Questions about STILBESTROL answered

Agricultural and Home Economics Experiment Station, Cooperative Extension Service, cooperating
The first stilbestrol feeding experiment with beef cattle was conducted 10 years ago (1953) at Iowa State University. Since then nearly every state university, many foreign countries and several feed manufacturers have conducted stilbestrol research. In these studies essentially all cattle feeding conditions have been explored. Information from more than 100 cattle experiments is used in this review to answer many of the questions posed at different times by different individuals regarding stilbestrol feeding.

Some questions were answered in 1954 in Iowa State Pamphlet 215, "Questions and Answers About Adding Stilbestrol to Feeds for Growing and Fattening Beef Cattle." Since then stilbestrol usage has spread throughout the cattle feeding industry. This use of stilbestrol feeds has continued. More questions are being asked. The more recent questions reflect the impact of stilbestrol use upon all segments of the beef industry.

Stilbestrol is incorporated into cattle feeds for purposes of increasing liveweight gains and lowering the feed cost of gains. The incorporation process consists of mixing specially compounded stilbestrol premixes into cattle supplemental feeds. Feed manufacturers produce these supplemental feeds in accordance with state and federal regulations. Each bag or batch of supplemental feed carries a label stating the amount of stilbestrol in the supplement and directions for use.

Many feed manufacturers produce several supplemental feeds for cattle. These sometimes differ in amount of stilbestrol provided per pound so that cattlemen may "tailor" their supplemental feed needs to different types of cattle rations in supplying each animal with 10 milligrams of stilbestrol per day. Each supplement thus produced by a feed manufacturer is tested periodically in a laboratory to make sure the product meets government standards.

The growth of stilbestrol use throughout the beef cattle industry has stimulated questions not only among cattle producers but also among meat industry people, beef consumers, individuals who have been made conscious of federal regulations, and feed industry people marketing cattle supplements. Most of these questions can now be answered from the experience and experimental results reported during the past 10 years.
1. **What is stilbestrol?**

Stilbestrol is a synthetically produced, hormone-like compound used in small quantities in cattle feeds or as an implant to stimulate liveweight gains and improve feed conversion. It has also been used as a medicinal agent in human and veterinary medicine. Medicinal levels are many times higher than the micro level used in cattle feeds in stimulating liveweight gains. (Stilbestrol is a shortened name for diethylstilbestrol.)

2. **What forms of stilbestrol are available to cattlemen?**

Stilbestrol is available as an incorporated ingredient in protein supplemental mixtures processed and distributed by feed manufacturers. The raw chemical is not sold direct for cattle feeding purposes. It is processed into premixes that usually contain 1,000 milligrams (1 gram) of stilbestrol per pound. The premixes are made available to approved feed manufacturers. With modern mixing equipment the manufacturer is capable of uniformly mixing the minute quantities of stilbestrol with the other supplemental ingredients. These supplements are laboratory checked and approved under the auspices of state and federal feed control officials. Stilbestrol also is available in the form of implants or pellets.

3. **What is a stilbestrol implant?**

It is a compressed pellet or pellets designed for slow body absorption, composed primarily of stilbestrol, which is sometimes implanted under the skin of cattle as an alternate to including stilbestrol in supplemental feeds. This method of administering stilbestrol is advantageous under range and pasture conditions where no supplemental feeds are fed.

4. **What is Stilbosol?**

This is a trade name of one of several stilbestrol premixes used by feed manufacturers in making cattle supplements. Twenty pounds of this stilbestrol premix mixed in a ton of cattle supplement provides 10 milligrams of stilbestrol daily per animal when the supplement is fed at the rate of 1 pound per animal per day.

5. **Where can stilbestrol be purchased?**

From all feed retailers where stilbestrol has been incorporated in cattle supplements. Stilbestrol for medicinal purposes can be purchased by prescription. Stilbestrol implants are available from livestock supply outlets, hatcheries and veterinarians.

6. **Who can mix stilbestrol in cattle supplements?**

Any feed manufacturer who has received federal and state clearance. To obtain clearance the feed manufacturers must have proper mixing and labeling facilities. The mixed feeds must be periodically checked by laboratory analyses.

