

AGRICULTURAL EXPERIMENT STATION

KANSAS STATE AGRICULTURAL COLLEGE
MANHATTAN, KANSAS

DEPARTMENT OF DAIRY HUSBANDRY



A GROUP OF JERSEYS FROM THE COLLEGE HERD

RULES FOR TESTING DAIRY COWS FOR ADVANCED REGISTRATION

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This circular is intended to furnish useful information for those interested in the advanced registry of dairy cows. A registered cow is entered in the advanced registry of her breed when she produces, in a given period of time, the amount of milk or butterfat required by the breed association of the breed to which she belongs. During this time the cow is said to be on test, and the record is made official by a disinterested party who weighs the milk, tests it for butterfat, and vouches for the accuracy of the test. The value of all dairy cattle is measured to a great extent by the production records back of them, and for this reason the testing work is important and valuable to the breeder.

The Kansas State Agricultural College is called upon to furnish supervisors for advanced registry tests, and these super-

visors are guided by the rules of the breed associations. In many cases, however, the breed association rules do not cover all conditions with which the supervisor must contend. The regulations herein given have been compiled and passed on by all the dairy breed associations, and are intended as a guide for the supervision of advanced registry tests in the state of Kansas and for the guidance of the breeder in making the tests.

GENERAL INFORMATION FOR BREEDERS

Many breeders hesitate to start testing because they feel that they cannot compete with rich men, owing to lack of equipment and experience. As long as they have this attitude they will not do official testing. The lack of equipment need not worry a breeder, as some of the largest records have been made under ordinary farm conditions. In fact some breeders pride themselves on this fact and advertise it. The most important things in successful official test work are good cows, plenty of feed, and good care. Any good farmer can provide the feed and the care, and if he hasnt the good cows, the sooner he finds it out the better off he will be.

OFFICIAL TESTING

All official testing in Kansas is under the direction of the Kansas State Agricultural College. The work is handled by the Department of Dairy Husbandry.

Official Tests.—The supervisors, in the case of official tests of seven days or longer, visit the herd under test, see the cows milked, weigh and test the milk, and report the production to the Department of Dairy Husbandry. The department checks and approves the reports and sends them to the breed associations.

Semiofficial Tests.—In the case of the semiofficial or yearly testing, the supervisor visits the herd on test two days during each month, doing the same work as specified for the official tests. In addition, the breeder keeps an itemized daily production record of each cow. A report of the monthly production must be sent to the breed association, and the milk sheets must be preserved until the record is completed and approved by the breed association.

COST OF OFFICIAL TESTING

The owner of the animal or animals tested must meet, convey, and care for the supervisor after his arrival at the railroad station. After the test is finished he must either return him to the station or take him to the farm where he is to conduct the next test. In addition to caring for the supervisor, the owner is required to pay \$2.50 per day for the time the supervisor is at the farm and for his time traveling to and from the farm, and also to bear other necessary expenses of the trip. Beginning November 1, 1919, a fee of 50 cents will be charged for all cows that qualify for the advanced registry in tests of seven days or longer. In the semiofficial or two-day testing, a fee of 10 cents per cow per month will be charged. These fees are to cover postage, breakage of glassware, telephone calls, telegrams, clerical help, etc. Before November 1 the Department of Dairy Husbandry absorbed all of these incidentals, but the work grew to such proportions it could no longer do so. Most states are charging \$3 or more per day for the time of the supervisor, but adding the above fees is preferred to raising the rate per day, in order to encourage the work as much as possible. The payment of testing expenses must be made to the Department of Dairy Husbandry and not to the supervisor.

SECURING AND CANCELLING TESTS

As much notice as possible should be given the dairy department before a test is to be started. Every effort will be made to supply each breeder with a supervisor at the time desired, but due to numerous demands, the supervisor is sometimes several days late. In case a breeder has applied for a supervisor, a man is sent, and the breeder then decides to cancel the test, all of the necessary expenses of the supervisor's trip must be borne by the breeder.

PROCEDURE IN SECURING ADVANCED REGISTRATION

The rules and regulations governing official testing are issued by the breed associations. The requirements are really very low, and there is no reason why any good purebred cow given the proper care cannot qualify. These requirements are given in Table I.

