

The passive tag is now more aligned with international requirements for tracking animals, and is designed to help the agency's National Animal Identification System keep tabs on disease outbreaks.

By Claire Swedberg

Sept. 13, 2007—The [U.S. Department of Agriculture](#) (USDA) has approved an implantable passive RFID chip for use in tracking horses and ponies for the [National Animal Identification System](#) (NAIS). The NAIS is a federal voluntary information system operated by the USDA to help track animals in the event of a disease outbreak.

The LifeChip, produced by [Destron Fearing](#), a division of [www.digitalangelcorp.com](#) Digital Angel, is a passive 134.2 kHz RFID tag encased in glass. The size of a rice kernel, the tag is implanted just under the skin in a horse's neck.



Sue Brown

Each chip is encoded with a 15-digit unique identification number associated with data about the horse, such as the identity and location of its owner. This information is stored in the NAIS database. Destron Fearing also offers the Biothermal Sensor LifeChip, which includes a temperature sensor allowing horse owners to track the temperatures of their animals. An RFID reader captures the unique ID number on the Biothermal Sensor LifeChip and the temperature of the animal at the time of the reading.

Both versions of the LifeChip are compliant with ISO 11784 and 11785 animal tag standards and designed for use by equine breeders or trainers. To date, they are the only RFID transponders approved by the NAIS. The agency sought a transponder with a 15-digit number that began with the U.S. country code (840, as designated by ISO). Chips made previously do not contain the U.S. identifying

number.

The tag should help bring the U.S. method of automatically tracking and identifying animals in line with international standards, because it employs the same frequency and 15-digit pattern utilized in the United Kingdom and most other European countries. The European Union mandates that all horses be assigned a 15-digit ID number, with the first three digits representing the country and the second three designating the breed.

"If someone wanted to chip their horses, and wanted to participate in NAIS, this would be the kind of microchip they would get," says Jim Morehead, cochair of the [Equine Species Working Group](#). Jointly overseen by the USDA and the horse industry's [American Horse Council](#) (AHC), the Equine Species Working Group evaluates the role of the NAIS in the industry.

The NAIS program does not specifically recommend the use of RFID, Morehead says, though it does focus its attention on horses that compete or race, and that travel outside their home state—or even the country. If the NAIS eventually recommends that RFID tags be used to identify horses, he explains, those would be the horses implanted with transponders.

Tracking individual horses with RFID serves several purposes. For the NAIS, the greatest concern involves the ability to identify and contact horse owners in the event of a disease outbreak. But the tags can also be used to identify missing or stolen horses as well.

The Biothermal Sensor LifeChip can help owners monitor the health of their animals. However, says Sue Brown, product manager at Destron Fearing, the sensor is not intended to replace manual temperature checks. "It's a management tool," she states, allowing those who maintain horse health to track fluctuations in an animal's temperature.

A unique feature to the LifeChip, Brown says, is a porous cap covering about half its length, reducing the likelihood of the tag migrating from the neck to another part of the horse's body. Because previous transponders have been smooth, she notes, they have been known to migrate within pets and other animals. The porous material on the LifeChip, on the other hand, is likely to remain fixed where it is injected, because tissue builds around the pores. Animal caretakers can find it difficult to read a tag's ID number if the tag has migrated to a different location, such as a leg.

Destron Fearing provides two handheld readers that can read either type of LifeChip within 2 to 4 inches. The \$800 DTR-3E is an industrial-style ruggedized handheld built to withstand harsh environments, Brown says. It captures the ID number of the LifeChip and sends that data via a Wi-Fi connection. It can also plug directly into a PC to download the ID number, which can be forwarded to a Web-enabled back-end system, such as NAIS' equine registry.

The DTR model is designed to read high volumes of tags, such as when livestock pass through a chute, and comes with a large antenna and other features. It is not designed to read sensor data, however, since it is more commonly used for tagged animals in which temperature sensors would not be included. The Pocket Reader, at \$250, is smaller and less rugged, designed for individual scans. That model captures both the ID number and the Biothermal Sensor reading of the animal's current temperature, displaying this data on a screen.

Stored data about the horses can be managed in several locations. Since the USDA has interest only in the horse's ownership and location, Morehead states, this is the only data stored in the NAIS registry. Other horse registries—operated by jockey clubs or the [American Quarter Horse Association](#) (AQHA), among other groups—provide owners with chips, and collect and store information about the horses in their database, including health records and parentage.

"We view these tags, whether for dogs or cats or horses, as keys," Brown says. "They unlock information associated with that animal." As registries begin storing data from the tags, she envisions

archiving more than just ownership data. "They could unlock complete health records, track [the horse] through multiple owners, even validate them as they go into the show ring," she predicts. Such data would not be encoded on the tag, but rather linked to the ID number in a back-end system.

Although the LifeChip is the first 15-digit equine RFID chip to receive approval from the NAIS, Morehead says, more can eventually be expected to follow. "There are multiple companies that have chips that would qualify if they went through the approval process," he says.

Recent media reports have implied that implanted RFID chips could pose a risk of cancer. In response, Digital Angel—along with parent company [Applied Digital Solutions](#) and fellow subsidiary [VeriChip](#)—have issued statements refuting such reports (see [VeriChip Defends the Safety of Implanted RFID Tags](#)).