7. **Why can't unregistered stilbestrol feeds be custom mixed?**

The main reasons why unregistered mixtures cannot be mixed arise from regulatory difficulties. These develop when there...
Feed manufacturers who have proper mixing equipment, have registered their mixtures and received proper clearance with state and federal regulatory agencies, are permitted to incorporate stilbestrol into cattle supplements.

There are many different mixtures to check. Each mixture must be checked by laboratory analyses to be sure of proper mixing. There are also difficulties in labeling such feeds with adequate feeding instructions as prescribed by state and federal regulations.

Most custom-mixed feeds are made in small quantities. They are often mixed on short notice. This multiplies the tasks of feed control officials who regulate the use of critical feed additives. However, registered mixtures containing stilbestrol can be custom mixed by feed manufacturers.
Question: 8. How much does the cattleman pay for stilbestrol in feeds?

A survey of costs has indicated that $4 to $8 per ton of supplement containing 10,000 or 20,000 milligrams of stilbestrol is common where the supplement is fed at the rate of 2 pounds or 1 pound per animal per day. This means that the average cost of feeding 10 milligrams of stilbestrol is four-tenths of one cent per animal per day or 50 cents for a period of 125 days.

Question: 9. What does an implant cost?

The estimated cost of implanting cattle ranges from 25 cents to 75 cents per head depending upon the size of the implant and the labor costs of implantation. Labor costs are least where adequate cattle restraining equipment is available, where large numbers of cattle are to be implanted and where the owner has adequate implantation tools and skill.

Question: 10. What effect does stilbestrol have on the animal?

It stimulates liveweight gain and improved feed conversion in growing and finishing beef cattle under farm feedlot conditions. Whenever stilbestrol is incorporated in proper amounts in cattle supplements, no other noticeable effects occur in steers or heifers. Somewhat similar effects are noted when steers are properly implanted with stilbestrol. However, heifers implanted with stilbestrol sometimes show undesirable side effects.

Question: 11. How much extra gain and feed savings will stilbestrol feeds produce?

On the average, they stimulate liveweight gains 12 to 15 percent in cattle and improve feed utilization by about 10 percent. The feed savings resulting from stilbestrol feeding are relatively constant from ration to ration. However, the total liveweight gain stimulation during a typical feeding period such as 140 days is dependent somewhat upon the amount of energy in the ration. With a high-energy ration (corn), 30 to 50 extra pounds per steer is common, whereas with low-energy rations containing little grain, 20 to 35 extra pounds per steer is more common.

Question: 12. How soon can a stilbestrol response be measured?

Within a few weeks. With cattle on high-grain rations the stimulation usually ranges between a quarter and a third of a pound per animal per day. Therefore, at the end of a 3-week period, the stimulation will range between 5 and 7 pounds per animal, which can readily be measured.

Question: 13. Should stilbestrol be fed to cattle during the first half of the feeding program, the last half or throughout the feeding period? What about discontinuing stilbestrol 30 days prior to slaughter?

The greatest gains and feed efficiency are achieved when stilbestrol is fed throughout the feeding period. Use should be discontinued 48 hours before slaughter so that no traces of stilbestrol remain in the animal at slaughter time. There is no advantage in discontinuing stilbestrol for a longer period. Reduced benefits occur when the period of stilbestrol use is reduced.

Question: 14. What proportion of feedlot cattle currently receive stilbestrol feeds?

More than half of the feedlot cattle marketed in the United States during the last 7 years have received stilbestrol feeds. The number of cattle receiving stilbestrol feeds has increased annually during this 7-year period.
It is estimated that more than 75 million head of feedlot cattle have thus far received stilbestrol supplements.

Question:

15. Does stilbestrol influence the animal's need for other nutrients such as vitamin A?

It does not lower the daily nutrient needs of cattle. Cattle fed stilbestrol supplements should be fed rations adequate in energy, protein, minerals and vitamins. When nutritionally adequate rations are fed to cattle, stilbestrol lowers the total feed required per unit of liveweight gain. If nutritionally inadequate rations are fed to cattle, the full response from stilbestrol may not be achieved.