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TABLE I.—REQUIREMENTS FOR ADVANCED REGISTRY
 (Prescribed by the respective breed associations)

Breed	Ayrshire		Holstein		Guernsey and Jersey
	Milk for 365 days	Fat for 365 days	Fat for 7 days	Fat for 365 days	Fat for 365 days
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
2 years	6,000	250.5	7.2	250.5	250.5
3 years	7,000	287.0	8.8	287.0	287.0
4 years	8,000	323.5	10.4	323.5	323.5
5 years	9,000	360.0	12.0	360.0	360.0
Increase per day in age	(a)	.1	.00439	.1	.1

(a) The requirement for the Ayrshire breed at 2½ years is 6,500 pounds of milk; at 3½ years 7,500 pounds; and at 4½ years, 8,500 pounds.

Those who wish to apply for advanced registry should proceed as follows:

1. The Holstein breeder should make application to M. H. Gardner, Superintendent of Advanced Registry, Delavan, Wis., stating name and No. of each cow to be tested, the probable date of freshening, and the date supervisor is wanted. A special form (Form K) will be supplied by Mr. Gardner. If a cow on test meets the requirements for entry, the owner shall, on the completion of the test, furnish the superintendent of advanced registry with a full report of the test on special forms used for that purpose.

2. The Jersey breeder should make application (Form No. 66) to the American Jersey Cattle Club, 324 West 23d Street, New York, stating herd register name, No., and tattoo mark of every cow to be placed on test. A fee of \$2 must be paid the club for every cow placed on test. At the conclusion of a test, the owner of cow should make application for Register of Merit Record (Form No. 62), and a certificate will be issued free of charge.

3. The Ayrshire breeder should make application for test on special form to Ayrshire Breeders' Association, Brandon, Vt., with an entrance fee of \$3 per cow accompanying the application.

4. The Guernsey breeder should make application to the American Guernsey Cattle Club, Peterboro, N. H. An application fee of \$5 per cow must accompany the application. On completion of the record, a certificate will be issued upon receipt of certificate fee of \$5 per cow.

PREPARATION OF COW FOR THE TEST

Many breeders, especially beginners, try to do official testing when their cows are in poor condition, and are then disappointed when their cows fail to qualify. The cow should be as fat as possible before freshening. Any good palatable ration will do if it gets results. The feed should be reduced just before freshening, and the cow gradually brought back on full feed after freshening. Liberal and careful feeding does much towards making big records. On seven-day testing the cow should be milked four times a day; and on semi-official testing, as many times a day as she deserves and it is practicable to milk her. The more tests a breeder runs, the more he learns about testing work; but it may all be summed up in good care and bountiful yet judicious feeding.

RULES FOR THE SUPERVISION OF OFFICIAL TESTS

1. The supervisor shall be present at the last regular milking preceding the beginning of the test, and see that the cow is milked dry by stripping each cow immediately after she is milked. He shall note the hour this milking is made, and the last milking of the test period shall be made at the same hour. It is especially important in the case of seven-day tests that the cow be milked on time each milking, as it is impossible to tell before the conclusion of the test what seven days will be chosen as the test period.

2. Whenever possible the cow should be identified at the time of the preliminary milking by comparing her markings with the sketch on the registration papers, in the case of broken-colored breeds; and in the case of the Jerseys, by the tattoo mark in the ear. In case registration papers are not available, or the diagrams do not agree with the markings of the cow, the cow should be sketched on forms provided for that purpose.

3. The supervisor must be present at every milking during the test and see that the pail contains nothing but the milk drawn from the cow under test.

4. Only one cow shall be milked at a time, and the supervisor must in every case be in a position to observe the milker during the whole milking.

5. Immediately after the milk is drawn at each milking the supervisor shall take charge of the pail and contents

weigh the same on scales provided by the dairy department, enter the exact weight of the milk at once on his records, and enter the milk weights on the owner's milk sheet or at least see that this milk sheet agrees with his record.

6. An extra pail shall be provided by the owner, and the milk shall be poured from one pail to another until thoroughly mixed. (This is unnecessary where a dipper is furnished and the milk thoroughly stirred.) The supervisor shall then take correct samples of the milk sufficient for his test and for the composite sample.

7. The samples of milk shall be kept under lock and key, or in the supervisor's sight, until tested.

8. The fat determinations shall always be made in duplicate, using properly calibrated glassware, and both determinations recorded. The average must be used in computing the amount of fat. The samples taken at any one milking must not be thrown away until satisfactory duplicate tests of the milking are obtained.

9. The milk shall be tempered to 68° F. before testing, and test samples that have just been drawn from the cow or have been in a cold place shall not be tested without adjusting the temperature.

