USDA Animal and Plant Health Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

Pneumatic Dart Use on U.S. Beef Cow-calf Operations
NAHMS Beef 2017 Study

Information Brief

March 2023

INTRODUCTION

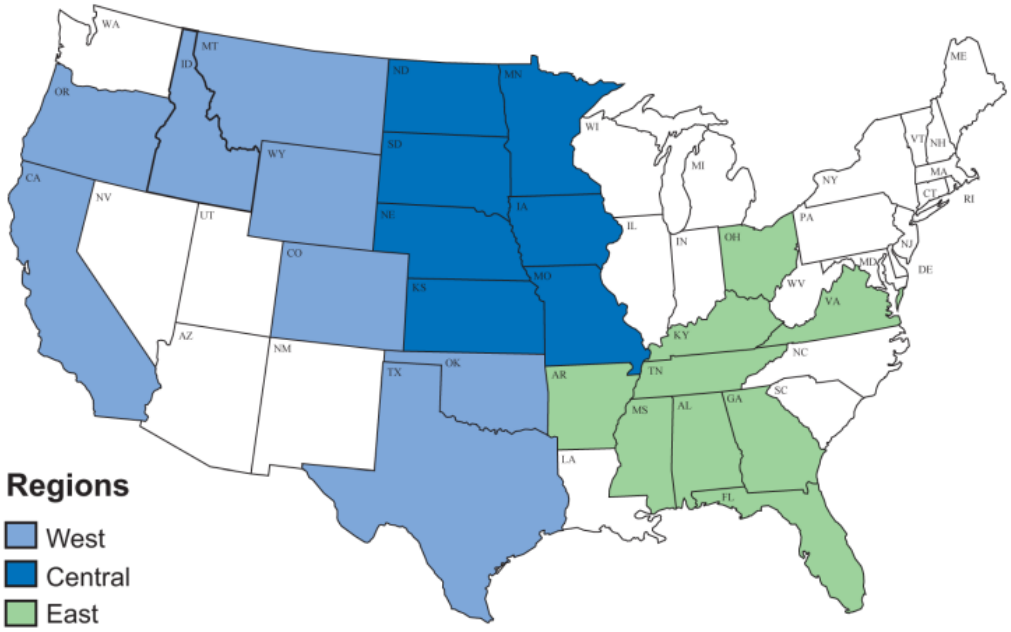
Tranquilizer guns have been used since the 1950s for wildlife immobilization; however, in recent times, these compressed air or gas guns have also been used for drug administration in beef cattle. Pneumatic darts can be used to administer antibiotics and other injectable medications to cattle to reduce the need to run animals through a chute or use other immobilization practices such as roping. Although this could be beneficial in instances where a chute is far away, or other immobilization practices are inconvenient, there are animal welfare and beef quality concerns about the use of pneumatic darts. Pneumatic darts are only capable of delivering limited amounts of drugs, so it is important that the dart size aptly correlates to the animal's weight and the drug being given. There is also a risk that the intended target may be missed with a pneumatic dart and instead hit a location that could compromise an animal's welfare. Because of this, and other reasons, the Beef Quality Assurance (BQA) program has an advisory statement against the use of pneumatic darts.

NAHMS BEEF 2017 STUDY

The Beef 2017 study was conducted in 24 of the Nation's major cow-calf States[1]. Operations in these States accounted for 86.6 percent of the U.S. beef cow inventory and 78.9 percent of all U.S. operations with beef cows. All operations in these States with one or more beef cows as of January 1, 2017, were eligible for inclusion in the study. One of the study objectives was to understand pneumatic dart usage across U.S. beef cow-calf operations.

[1]Alabama, Arkansas, California, Colorado, Florida, Georgia, Idaho, Iowa, Kansas, Kentucky, Minnesota, Mississippi, Missouri, Montana, Nebraska, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Tennessee, Texas, Virginia, and Wyoming

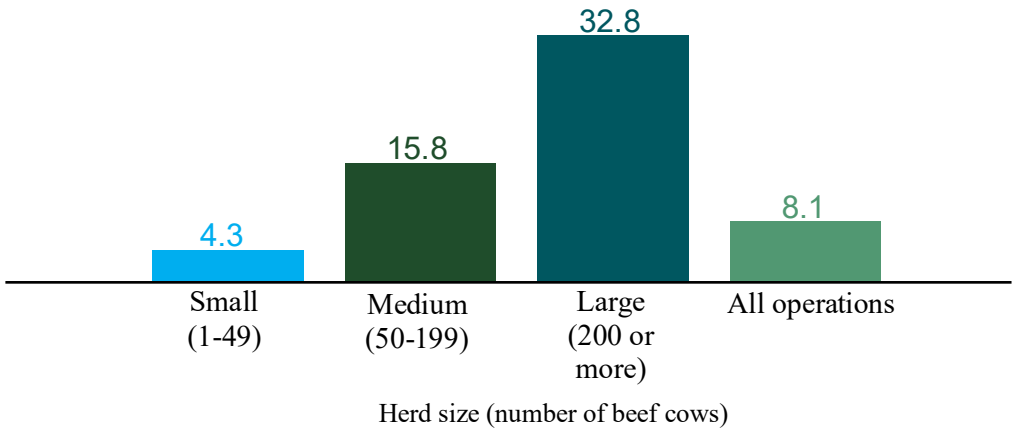
Figure 1. States/Regions that participated in the NAHMS Beef 2017 study