Question:

16. Does stilbestrol influence final market weight of cattle?

Yes, cattle of similar quality and beginning weight fed stilbestrol but otherwise fed similarly will weigh 30 to 50 pounds more when marketed. Stilbestrol-fed cattle can be marketed 2 to 3 weeks sooner than slower-gaining non-stilbestrol cattle if the lighter market weight and less finish are desired. This shorter period in the feedlot has the disadvantage that the cattle will grade lower. However, this disadvantage is largely offset by additional feed savings.

Question:

17. Does stilbestrol feeding affect carcass grade and yield?

It does not influence carcass grade and yield provided stilbestrol-fed cattle are fed similarly and remain in the feedlot as many days as non-stilbestrol-fed cattle.

Question:

18. Do stilbestrol-fed cattle shrink more in transit to market?

No. Checks on transit shrink to market have been made in various experiments, and on the average there has been no difference between control and stilbestrol-fed cattle.

Question:

19. Do packers pay less money for stilbestrol-fed cattle?

Experimental cattle at Iowa State University sold to packers under competitive bid, without disclosure of the absence or presence of stilbestrol feeding, brought similar average prices per hundredweight for both the stilbestrol-fed and the non-stilbestrol-fed lots.
20. Can stilbestrol-fed cattle be distinguished from non-stilbestrol-fed cattle by differences in body conformation?

No. Stilbestrol-fed cattle that have been fed for the same length of time as non-stilbestrol-fed cattle are alike in conformation, shape and hair coat.

21. Does stilbestrol feeding influence lean, fat and water relationships in beef tissues?

Very little change occurs in lean, fat and water relationships in tissues of cattle fed 10 milligrams of stilbestrol daily per animal for periods of 100 days or longer. Cattle fed stilbestrol for shorter periods may contain less fat and somewhat more moisture and protein. These differences when they occur largely disappear after cattle have been on feed for 100 days or longer.

22. Is the meat from stilbestrol-fed cattle as high in eating qualities even though carcass grade is unaltered?

Three separate studies have been conducted on the eating qualities of choice carcass beef produced from cattle fed 10 milligrams of stilbestrol daily per animal for periods of 100 days or longer. Cattle fed stilbestrol for shorter periods may contain less fat and somewhat more moisture and protein. These differences when they occur largely disappear after cattle have been on feed for 100 days or longer.

23. Should stilbestrol be fed to heifers?

It can safely be fed to heifers intended for slaughter the same as it is fed to steers. Liveweight gain stimulation will result. Feed savings are as great in heifers as in steers. Stilbestrol feeding to heifers is practiced in many large feedlot operations.

24. Are side effects such as prolapse common when heifers are fed stilbestrol?

No appreciable side effects develop. Vaginal prolapse occasionally occurs in feedlot heifers regardless of the ration fed and whether or not stilbestrol is included in the ration. Unlike stilbestrol in implants, stilbestrol in heifer rations does not result in appreciable increases in the number of vaginal prolapses.

25. Should stilbestrol be fed to mixed groups of steers and heifers?

Both steers and heifers benefit by stilbestrol feeding. No difficulties, such as riding, arise from its use when both sexes of cattle are fed together. The recommended amount of stilbestrol for both heifers and steers is 10 milligrams per animal per day.

26. What kind of cattle benefit most by stilbestrol feeding?

Steers, bulls, mature open cows, intact open heifers and spayed heifers fed for slaughter receive nearly equal benefits. Breeding stock, however, does not benefit from stilbestrol feeding since extra weight gain is of no concern.

27. Will stilbestrol give a response when used with other feed additives?

The effectiveness of stilbestrol in cattle appears to be as great regardless of the absence or presence of other feed additives. The primary reason for this is that the physiological action of stilbestrol appears to be different from that of all other feed additives currently available in cattle feeds.

28. Can stilbestrol be used with antibiotics or other feed additives?

Yes, with certain approved antibiotics or other cattle feed additives. However, there are sometimes difficulties in purchasing in a single cattle supplement some combinations of stilbestrol and other approved feed additives.

29. Why can’t stilbestrol be mixed in certain liquid cattle supplements?

The main reason is the difficulty of maintaining a uniform stilbestrol distribution in
liquid supplements. Stilbestrol is insoluble in water, so when mixed with water it has a tendency to separate out.

