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Coreen with her seventeenth foal. Brood mares like this help to replenish farm power.

THE MARE AND FOAL

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THE MARE AND FOAL

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Michigan farmers have been making every effort possible to increase horse production by breeding more good mares and by giving them proper feed and care, thereby enabling them to raise a larger percentage of foals for replacing older horses.

The horse population of the United States has decreased from 19,800,000 head in 1920 to 13,742,000 head in 1930 and still lower to 10,616,000 Jan. 1, 1939. In Michigan, the figures are approximately 605,000 in 1920, 382,660 in 1930, and 366,000 head Jan. 1, 1939, making a decrease of 40% during the last 19-year period. Approximately 35% of these animals are more than 10 years of age, making replacement very necessary. According to the Bureau of Animal Industry of the State Department of Agriculture, more than 8,154 certificates of health were filed for horses being imported into Michigan between July 1, 1936 and July 1, 1938. Michigan farmers spent more than \$1,108,900.00 for these horses alone. These figures do not include horses not registered with the State Department of Agriculture.

Michigan has been raising fewer than 18,000 colts per year, while the mortality of Michigan horses is now about 25,000 head per year, showing that horses must be bought or raised in greater numbers during the years to come. No better market can be provided for low-priced feeds than to use them on the farm for replacing and renewing the horse population. As a means to this end, this bulletin has been published as an encouragement to horse production.

BREEDING THE MARE

In selecting animals to be mated for the production of the draft foal, it is best to choose individuals which have the conformation desired in the colts. Drafty, thick, short-backed, heavily-boned animals with good feet and quality legs and pleasing dispositions should be mated to obtain offspring of a desirable type for present day demand. Good breeding in the mare as well as in the stallion should be demanded.

Although it is not always advisable, mares may be bred when they are two years old if they are large, well-developed, and not needed for work as late two or three year olds. Mares bred when they are three or four years old may be worked while they are in foal without harmful results. Mares should not be allowed to become too far along in years before breeding, as difficulties in breeding increase with age.

Mares come in heat nine days after foaling and usually every 18 to 21 days thereafter. The mare should be returned to the stallion for retrieval once every three weeks for at least four times after the last service, in order to be sure that she is in foal. The mare may be bred to foal in either the spring or fall. Both times have advantages but it is

generally a more desirable practice to have them foal in the spring previous to the spring rush of work. If the mare is to foal after the spring work is over, her work should be slow and light in order that possibility of injury may be reduced to a minimum.

CARING FOR THE BRED MARE

A little additional care should be given the mare after she is pregnant if she is to do her best in raising the foal. As a general principle, feeds rich in protein, lime, and phosphorus should be used. These elements are present in legumes and may be increased by using a greater portion of alfalfa or clover hay.



Fig. 1. Brood mares in winter.

Dusty or moldy feeds should be avoided because they are often the cause of abortion. Beginning three or four months after the mare is settled, she should be given one ounce, three tablespoonfuls, of a solution composed of one-half ounce of potassium iodide in one pint of water on the feed once every week. Iodine, sometimes lacking in the feed produced in certain localities, should be provided in some other form because it is known that iodine through prevention of goitre gives a stronger foal that has resistance against diseases. The most common of these diseases, and probably the most fatal, is known as joint ill, navel infection, or leakage of the navel.

THE WORKING MARE

The pregnant mare should have plenty of exercise as well as good food. The best manner in which to supply exercise is in daily work in the harness at moderate farm work. Care should be taken not to cause over exertion or continued heavy hauling or backing.

The working mare should be fed a little more grain than usual in order that nourishment is provided for herself as well as for the development of the fetus. Three parts corn and two parts oats by weight is a good grain mixture for the working brood mare. A pound of bran daily should be added along toward foaling time as a laxative and conditioner. The amount of grain and hay will depend upon the condition, work, and individuality of the mare, and should be decided by one who is handling and feeding her daily. Whatever these conditions may be, she should not be overly fat or exceedingly poor. Work in the harness should be continued until foaling time, not by the calendar, but until the foal is born. As a guide to the quantity of feed for the working mare, give one pound of grain per day per 100 pounds of live weight, increasing to one and one-fourth pounds per 100 pounds of live weight as the mare's work increases, gradually diminishing intensity of work and grain as foaling time approaches.

THE IDLE MARE

On some farms, it is not possible to work all of the mares in harness daily, and this is especially the case during the winter season if several mares have been bred. It is a good plan, under such conditions, to choose the quiet working mare for the chores and other routine and not plan to work the others at all. These idle mares can be kept at a minimum of expense by giving them a run on a sod field which is to be planted in corn the following season.