WHO USES PNEUMATIC DARTS?

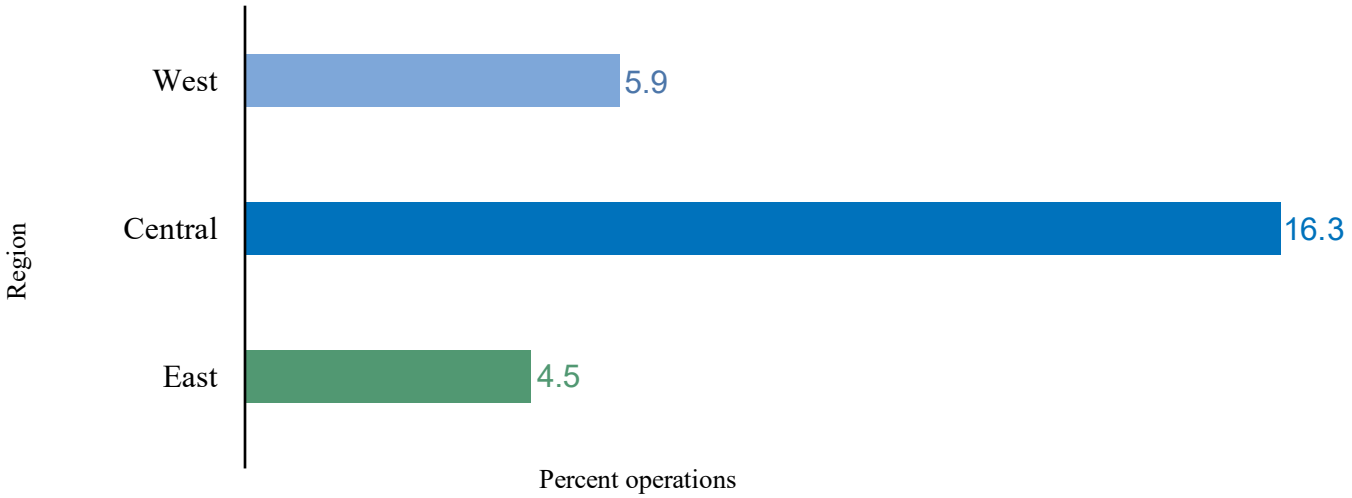
As herd size increased, the percentage of operations that used pneumatic darts in any cattle increased (Figure 2). During the previous 12 months, 4.3 percent of small, 15.8 percent of medium, and 32.8 percent of large operations used at least one pneumatic dart to deliver injections. Across all operations, 8.1 percent of operations used at least one pneumatic dart to deliver injections. Overall, 1.1 percent of cattle were injected with pneumatic darts (data not shown), and this percentage did not differ substantially by herd size.

Figure 2. Percentage of operations that used pneumatic darts to deliver injections to any cattle during the previous 12 months, by herd size



Participating states were divided into West, Central, and East regions (Figure 1). A higher percentage of operations in the Central region used at least one pneumatic dart to deliver injections to any cattle in the previous 12 months (Figure 3).

Figure 3. Percentage of operations that used pneumatic darts to deliver injections to any cattle during the previous 12 months, by region

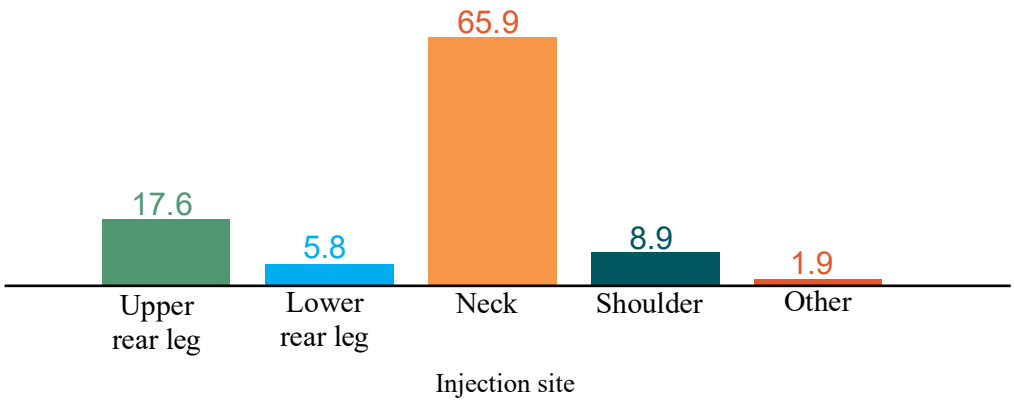


HOW ARE PNEUMATIC DARTS BEING USED?