**Question:**

30. Is stilbestrol more effective in drylot than on grass? How about high-grain feeding versus high-roughage feeding? Should similar amounts of stilbestrol be fed?

Usually pasture and high-roughage rations are lower in energy than high-grain drylot rations. Nevertheless, the benefits from stilbestrol cattle supplements or implants usually are sufficient to justify their usage under pasture or high-roughage feeding conditions. The same amount of stilbestrol should be fed to cattle on all types of rations.

**Question:**

31. Is stilbestrol effective when alfalfa is fed either as hay, pasture or silage?

As much benefit from stilbestrol is obtained in cattle rations containing alfalfa as in rations without alfalfa.

**Question:**

32. How much stilbestrol should be fed?

The recommended quantity to be fed to cattle is 10 milligrams per animal per day. A supplement containing 10 milligrams per pound should be selected when the desired rate of supplement feeding is 1 pound per animal daily. When the desired rate of supplement feeding is 2 pounds per animal daily, select a supplement containing only 5 milligrams per pound. At a higher level of supplement feeding, a supplement should be selected for a correspondingly lower level of stilbestrol so the daily intake of stilbestrol is adjusted to 10 milligrams per animal.

**Question:**

33. Does it pay to feed stilbestrol to calves on high-roughage rations prior to high-grain feeding?

Yes. The extra gain produced by stilbestrol during high-roughage feeding will be less than the extra gain produced during the finishing period, but the total extra gain obtained from the two feeding periods will be higher than that obtained by feeding stilbestrol only during the high-grain feeding period.

**Question:**

34. Will 5 milligrams or as much as 7.5 milligrams of stilbestrol give the same response as 10 milligrams?

No. The response is less from a 50 to 75 percent portion of stilbestrol. Most feed manufacturers combine protein, minerals and vitamins in a given supplement in such amounts that they will give maximum performance when fed at a rate that supplies 10 milligrams of stilbestrol per animal per day. If such a supplement is fed at half the recommended rate, the response from stilbestrol as well as other supplement ingredients will be less than maximum.

**Question:**

35. Does it pay to feed more than 10 milligrams of stilbestrol? What happens when too much stilbestrol is fed?

The dividends from feeding cattle more than 10 milligrams, rather than exactly 10 milligrams, per animal per day are comparatively small. Several experiments have indicated that feeding a 10-milligram level of stilbestrol until cattle weigh about 800 pounds and thereafter feeding 20 milligrams is $2 or $3 more profitable per animal than continuous feeding of the 10-milligram level throughout the feeding period. Nevertheless, this feeding procedure needs more experimental testing before it can be generally recommended. No known difficulties occur, however, when cattle consume quantities of stilbestrol up to two to three times the 10-milligram feeding level. But when cattle consume many times the recommended 10-milligram feeding level, side effects may develop. These involve body conformation. A longer withdrawal period is essential for high levels of stilbestrol in order to eliminate stilbestrol from the body before marketing. Present federal regulations permit the adding of only 10 milligrams of stilbestrol per animal per day.

**Question:**

36. Should stilbestrol be fed once or twice daily? Can it be used in a self-feeder?

The feeding need not be oftener than once a day. Stilbestrol can be fed twice a day with good results. It can also be self-fed at the rate of 0.4 milligram per pound of complete cattle feed.
37. **When should stilbestrol feeding be started? Can stilbestrol be fed to 300-pound calves?**

It can be started any time calves are large enough to consume concentrate feeds, such as a creep ration fed during the nursing period. Stilbestrol feeding is not usually started until calves have been weaned off pasture and weigh 300 to 500 pounds. Steers, heifers and bulls intended for slaughter respond to stilbestrol feeding at early ages. Small stilbestrol implants (6 to 12 milligrams) are sometimes used in nursing calves on pasture that are not receiving a stilbestrol creep ration.

**Question:**

38. **How long is stilbestrol feeding effective? When should stilbestrol feeding be stopped?**

For 300 days or longer. This means that stilbestrol use is effective throughout the feedlot feeding period of essentially all cattle slaughtered in this country. The only time restriction is its removal from the ration 48 hours prior to slaughter in order to free the animal's body of all possible stilbestrol residues. There is no need to stop feeding stilbestrol supplements more than 2 days prior to slaughter.

