



► Researchers at MSU are finding ways to increase embryo survival in both dry and lactating cows.

Up the Odds on Embryo Survival

A new procedure could increase your chances.

Story & photos by **Becky Mills**

After going to the expense and trouble of flushing a donor cow and/or buying embryos, not to mention the hassle of maintaining and setting up recipient cows, you want those embryos to live.

Unfortunately, that isn't always the case.

"Evidence suggests that up to 30% to 40% of embryo losses occur between Day 8 and Day 17 of pregnancy," says Mississippi State University (MSU) researcher Rhonda Vann. "We need to find a way to offset these losses."

Preventing embryo loss

Knowing cows need progesterone and a corpus luteum (CL) to maintain pregnancy, Vann theorized that an extra progesterone source and an artificial CL might help curb early embryo loss. To test that theory, she

used a controlled internal drug release (CIDR®) insert, an intravaginal progesterone-releasing device, as an additional source of progesterone in the early stages of pregnancy. CIDRs are normally used to synchronize heat, and Vann also used them to synchronize the recipient cows.

The first trial was in spring 2003. Vann and her coworkers at the Brown Loam Branch Experiment Station near Raymond, Miss., set up 26 lactating commercial cows as recipients. To synchronize the heat cycles of the recipient cows, they inserted a CIDR in each cow and gave them each an injection of gonadotropin-releasing hormone (GnRH). On Day 7 the research team removed the CIDRs and gave prostaglandin (PGF) injections.

When the recipient cows showed heat, usually on Day 3 after the CIDRs were removed, an embryologist inserted a 9-day-old Angus embryo in each cow.

Producing results

At the same time the embryos were placed, Vann inserted a CIDR in half the cows, while the other half of the cows served as controls. The CIDRs were removed after 14 days.

"We saw one or two false heats when we took them out, and that's it," Vann says.

In the control group, 28.5% of the cows retained their embryos. "For the older glycerol embryos, this is not unlikely," Vann comments.

With the CIDR group, 57% of the cows retained their embryos.

Vann did a similar trial in spring 2004, also with 26 commercial recipient cows. "This trial was with dry cows, though, so they didn't have the stress of calves on them. We also used traditional embryos, frozen in straws," she says.

This time 61.5% of the control group retained their embryos while 76.9% of the cows with CIDRs retained their embryos.

"That is a 15.4% difference in retention rates," Vann emphasizes. "If you have gone to the expense of flushing a cow, it is worth it to buy a \$9.25 CIDR."

Vann is currently repeating the study with lactating cows and embryos in straws.

"We're also trying to identify different hormones or metabolites that might be responsible for embryo survival," she adds.



► MSU researcher Rhonda Vann increases embryo survival by providing cows with an artificial source of progesterone.

The numbers are on his side

For Rayle, Ga., Angus producer Blake Callaway, the strategy is to get embryos in as many recipient cows as possible, rather than trying to increase the survival rate once they are in.

"We have seen no way to influence embryo survival," Callaway says. "It doesn't matter whether we dry-lot the cows or put them on winter grazing. We just use the same good commonsense husbandry practices we use in an AI (artificial insemination) program, like a good health program and a good plane of nutrition."

What he does do is get as many recipient cows ready for embryos as possible. First, he synchronizes the cows with a gonadotropin-releasing hormone (GnRH)-based program. Then, rather than watching for heat, he uses a timed embryo transfer (ET) protocol. He and his embryologist, Clay Burnley, go through the cows, and

Burnley palpates for a corpus luteum (CL). All the cows with a CL get an embryo.

"If we set up 100 recips, we'll put embryos in 90 of them," Callaway says. "If we were checking heat, we'd probably only get embryos in 50 to 60 of them."

"We only get a 10% less pregnancy rate on them than we do when we check heat. That 10% is max," he continues. "Usually we only get 7% to 8% less. We are getting a 55% to 60% pregnancy rate with fresh and frozen eggs. And that is calves on the ground."

He adds, "We get better utilization of our commercial cattle, the embryos get transferred in a shorter period of time, and we don't tie up labor for three days observing heat. It works tremendously well."