HEIFER BREEDING
Simple steps to accelerate performance.
Calving heifers earlier reduces raising investments.

Heifers are an overlooked profit opportunity. According to industry estimates, it costs between $1,595 and $2,935 to raise a heifer from birth until freshening, one of the largest expenses on a dairy.¹

One way to reduce the investment in raising heifers is to calve heifers earlier. Age at first calving can be improved on most dairies. According to U.S. Department of Agriculture (USDA) research, age at first calving has averaged older than 25 months for the past 10 years despite industry recommendations and financial reasons to improve.³

Producers who routinely achieve an age at first calving between 22 and 24 months capture increased return on their heifer-raising investment in many different ways.

Every month first calving is delayed beyond 22 months costs producers $100 per heifer in lost milk production opportunity and additional raising costs.²

Reduced raising costs
   Improving age at first calving reduces raising costs from birth to freshening²

Earlier investment returns
   Heifers that join the milking herd begin to return on raising investment earlier in life

Increased herd management flexibility
   Heifers entering the herd earlier can provide opportunities for expansion or voluntary culling

Fewer replacements on the dairy
   Heifers calving sooner reduce the total number of replacement heifers needed to meet herd size goals
Improving heifer reproduction is simple.

Setting a goal for age at first calving won’t ensure heifers are bred in time to reach it. Improving age at first calving takes a commitment to more aggressive management of heifer reproduction. Since gestation is a fixed length, first service conception risk and age at first breeding will be the biggest drivers of reproductive efficiency.

Five easy steps.

There are real opportunities to move replacements into the milking herd sooner by taking simple steps to more aggressively manage heifer reproduction.

1. **Move heifers to the breeding pen.** Heifers should be moved into the artificial insemination (AI) breeding pen as they reach height and weight targets and are ready for breeding. Don’t delay based on age. If heifers are big enough, move them into the breeding pen.

2. **Use prostaglandin on date of move.** Administer LUTALYSE® (dinoprost tromethamine) Sterile Solution on the day of movement and again 10 to 12 days later for heifers not yet inseminated. Using it up front can save 10 to 12 days of feed.

3. **Make sure all heifers are inseminated.** Eazi-Breed™ CIDR® should be used for timed breeding on heifers not inseminated during their first 28 days in the breeding pen. This will ensure all heifers are inseminated within 36 days of arrival into the AI pen.

4. **Routine pregnancy checks.** Pregnancy diagnosis must be conducted as routinely as heifers are moved to the breeding pen to identify pregnant females and move them out, making room for new heifers. All pregnancies should be reconfirmed at 70 to 90 days carried calf.

5. **Re-enroll open heifers.** Any heifers that aren’t bred should be immediately submitted to a timed breeding program with LUTALYSE or Eazi-Breed CIDR.

Managing heifer reproduction as intensely as the lactating herd can pay real dividends. Research has found that administering LUTALYSE on the day heifers are moved to the breeding pen, and then again 14 days later for animals not yet inseminated, can improve breeding success. The incremental costs are minimal compared with the benefits calving heifers younger than 24 months of age can have on a dairy’s bottom line.

**Important Safety Information:** Aseptic technique should be used to reduce the possibility of post-injection bacterial infections. Do not administer in pregnant animals unless cessation of pregnancy is desired. Not for intravenous administration. Women of childbearing age and persons with respiratory problems should exercise extreme caution when handling this product.
LUTALYSE
dinoprost tromethamine injection
Sterile Solution

Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

For intramuscular use for estrus synchronization, treatment of undetected (silent) estrus and pyometra (chronic endometritis) in cattle; for abortion of Feedlot and Other Non-Lactating Cattle; for parturition induction in swine; and for controlling the timing of estrus in estrous cycling mares and clinically anestrous mares that have a corpus luteum.

DESCRIPTION
This product contains the naturally occurring prostaglandin F2 alpha (dinoprost) as the tromethamine salt. Each mL contains dinoprost tromethamine equivalent to dinoprost 7.5 mg. Each 30 mL bottle contains dinoprost tromethamine equivalent to dinoprost 225 mg. When necessary, pH was adjusted with sodium hydroxide and/or hydrochloric acid. Dinoprost tromethamine is a white or slightly off-white crystalline powder that is readily soluble in water at room temperature in concentrations at least 200 mg/mL.