**Question:**

39. **How much carryover in gain stimulation is there after stilbestrol is discontinued?**

Very little. The beginning and end of the response from stilbestrol feeding essentially coincides with the day-to-day feeding of stilbestrol supplements to cattle. The more days a stilbestrol supplement is fed to cattle, the greater will be the total gain stimulation.

**Question:**

40. **When cattle are "topped-out" during marketing, should stilbestrol feeding be stopped?**

Best results occur when stilbestrol is continuously fed up to 48 hours before marketing. Where cattle are "topped-out," those sold on a given day are often placed in a separate pen or cornered in the pen where no stilbestrol feeds can be consumed for 2 days before slaughter. Where cattle are in transit one day before slaughter, cattle are often separated only one day prior to shipment.
41. Should stilbestrol be fed to breeding stock? Will heifers fed stilbestrol in the feedlot later breed satisfactorily?

The feeding of stilbestrol to breeding stock is not recommended. The objectives of breeding cattle are not furthered by its use. However, injuries to breeding performance which might occur as a result of feeding stilbestrol do not appear to be as great a hazard as earlier feared. Some experiments have indicated that bulls, cows and heifers will breed close to normal when fed stilbestrol at the 10-milligram level for sustained periods, even though size of certain reproductive organs has been somewhat affected. Heifers fed stilbestrol in the feedlot have later been bred successfully. However, there has not been enough research evidence to assure that feeding levels of stilbestrol will never injure breeding performance in cattle.

42. Can stilbestrol supplements be used to abort pregnant heifers in feedlots?

No. The amount of stilbestrol used in cattle feeding supplements is many times too small for this purpose. Veterinarians sometimes inject large dosages of stilbestrol to cause abortions in heifers. This practice involves least difficulty when it is carried out by veterinarians during the first half of the heifer's pregnancy.

43. How about feeding stilbestrol to lambs and other livestock?

The feeding of stilbestrol to growing and fattening lambs at the rate of 2 milligrams of stilbestrol per lamb per day is usually helpful and permitted throughout the United States. The benefits from feeding stilbestrol to lambs are somewhat less than the benefits with cattle. Lambs appear to be more sensitive to overdosage with stilbestrol. When this occurs, side effects develop and poorer carcasses result. Dairy cows in lactation and growing swine have shown few or no benefits from stilbestrol administration. Growing chickens exhibit some benefits from stilbestrol administration. However, the dosage level needed on a body-weight basis is several hundred times greater than in the case of cattle. This high dosage level results in small tissue residues.

44. Is stilbestrol used for other purposes?

Yes. It is used as a medicinal agent for various conditions in human and veterinary medicine.

45. What eventually happens to stilbestrol in the animal?

The small quantity of stilbestrol consumed daily by cattle is excreted in the urine and feces. It is subsequently destroyed by decay and exposure to sunlight. Some stilbestrol activity remains for a time in excreta. Soil analysis has indicated no buildup of stilbestrol-like substances, with time, when applications comparable to maximum quantities of stilbestrol present in manure have been placed on the soil.

46. Can sows be safely run behind stilbestrol cattle?

Sows and gilts exhibit little or no difficulty in the feedlot where cattle are fed stilbestrol, provided the sows are properly managed and do not have access to the cattle feedbunk. Apparently sows and gilts do not pick up enough stilbestrol in cattle droppings to be injurious.

47. Can handling stilbestrol feeds be injurious to people?

There is no danger to people handling cattle supplements containing stilbestrol. The stilbestrol premix used by feed manufacturers is a more concentrated form of stilbestrol, and it requires some care in handling. The chemically pure form of stilbestrol can be injurious to people, and it requires the greatest precautions. It should be handled only by technically trained personnel.

48. Does stilbestrol cause cancer?

There is no evidence that it causes cancer in humans. It has been used for years as
a medicinal agent in human medicine. In the case of selected strains of cancer-prone mice, developed specifically for cancer research, stilbestrol given in massive doses appears to cause cancer. Thus it is considered a "carcinogenic" agent. Since no residue of stilbestrol remains in the meat of properly fed cattle, the present usage constitutes no public health hazard.