On the operations that used pneumatic darts, most (58.1 percent) employed darts for less than 25 percent of injections delivered (data not shown).

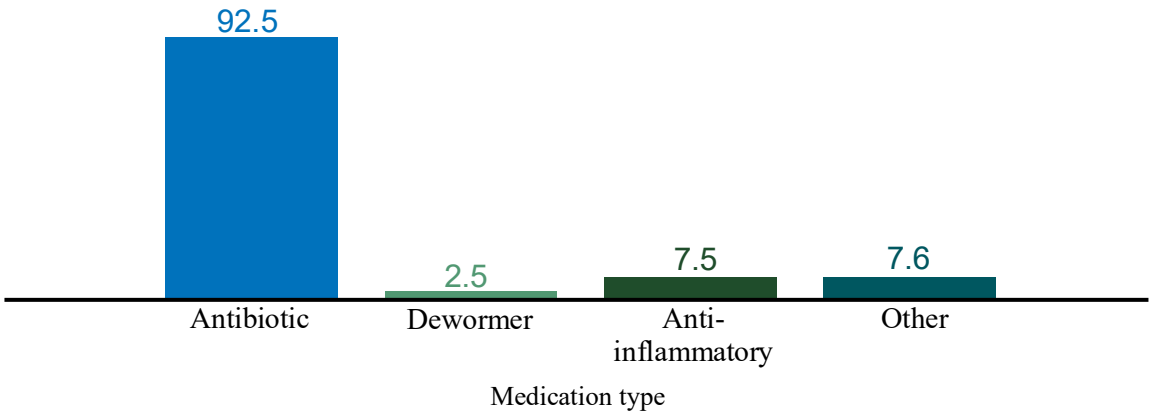
The BQA program recommends that all injections in cattle be administered in the neck unless otherwise specified by the product label. Injections cause lesions that need to be trimmed away at slaughter. Muscles in the neck area are only used for trim and are not used for whole cuts of meat, so trimming away injection-site lesions in the neck minimizes product losses. Administering injections in locations such as the rump results in significant losses since the rump is a valuable cut of meat. When it comes to pneumatic dart usage, the neck can be a tricky area to hit because it is small. Producers may be tempted to target larger areas such as the upper rear leg (rump). On operations that employed pneumatic darts, nearly two-thirds of all injections were administered in the neck while the remaining one-third were given in the upper rear leg (rump), shoulder, or lower rear leg (Figure 4). However, given that the rear leg is easier to hit with a dart than the neck, it is possible that the 23.4 percent of injections given in the rear leg is an underestimation.

Figure 4. For operations that used pneumatic darts, operation average percentage of pneumatic dart injections by injection site



Pneumatic darts can be used to administer a variety of drugs such as antibiotics, dewormers, and anti-inflammatory drugs. The most common medication administered via pneumatic dart across all operation sizes (Figure 5) and all regions (data not shown) was an antibiotic.

Figure 5. For operations that used pneumatic darts, percentage of operations by type of medication(s) delivered in at least one pneumatic dart injection



Of antibiotic injections given by pneumatic dart, the highest average percentage of injections given (49.2 percent) contained tulathromycin (Draxxin®). Thus, about one-half of all antibiotic injections given with pneumatic darts contained tulathromycin, and about one-half (50.8 percent) contained a different antibiotic. Average percentages of each of these different antibiotics ranged from 0.7 to 12.9 percent, so tulathromycin was by far the most common antibiotic used in pneumatic darts.

CONCLUSION

Overall, 8.1 percent of cow-calf operations in the U.S. used pneumatic darts in the last 12 months. Pneumatic darts were most commonly used to administer antibiotics and most injections were given in the neck. Pneumatic darts can be a convenient tool for administering medications to cattle when a chute is not readily available or when handling the animal is not feasible. However, producers should be aware that due to concerns about beef quality and cattle welfare, the Beef Quality Assurance program has an advisory statement against the use of pneumatic darts.

REFERENCES

1. USDA. 2020. Beef 2017, “Beef Cow-calf Management Practices in the United States, 2017, report 1.” USDA–APHIS–VS–CEAH–NAHMS. Fort Collins, CO.#.782.0520

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