General Biologic Activity: Prostaglandins occur in nearly all mammalian tissues. Prostaglandins, especially PGF2 alpha (dinoprost), have been shown to induce luteolysis in the ovary. PGF2 alpha typically causes a decrease in serum progesterone levels and stimulates cervical ripening and changes in other tissues in the pregnant animal. PGF2 alpha stimulates myometrial contractility, and is important in the process of parturition. PGF2 alpha alters the normal pregnancy-related changes of the endometrium, and may result in abortion or infertility, depending on the stage of pregnancy of the animal and the dose of the prostaglandin. PGF2 alpha stimulates the ovary and uterus, decreases uterine blood flow, and may cause pain and uterine contractions. PGF2 alpha inhibits the absorption of milk in lactating animals. PGF2 alpha stimulates the myometrium, and may cause pain and uterine contractions.

METABOLISM
A number of metabolism studies have been done in laboratory animals. The metabolism of triamteren labeled dinoprost (3H PGF2 alpha) in the rat and in the monkey was similar. Although quantitative differences were observed, qualitatively similar metabolites were formed. Approximately 76% of the administered radioactivity was excreted in the urine within 24 hours after single intravenous injection of the drug. The metabolites of 3H PGF2 alpha Tham and 3H PGF2 alpha free acid administered intravenously to rats demonstrated no significant differences in blood concentration or urinary excretion of the administered radioactivity. No significant differences were seen in the urinary excretion of radioactivity by the rabbit, dog, and monkey following administration of the drug. The urinary excretion of radioactivity by the dog and monkey following oral administration of the drug was greatly reduced compared with intravenous administration of the drug. The excretion of radioactivity in the urine of rats was greater than the liver and gastrointestinal tract. For both species, the liver, gastro-intestinal tract, and skin were the major sites of uptake of radioactivity following either intravenous or oral administration of the drug.

INDICATIONS AND USAGE
Cattle: LUTALYSE Sterile Solution is indicated as a luteolytic agent. LUTALYSE is effective only in those cattle having a functional corpus luteum. LUTALYSE is effective in cattle when administered from days 12 to 14 (chronic endometritis) in cattle; for abortion of feedlot and other non-lactating cattle; for parturition induction in swine; and for controlling the timing of estrus in estrous cycling mares and clinically anestrous mares that have a corpus luteum.

Cattle:
1. Evaluate the reproductive status of the mare.
2. Administer a single intramuscular injection of 1 mg per 100 lbs (45.5 kg) body weight which is usually 1 mL to 2 mL per 100 lbs body weight.
3. Observe for signs of estrus by means of daily teasing with a stallion, and evaluate follicular changes on the ovary. This should continue until the first sign of estrus is observed.
4. Some clinically anestrous mares will not express estrus but will develop a follicle which will ovulate. These mares may become pregnant if inseminated at the time of ovulation.
5. Breed mares in estrus in a consistent manner with normal sexual.

SAFETY AND TOXICITY
Dinoprost tromethamine is not teratogenic in rats when administered orally at 1, 25, 3, 10, and 20 mg/kg/day from day 8 of gestation on or when administered subcutaneously at 0.1 and 0.5 mg/kg/day on gestation days 8, 9, 10, 11 and 12, 13 or 14. Prostaglandins, especially PGF2 alpha, have been found to be abortifacient in certain species. Prostaglandins have been reported to result in abortion of pregnant cattle. However, these studies have not been conducted under controlled laboratory conditions. These effects are transient, lasting from 2 to 4 hours, and are not detrimental to the health of the animal.

Mares: The most frequently observed side effects are sweating and decreased rectal temperature. These side effects may be seen for up to 48 hours after administration of dinoprost tromethamine. The most frequently observed side effects are sweating and decreased rectal temperature. These side effects may be seen for up to 48 hours after administration of LUTALYSE Sterile Solution. However, such side effects were not observed in monkeys similarly administered LUTALYSE Sterile Solution at 15 mg PGF2 alpha per kg body weight. The incidence and severity of these effects were dose related.