Question:

49. Will stilbestrol residues build up in the tissues of cattle?

There is no detectable buildup in the lean and fat tissues resulting from continuous feeding to cattle for long periods. The daily feed intake of stilbestrol is excreted from day to day in the urine and feces of cattle. At no time is there more than a trace of stilbestrol detectable in cattle tissues. This is localized within the visceral organs. The last of these detectable quantities is eliminated from the visceral organs within 48 hours after stilbestrol feeding stops.

50. What are the federal regulations on feeding stilbestrol?

The federal regulation procedures are governed by state feed control officials and the federal Food and Drug Administration. They include the use of approved feed-mixing facilities and mixing methods which result in feeds containing accurately known amounts of stilbestrol. These amounts are stated on printed tags attached to the supplement bags. This accuracy is assured by periodic laboratory analyses. The procedures also include approved feeding instructions printed on the feed tag as to the rate of feeding, the kind of cattle to be fed and when the use of the feed should be discontinued. The amount of stilbestrol presently permitted in a cattle feed is 10 milligrams per animal per day. This amount is governed by the rate at which the feed is to be fed. This rate of feeding is designated in the feeding instructions. The feeding instructions indicate that the feed is intended only for beef cattle raised for slaughter and that it should not be fed to breeding animals. The printed feeding in-
WARNING: Remove cattle from this feed 48 hours before slaughtering for food to eliminate the drug from the edible tissue. Do not feed to any poultry or livestock except beef cattle at least 450 pounds in weight being fattened for market.

WARNING: Do not feed to dairy cattle, swine, sheep, poultry or breeding beef cattle other than beef cattle weighing at least 450 pounds which are to be slaughtered. Hogs which are to be slaughtered may be allowed to follow the beef cattle.

WARNING: Not to be fed direct to any animal other than beef cattle weighing at least 450 pounds which are to be slaughtered. Read feeding directions on reverse side of this tag.

For fattening beef cattle, feed at the rate of 1 pound per head per day. Each pound contains 10 milligrams of diethylstilbestrol.

Caution: Follow directions on back of this tag.

ACTIVE DRUG INGREDIENT
Diethylstilbestrol ........................................ 0.0022%

Read and follow instructions on the feed tags of supplements containing stilbestrol.

51. Why must stilbestrol feeding be discontinued 48 hours before slaughter?

This 48-hour period permits the visceral organs (tripe, kidney and liver) to free themselves of detectable stilbestrol residues.

52. Why are signed statements required in some areas declaring that stilbestrol feeding has been discontinued 48 hours before slaughter?

This procedure requiring cattlemen to sign statements declaring the time they discontinued stilbestrol feed is in keeping with meat inspection activities. It protects buyers and packers who wish to be sure that stilbestrol-fed cattle have been slaughtered in accordance with federal regulations so that no detectable residues remain in visceral organs.

53. Why does the government tie down stilbestrol usage so tightly?

This is to make sure that it is properly used to benefit the cattle producer and that the health of the public is safeguarded. This includes the consumer of the beef and those who handle this chemical from the time it is produced to the time it is used in cattle feeds. Unrestricted use of this material could constitute a public health hazard as well as a livestock hazard.

54. Has there been any major problem resulting from the feeding of stilbestrol to cattle?

No. During the 8 years that stilbestrol has been used in cattle feeds, only minor problems with feed-mixing facilities have arisen. These have essentially disappeared.

55. What are federal regulations on stilbestrol implants? If you are implanting, where should the implant be placed?

All implants sold must be accompanied by instructions that they be injected in the ear of cattle rather than in other parts of the body. This procedure insures that no pellet residue will be in the edible meat of beef carcasses following slaughter.

56. Are implants in animals as "good" as stilbestrol in feeds?

Implants, when administered in proper amounts in steers, appear to be as effective in stimulating liveweight gains and improving feed efficiency as stilbestrol incorporated in cattle supplements. However, body conformation of feeder steers and carcass characteristics of finishing steers which have received implants are sometimes inferior to those of cattle which received stilbestrol in feed supplements. This
is especially true when the level of the implant used in steers is 36 milligrams or larger. Also, in the case of heifers, implants of all sizes appear to be inferior to the use of feed supplements containing stilbestrol.

