Performance Matters

Enviable Progress on Display

by **Shane Bedwell**

AHA members show their dedication to breed improvement on multiple fronts.

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This year has been a whirlwind. From stock shows to diving head-first into bull sale season, it has been an awesome start to 2024. Congratulations to Hereford exhibitors who brought a deep set to January's national shows. Congratulations also go to Hereford breeders who ignited the bull sale season with a strong offering met by stout demand for Hereford genetics. Keep up your committed efforts to supply commercial cow-calf producers with the type of cattle they need; it is paying dividends.

DB progress

Given the recent discovery of Delayed Blindness (DB), a genetic-recessive disorder in the Hereford population, it pays to review its simple mode of inheritance while highlighting the extraordinary progress breeders have made in a short period of time.

Since announcing documentation of DB in November, more than 4,500 tests have been conducted and results released to the American Hereford Association (AHA) membership, as of Feb. 2, 2024. Despite some delays at the testing lab, which is frustrating for all involved, the progress is positive.

Testing is crucial in managing DB because affected animals likely will not express the phenotypic effects until a year of age. As with anything, this can vary from one animal to the next.

I commend AHA members for their proactive approach to testing key sires and donors to break many chains of carrier animals. As we go through the spring there will be many other cattle tested, and DB will be in our rearview mirror.

Simple-recessive genetics

Since the beginning, we have identified several DB-affected animals, which are listed on the AHA website as Delayed Blindness Affected (DBA). In other words, these animals inherited the recessive gene associated with DB from both their sire and their dam — they are homozygous for the trait and are either blind or will become blind.

Animals inheriting a single copy of the DB gene from one parent are heterozygous, or carriers (DBC) — they can pass the gene to their progeny, but these offspring will never express the phenotype (blindness).

Likewise, cattle with a Delayed Blindness Free (DBF) genotype do not possess the recessive DB allele.

Figure 1 shows the odds of creating DB carriers if you mated a DBA animal to a DBF animal. Essentially, 100% of the time you will get a Delayed Blindness Carrier (DBC) animal. Consequently, the resulting progeny will never express the phenotype (blindness), but they will possess the recessive allele, which they could pass onto their offspring.

So, what happens if you mate a DBC animal to a DBF animal? In Figure 2 you will see 50% of the time you will get a DBF animal and 50% of time you will get a DBC animal. Now, what about mating a DBC animal to a DBC animal? Figure 3 outlines that you have a 25% chance of getting a DBF animal, a 25% chance of getting a DBA animal and 50% chance of getting a DBC animal. Bottom line when mating two DBC animals together you have an equal percentage chance of getting a DBF animal as you do a DBA.

Given that DB is recessive, breeders can mate around the condition and continue breeding better cattle. In my opinion, a genetic defect is no different than having a bull with a performance trait on the wrong side of breed average or a phenotype you would like to improve. Utilize technology and your God-given ability to breed cattle to make the next generation better.

Keep them sound. HW

Figure 1: DBA mated to DBF results in 100% DBC.

	DBA	
DBF	c	c
C	C/c	C/c
C	C/c	C/c

Figure2: DBC mated to DBF results in 50% DBF and 50% DBC .

	DBC	
DBF	C	c
C	C/C	C/c
C	C/C	C/c

Figure 3: DBC mated to DBC results in a 25% chance of DBF, a 25% chance of DBA and 50% chance of DBC.

	DBC	
DBC	C	c
C	C/C	C/c
c	C/c	c/c

c/c – Affected | C/c – Carrier | C/C – Free