For such horses, clover, alfalfa, or soy bean hay with oat straw or cornstalks makes an ideal ration. Hay or straw can be fed in large racks such as is illustrated in Fig. 1. These racks are simply a frame on skids with woven wire fencing for the sides. Such racks may be filled once or twice a week from a wagon, and by starting at one side of the field, and moving them forward every few days will not only reduce the cost of feeding but will scatter the manure over the field ready for plowing in the spring. The racks, if kept filled, also serve as a shelter from the wind and driving rain and are all that horses need if they are in good condition. This method of feeding roughage also is very efficient and practical for young horses and idle geldings.

For mares wintered on roughage alone, roots, such as carrots, beets, or potatoes at the rate of six or eight pounds each daily are good and will help to keep the horses in good condition for foaling. This is especially important for the mare that is wintered in the barn with access only to the barnyard or dry lot where she cannot get enough exercise nor obtain second growth grass. If the mare continues on grass and is idle until she foals, she will need no grain or roots because fresh grass is the best conditioner and is the most sanitary floor for foaling which can be supplied. However, the mare should not be allowed to foal on the ground unless the nights are warm and the ground is free from winter chill and dampness.

APPROACHING PARTURITION

The average period of gestation for the mare is 11 months or 340 days although it may vary from 319 to 373 days after the day of breeding. If the mare has been at work, she should be continued at light,

slow work right up to the time of foaling. When there is noticeable sinking of the croup muscles, a falling in of the abdomen, and a fullness of the udder, the mare may be expected to foal within a week and preparations for giving the young foal every possible chance should begin. Waxing of the nipples is not always an immediate sign of parturition, although in a great majority of mares, this condition prevails within 24 hours of foaling. The mare should become accustomed to the stall in which she is to foal. A large, light, clean box stall which has been disinfected and the floor covered with lime and well bedded is preferable. The mare should be given daily exercise and, if she is not accustomed to pasture, it should not be allowed at this time more than perhaps one hour per day to accustom her to it gradually. A knowledge of the mare's previous success, coupled with good judgment, should decide the amount of feed and exercise she should receive.

Light, comfort, sanitation, and room should never be overlooked in stabling the mare before or after foaling. If weather permits and the ground is warm and dry, allow the mare to foal in pasture even if she has been worked in harness during the day, and it is necessary to turn her out at night. Here, it is much cleaner and the conditions are much more natural.

PARTURITION

The Mare

When the mare shows uneasiness, lies down and gets up, bites her side and flanks, sweats in her flanks, and switches her tail, immediate parturition may be expected. If possible, be near but not in view when the foal arrives. Parturition usually extends from 10 to 15 minutes with normal presentation. If presentations other than the fore legs extended with the head resting on them are encountered, the condition is considered abnormal and a veterinarian should be summoned as trouble will undoubtedly result. If the feet are presented with bottoms up, it is an indication that they are the hind ones, and that assistance must be given to deliver the foal at once, otherwise it will smother. As soon as the foal is dropped, see that he begins to breathe. Remove the film from his mouth and nostrils, and if he fails to breathe blow into his mouth and rub or shake his ribs. If this does not start him at once, breathe into his nostrils normally, pressing on his ribs as you inhale your breath and release the pressure as you exhale.

Double the afterbirth on itself and tie it with a piece of string. Tie high enough so that the afterbirth will not hang below the hocks. The foal or mare may step on it thereby increasing the danger of inflammation of the uterus in the mare. This results in stiffness of the joints and a disease known as foal founder. If the afterbirth is not discharged within six hours or if lameness is evident, the animal should be blanketed and a veterinarian called at once. The mare and foal should be left lying as long as they are quiet. This gives them a chance to gain strength. Remove the afterbirth from the stall and burn or bury it; this is often the source of disease if left uncared for. The stall should be cleaned and the floor sprinkled with lime and covered with new bedding.

The Foal

Paint the navel cord with tincture of iodine as soon after birth as possible. An antiseptic powder should be dusted on the cord daily to prevent infection and to dry it up. Air-slacked lime may be used if an antiseptic powder is not readily available. The treatment should be continued until the cord drops off, usually within three or four days, and the scar is healed.

If the foal fails to nurse after two or three hours, he should be assisted. Attempts to force him are useless. He must be coaxed. The best method is to back the mare's rear quarters on a pile of straw in one corner of the stall and coax the foal to the teat with a nipple and bottle in which has been placed a small amount of the mare's milk. Work from the side of the dam opposite to the foal.



Fig. 2. Mares and foals in alfalfa pasture.