**Question:**

57. Do implants lower carcass grade?

When proper implant levels are used, they exert little or no influence upon federal carcass grade of slaughtered cattle. When stilbestrol implants are used at excessive levels, they decrease carcass grade of slaughtered cattle. The seriousness of this appears to lie in a conflict between getting an implant large enough to stimulate live weight gain and at the same time getting one small enough that carcass grade is not adversely influenced.

**Question:**

58. How large an implant should be used in cattle?

In nursing calves a 6-milligram implant appears to be almost as effective as a 12-milligram implant. Cattle past the nursing age require larger-sized implants. The sizes more often used in older cattle are either 24- or 36-milligram implants. Some research suggests that implants as small as 15 milligrams are more desirable. The larger-sized implants stimulate liveweight gains to a greater extent but at the same time are often more injurious to body conformation of feeder cattle and carcass quality in finishing cattle.

**Question:**

59. How long are implants effective? Should cattle once implanted be reimplanted?

Implants appear to be effective throughout a typical grazing or feeding period of 100 to 150 days. Where cattle are fed for a longer period, they should be switched to a stilbestrol-containing cattle supplement or be reimplanted. Cattle should not be reimplanted with stilbestrol for a period of 100 to 150 days following the original implantation. Any time following this period, cattle can be successfully reimplanted or placed upon a cattle supplement containing stilbestrol.

**Question:**

60. Is there a carryover of an implant from grass to drylot? Will western-implanted cattle gain as well in Midwestern feedlots as cattle not implanted?

Little or no carryover in liveweight gain stimulation occurs from implants made in cattle while on pasture. Implantation most often occurs during the fore part of the pasture season, which precedes drylot feeding by at least 100 to 150 days. This is the time limit of liveweight gain stimulation for most implants. Feeder cattle previously implanted on pasture or range will gain essentially as well in Midwest feedlots as cattle given no implantation during the previous pasture season. In an Iowa State University experiment, the only difference in feedlot performance between feeders previously implanted and those not implanted on grass was a tendency for the pasture-implanted cattle to grade slightly lower when slaughtered at the end of the feedlot period.

**Question:**

61. Can cattle be implanted when they are being fed stilbestrol supplements?

Federal regulations permit the simultaneous use, in cattle, of a stilbestrol implant and a stilbestrol feeding supplement. Nevertheless, this joint method of using stilbestrol requires further experimentation before it can be generally recommended in cattle feeding practice.

**Question:**

62. My neighbors feed stilbestrol. Compared with them, how much am I losing by not feeding stilbestrol?

The exact amount depends on the price of cattle, the ration fed and the cost of feeds used in the ration. The additional return from feeding stilbestrol to cattle for 150 days in 100 university experiments averaged $7 per steer. This estimate was based on prices of $25 a hundredweight for steers, $1 a bushel for corn, $20 a ton for hay, $100 a ton for non-stilbestrol supplement and $108 a ton for supplement containing stilbestrol. The supplement was fed at the rate of 1 pound per animal per day. When feed and cattle prices are higher or lower, the loss resulting from not feeding stilbestrol to growing-finishing steers would be accordingly higher or lower than $7 per steer.
Diethylstilbestrol was first synthesized in 1938 in England by Sir Charles Dodds and co-workers as a result of their curiosity about the many chemical forms of natural estrogens appearing in the urine of pregnant animals. Prior to this time, estrogens used in medical and veterinary practice were obtained almost exclusively as isolation products from the urine of pregnant mares. The synthesis of stilbestrol not only provided a new estrogenic substance for medical use, but also provided a more adequate supply of a potent estrogenic compound for non-medical physiological studies with farm animals.

In 1943 Lorenz of the University of California was the first to implant stilbestrol pellets under the skin of poultry as a fattening aid. These experimental studies were extended to beef cattle and lambs in 1949 by Andrews and associates at Purdue University.

The first successful method of employing stilbestrol in cattle feeds was reported by Burroughs and associates at Iowa State University in 1954. This development grew out of a study with experimental lambs that made exceptionally good live-weight gains while receiving a ration later demonstrated to contain natural estrogens. In subsequent experiments, controlled amounts of stilbestrol additions to rations proved to be far superior to natural estrogens occasionally present in small quantities in lamb and cattle feeds.