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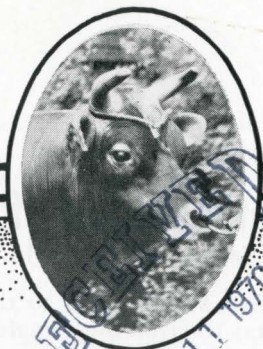
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ARTIFICIAL INSEMINATION of DAIRY CATTLE



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Artificial Insemination of Dairy Cattle

M. N. Lawritson and C. W. Nibler

ARTIFICIAL INSEMINATION refers to the artificial introduction of semen into the genital tract of the female, as contrasted with the natural way of mating the female with the male animal.

This method of breeding farm animals was first demonstrated in Italy, Russia and Denmark. Now owners of dairy animals in the United States are using this method to breed their cows and heifers to selected dairy bulls. In 1941 the first cooperative association in Nebraska was organized in Douglas County, and since that time many more counties have organized associations.

The breeding of dairy cattle by means of artificial insemination is not a substitute for good dairy cattle feeding and management.

Method of Operation of An Association

A cooperative breeding association is an organization of farmers owning dairy cattle and organized for the purpose of artificially breeding their cows and heifers to selected bulls.

The members of the association own at least 1,000 cows and live within a radius of 20 miles. They employ a qualified veterinarian or technician to do the inseminating. Semen is obtained from central bull studs of which there are three in Nebraska. There are a sufficient number of studs to serve all associations that may be organized within the state. The associations organized where the bull studs operate have added responsibilities in conducting the affairs of the stud.

When they notice cows in heat, members of the association call the veterinarian or technician before a specified time in the morning. Then the veterinarian or technician, who has received the semen from the bull stud, makes his calls and inseminates all cows and heifers that are to be bred that day.

The board of directors determines the amount of the membership fee and inseminating charges which generally amount to a minimum of \$6.00 for each cow served. This fee entitles the owner to one, two or three services per cow, depending upon the number required. If more than three services are requested, an additional charge is made. Generally, the membership fee and at least 50 per cent of the total service fees are paid in advance.

Charges should be adequate to cover all expenses, which will include cost of semen, veterinarian or technician fee, equipment, office supplies, postage and express, plus a small amount for a reserve.

Method of Organization of an Association

Those most concerned determine from farmers and dairymen the amount of local interest there is in an artificial breeding association.

If there is interest, they conduct, with the assistance of the county agricultural agent and extension dairyman, an educational program to thoroughly acquaint people with the plan.

The leaders organize a committee that will obtain applications for memberships, investigate the availability and price of semen, and ascertain whether a competent technician is available.

They conduct a meeting of those that signed membership application blanks for the election of the board of directors of the permanent organization. Before the permanent organization is formed, it is desirable to have signed 200 more cows than the minimum requirement, since usually some cows will be dropped because of unforeseen circumstances. Officers are elected by the board of directors from its membership.

Requirements for Successful Association

Sufficient cows within a radius of 20 to 25 miles to insure efficient operation. A minimum of 1,000 cows is suggested.

The services of a well-trained, reliable, energetic, conscientious veterinarian or technician.

A financial plan that is ample and sound.

A complete, efficient, and accurate system of keeping all service and financial records of the association.

A board of directors who are substantial leaders in their communities and who use the services of the artificial breeding association. The board directors should represent different parts of the area covered by the association.

Advantages to the Members

Eliminates the danger, cost and inconvenience of keeping a bull.

Provides the services of more desirable bulls than can be afforded by individuals.

Increases the value of offspring when from selected sires.

May reduce the spread of disease transmitted by the bull.

May lower production costs by increasing production of offspring.

Controls the age and size when heifers can be bred.

May improve the type of offspring.

Permits owners with more than one dairy breed to breed their cows and heifers to the breed desired.

May control more uniformly the dates of calving for cows.

Generally increases interest in dairying and assists with Dairy Herd Improvement Associations, and with culling, feeding and management practices.

Disadvantages to the Members

May increase breeding costs in some herds.

Requires telephone service reasonably close.

Requires close observation of the herd to detect animals in the early stages of heat.

Severe storms and blocked roads may interrupt service temporarily.

Organization and supervision require some time and effort.

Difficult to follow a definite breeding program with cow families.

Does not make it possible to have cows bred to any certain sire within a breed.

Results of Experience and Research

The University of Nebraska College of Agriculture, Department of Dairy Husbandry, has found that semen can be stored, transported and maintained in good condition for several days at 38° F.

Semen samples are tested for activity by observation with a microscope. Only good, fertile samples are distributed to associations.

Samples of semen are successfully divided into many services, 20 or more cows being bred with one normal service. Egg yolk mixed with phosphate or citrate buffer is used for the diluter.

Experimental studies and actual practices indicate that the highest rate of conception is secured by breeding cows in the middle or toward the end of the heat period.

The length of the heat period varies from seven to 29 hours, with the average approximately 18 hours.

Experimental studies indicate that five to ten per cent of cows and heifers bred are sterile, and fail to conceive naturally or artificially.

The rate of conception for natural and artificial breeding is the same, on the average requiring two breedings per conception.

Increases Obtained in Production

Cows that were produced artificially are now in production and a record of milk and butterfat they produced has been secured.

The following daughter-dam comparisons show that the daughters which were secured by artificial insemination exceed their dams in both milk and butterfat production.

Records from New York			
	Number	Milk	Butterfat
Daughters	156	12,153	442
Dams	156	11,803	413
Increase		350 lbs.	29 lbs.
Records from New Jersey			
	Number	Milk	Butterfat
Daughters	207	8,558	327
Dams	207	7,781	292
Increase		777 lbs.	35 lbs.

The above records were made under supervision of Dairy Herd Improvement Associations or under semi-official testing. All records have been placed on a comparative basis from the standpoint of age and length of lactation. Generally, the methods of feeding and management were the same for dams and daughters.

A United States summary of average production of daughters of bulls used in artificial breeding associations shows that daughters average 10,488 pounds of milk and 428 pounds of fat and exceed their dams by 859 pounds of milk and 41 pounds of butterfat.