Let the foal have the first milk to come from the mare's udder. It is nature's laxative which cleans the intestinal tract of the fecal discharges. If the bowels fail to discharge within four hours and the foal fails to take much nourishment, give an injection of luke-warm, weak soapy water made with a vegetable soap, in which has been placed a few drops of glycerine, using for the injection a syringe with about a three-inch nipple. If constipation continues, give an ounce of castor oil in a small amount of the mare's milk. To do this, lay the colt on its side and pour the mixture into the corner of its mouth on top of its tongue, a swallow at a time. If the foal scours, restrict his diet by milking the mare out frequently.

When foals appear weak and die, the trouble may be due to pre-natal infection, and, according to Dr. W. W. Dimock, head of the Animal Pathology Department, University of Kentucky, a large percentage

of such foals could be saved by injecting them intravenously with 50 cc. of blood taken from the jugular vein of the mare.

CARE AFTER FOALING

The mare should be given frequent drinks of luke-warm water in small quantities. Her first meal should be about one-half the regular feed and should be a mash made of two-thirds oats and one-third bran. After this, she should be put back on her regular feed, limiting the quantity to one-half the usual amount for at least nine or 10 days. If the udder seems full and caked or if the colt is inclined to scour, milk the mare out by hand a number of times until the conditions are corrected. Watch the bowels of both mare and foal and see that they are kept in a normal condition, neither too laxative nor constipated.

If the mare was on pasture before foaling, get her and the foal out as much as possible when weather permits. If they cannot be on pasture, they should be given a place to exercise in a small lot near the barn. If both the mare and foal progress all right, the mare may be rebred on the ninth day and then be returned to work. It is better to wait until at least two weeks after foaling. If there has been trouble at the time of parturition, it is a good policy to defer breeding until 30 days after foaling. Troublesome germs, streptococci, invade the uterus of the mare shortly after parturition. Sometimes, these germs become established and produce infection, resulting in abortion or weak foals the following year. Another germ, *S. equirulis*, is also present in many mares and may also cause abortion or weakness in the foals. It is important then to allow the mare time to clean up fully after foaling before mating her with the stallion.

Work in the harness at first should be slow and easy. The foal should be left in the box stall and given a small amount of water and grain to work over and amuse himself with. The mare should be taken to the barn to allow the foal to nurse once during the forenoon and again during the afternoon for the first 10 days after she is put to work. The warm mare should be partially milked out and the udder washed before the foal is allowed to suckle her. It is a better plan to milk the mare frequently while she is working, at least two or three times during the forenoon and again two or three times during the afternoon. Allowing the foal to suckle the warm mare without milking may cause him to become shaggy, rough-coated, and have some trouble with indigestion.

At night, the mare and foal can be turned on pasture, preferably separate from the work stock, which are sometimes rather rough with the little foal, or are quarrelsome with the mare.

WEANING

By placing the feed box on or near the floor, the foal will soon learn to eat with his mother and may be given grain separate from her. At the end of five or six months when he may be weaned, he should be taken away from the dam and not allowed to return. At this time, some trouble may be experienced with swelling of the mare's udder. The foal should be taken away in the morning rather than at night, and the mare put to work or turned out for exercise. Milk her out clean in 12

hours and then apply camphorated oil, spirits of camphor one part and mineral oil six parts, and then milk again clean in 24 hours, and then again in 48 hours. After this, watch the udder, but do not milk unless absolutely necessary.

Weaning is the most trying time in the foal's life and it is at this time that every effort should be used to give him the proper start. Keep him growing and developing as much as possible during his first two years. Give three parts of oats and two parts corn, by weight, feeding one pound per day for each 100 pounds he weighs. One pound of alfalfa hay per day per 100 pounds of live weight and good oat straw to work at between meals completes the ration. The colt should get plenty of outdoor exercise, housing him in an open shed or box stall if possible, where he can go out and in at will. (See the Experimental Report, "Limited Rations for Draft Colts," Michigan State College Experiment Station.)

Combinations of Feed for Working Mares

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| 1. Alfalfa hay
Oat straw
Oats 2 parts, ear corn 3 parts. | 3. Mixed hay (legume and timothy)
Oats 1 part
Corn 1 part
Bran 1 pound
Linseed oil meal one-half pound per day. |
| 2. Timothy hay
Oats 2 parts
Corn 1 part
Bran 1 pound daily
Linseed oil meal 1 pound daily. | |

Ration for Idle Mare

Alfalfa hay or mixed hay at liberty. Oat straw or stalks to be fed once or twice weekly.

Ration for Idle Mare Confined to Stall and Dry Lot

Alfalfa or mixed hay 18 to 22 pounds daily. Carrots or potatoes six to eight pounds.

Winter Rations for Weanlings

- Alfalfa hay one pound per 100 pounds live weight.
Grain—one pound per 100 pounds of live weight of mixture, oats 3 parts by weight, ear corn 2 parts by weight.
Oat straw at liberty.