LUTALYSE Sterile Solution is effective when administered prior to day 5 after ovulation. Pregnancy status should be determined prior to treatment since LUTALYSE has been reported to induce abortion and parturition when sufficient doses were administered. Mares should not be treated if they suffer from other acute or subacute disorders that may be prevented or treated by use of this drug.

ADVERSE REACTIONS
As with any multi-dose vial, practice aseptic techniques in withdrawing each dose. Adequately clean and disinfet the vial and vial stopper with a suitable approved disinfectant. Use of the same needle for repeated withdrawal of the sterile solution is not recommended. Use of the same needle for repeated withdrawal of the sterile solution is not recommended.

DOSAGE AND ADMINISTRATION
As with any multi-dose vial, practice aseptic techniques in withdrawing each dose. Adequately clean and disinfect the vial and vial stopper with a suitable approved disinfectant. Use of the same needle for repeated withdrawal of the sterile solution is not recommended. Use of the same needle for repeated withdrawal of the sterile solution is not recommended.

Cattle: LUTALYSE Sterile Solution is supplied at a concentration of 5 mg dinoprost per mL. LUTALYSE is luteolytic in cattle when administered at the rate of 1 mL per 100 lbs body weight.

Swine: LUTALYSE Sterile Solution will induce parturition in swine at 1 mg (2 mL) when injected intramuscularly.

HOW SUPPLIED
LUTALYSE Sterile Solution is available in 30 and 100 mL vials.

STORAGE CONDITIONS
Store at room temperature 20° to 25°C (68° to 77°F). Protect from freezing.

Restricted Drug (California), Use Only As Directed

NADA 100101, Approved by FDA

Manufactured by:

Pharmacia and Upjohn Company LLC
Division of Pfizer Inc.
Get heifers ready for work.

Heifers represent the best genetics within the herd, and ensuring they are bred and calve in a timely manner is crucial to future production. Research has shown long-term financial benefits to calving heifers for the first time at younger than 24 months of age.

The decision to breed heifers to calve between 22 and 23 months of age needs to begin before they are ready for first insemination. Set goals and monitor growth to ensure replacement heifers are reaching breeding size targets by 12 to 13 months of age. Heifers must reach height and weight benchmarks to ensure a healthy calving and a smooth transition into higher production.

Monitor performance.
Performance should be monitored on an ongoing basis. An important measure to track is age at first breeding. Set a goal for age at first insemination and see how many heifers are meeting it. Measurement of progress should be evaluated after each pregnancy check.

Building a better heifer.
Important steps must be taken early in a heifer’s life to make sure she grows to her full potential.

Timely feeding of colostrum – Deliver 3 to 4 quarts of colostrum within six hours of birth

High plane of nutrition – Double a calf’s birth weight and ensure appropriate structural growth by 60 days of age through a higher plane of nutrition pre-weaning

Adequate housing – Provide a clean, dry, well-ventilated place for calves to lie down

Monitor growth – Ensure calves are growing with routine measurement
Keys to great heifer reproduction.

Move heifers to breeding pen when they reach size goals

- Heifers are ready to move when they reach 55 percent of mature size
- For a Holstein heifer, this is 800 to 850 pounds of body weight and 49 to 51 inches of wither height

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<th>Weight</th>
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<tbody>
<tr>
<td>Current Size Upon Entry:</td>
<td>Goal:</td>
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Reduce days to first insemination with LUTALYSE® (dinoprost tromethamine) Sterile Solution

- Target between 375 and 400 days

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<th>Weight</th>
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<tr>
<td>Current age at first insemination:</td>
<td>Goal:</td>
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Identify open heifers and rebreed

- All heifers should be confirmed pregnant by 15 months of age

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<tr>
<td>Current average age at conception:</td>
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Monitor appropriate metrics

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<tr>
<td>Current pregnancy rate:</td>
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<tr>
<td>Current heat detection rate:</td>
<td>Goal:</td>
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<tr>
<td>Current conception rate:</td>
<td>Goal:</td>
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Pay attention to management details

- Health of heifers
- Clean pens and corrals
- Sound vaccination program
- Efficiency of lock-ups
- Proper nutrition and feed bunk management

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