized by your nutritionist, veterinarian, or embryologist prior to use.

Donors should typically be confined to a dry lot or pen or small paddock with minimal access to lush pasture or high quality legume forage. They should be fed good quality grass or

small grain hay or haylage. High quality alfalfa hay or haylage should be avoided in donor rations due to greater potential risk of increased unfertilized embryos from excess soluble protein and/or excess estrogen intake.

Feed supplements containing urea or non-protein nitrogen should also not be used. Running donors on pasture also increases the likelihood of various plant toxins such as mycotoxins, nitrates, prussic acid, etc. being ingested from various plants and even some grasses and small grain forages which can impair fertility and normal reproductive functions. Lastly, producers should ensure donors have access to clean, fresh water at all times. If drinking water is derived from a shallow well or stock pond, water testing should be performed prior to allowing donors access.

Herd Health Basics

The female's health should obviously be taken into account when making donor selection. Donors should be on a proper vaccination program and deworming protocols. Producers should ensure donors are protected against any and all primary disease pathogens to which they may be exposed.

Producers should also work closely with their local veterinarian in developing a custom vaccination program for their herd based on those diseases and pathogens most prevalent in their area. My dad always tried to deworm cows around Easter and Thanksgiving primarily since he had so much free labor from all our visiting relatives. This practice still holds merit today in that most successful deworming protocols include twice per year treatment.

Biosecurity is important to all aspects of a livestock operation, but even more so to cattle involved in ET programs. Newly purchased cattle should always be housed away from any ET prospects to minimize exposure. Ideally, new cattle should remain in an isolation area or at least housed in a separate pen or pasture before comingling them with the rest of the herd. All necessary testing and vaccinations should also be performed on incoming cattle during this time of isolation. Never vaccinate donors or recipients within 30 days of breeding or transfer.

Stress Basics

Stress is a critical factor in all aspects of an ET program. Noise and improper

handling can greatly impact the success of ET and should be avoided or at least greatly minimized around time of breeding and transfer. Low-stress handling is a must for both donors and recipients. This is absolutely the last place on the farm that cattle prods or "rodeo-ing" should be used.

In my opinion, cattle prods should never be used on any cattle at any time when producers practice proper low-stress handling techniques and Wagyu cattle in particular do not ever need to be exposed to rodeo-ing. The overwhelming majority of Wagyu cattle are very even-tempered, docile cattle and they respond well to those who handle them with this same approach. Bottom line, stress equals lost revenue.

Donors should certainly not be exposed to any potential stressors during the final 60 days prior to flushing and no significant management changes such as movement of cattle from one location to another should occur through flushing or transfer through pregnancy diagnosis.

Proper shelter for both donors and recipients is also critical to minimize any detrimental effects that environmental stress can exert on normal reproductive function. Though ET cattle are not required to be housed indoors, producers should strive to protect them as much as possible from the elements. Most cattle can tolerate extremely cold temperatures as long as they are kept dry and free of moisture and most can withstand extremely hot temperatures as long as they are kept in areas with adequate shade and air movement.

Though the costs associated with ET may be significant, it provides producers a highly valuable tool which can greatly increase the number of offspring a genetically superior female can produce in her lifetime. With the limited pool of diverse Wagyu genetics available to producers, ET is even more applicable in the U.S. Wagyu industry. Producers should ensure they can properly feed, house and

care for cattle in their ET programs prior to implementation of this highly valuable management tool to experience the most success possible. Please feel free to contact me at jhorner@protocoltech.net with any questions regarding this article or if you simply wish to discuss this subject further.