10. Readings of the tests shall be made at a temperature of 130° to 140° F. If the duplicate determinations vary more than two-tenths of 1 percent, the test must be repeated.

11. Composite sample jars will be returned at owner's expense if he so desires. Composite samples should be made up at the time of testing, with milk at proper temperature, and not at milking time.

12. In case all or a part of any milking shall be accidentally lost, the average of the six nearest milkings at the same hour shall be interpolated. This rule shall apply only in the case of tests seven days or more in length. In the case of two-day tests the weight of milk and test of corresponding milking of the other day in the test shall be used. In making such estimates as above, the weight of milk, percent of fat, and pounds of fat must all be estimated if any one of them is lost on any sample. Thus in the case of the weight of milk being available but the sample lost, the weight of milk must be discarded and estimated according to the above as well as the test.

13. The supervisor shall report to the person in charge of

testing in the state any obvious violation of the rules of the breed association on the part of owner or attendants.

14. The supervisor shall make a notation on test report of any condition which might influence the test, such as cow being in heat, sickness of cow, severe change of weather, etc.

**BRIEF DIRECTIONS FOR SAMPLING AND TESTING
WHOLE MILK**

SAMPLING

Thoroughly mix all of the milk to be tested by pouring it not less than three times from one vessel to another. Take a sample with a dipper; or

Mix the milk thoroughly with some efficient stirrer and sample with dipper.

If composite samples are to be taken, each small sample should be in proportion to the amount of milk produced that milking.

TESTING

Make two tests for each sample.

Temper the milk to 68° F. by placing in warm water, if it is not already at that temperature.

Temper the acid to 68° F. by placing in warm water, if not already at that temperature.

Mix the milk by pouring from one bottle to another at least three times.

With the 17.6 pipette, measure exactly 17.6 c.c. of milk into an 8 or 10 percent whole milk test bottle.

Measure out 17.5 c. c. of sulphuric acid (H_2SO_4) and add to the milk in the test bottle, letting it run down the side of the neck, turning the bottle so that the milk will all be washed from the neck. Mix this acid and milk at once by giving it a rotary motion.

Place your samples in a tester and run for five minutes.

Place in water at 180° F. for five minutes.

Add boiling water to the neck of the bottle, and again revolve in the tester two minutes.

Place in water at 180° F. for five minutes.

Add boiling water to bring the fat column up about 7 or 9 percent mark, and finish by whirling in tester for one minute.

Place in a hot waterbath at 130° to 140° F. for 10 minutes.

The water should be deep enough to come up above the surface of the fat that is in the neck of the test bottle, and at the start should be about 140° F.

HEADING

Read with the dividers. Place one point of the dividers on the extreme lower end of the fat column and bring the other point to the extreme upper edge of the upper meniscus.

Now, placing the lower point of the dividers on the scale at zero (0), the other point will give the reading or the percent of fat in the milk. Record this amount.

Always note the fat column closely. Is it clean, curdy, black, or charred? Is it clear or cloudy? If black or charred, reduce the amount of acid, mix acid and milk longer, and retest. If curdy or cloudy, add more acid and retest. Bubbles on the top of the fat column are due to carbon dioxide being generated. To correct this, use soft or distilled water. If neither are available, add a small amount of acid to water before adding to test bottles. Add acid to water very slowly.

REGULATIONS

Number of Cows Supervised.—The maximum number of cows a supervisor is allowed to test is as follows: Six cows milked four times daily; eight cows milked three times daily; or twelve cows milked twice daily.

Choosing Test Period.—In the case of official tests, a cow may be continued on test for more than seven days and the best seven consecutive days' production selected as the record period, but all tests must be reported. In the case of semi-official tests, the entire testing period must be reported; but no choice of the best two days' production is allowed. If a cow is tested for seven days or longer and the owner wishes to continue her on semiofficial test, it will be unnecessary to run a two-day test the same month the seven-day test is made, as the average of all the days on test will be taken by the cattle club as the average percent of fat for that month. A breeder may have as many tests during the month as he desires, but all must be reported, and all cows in test must be tested and reported on the retests, except in the case of Guernseys which are allowed only one regular test unless a retest is ordered.

Time of Starting Official and Semiofficial Tests.—In the case of Holsteins, no seven-day test may start earlier than the seventh day after calving, the day of calving being counted as the first day. In semiofficial testing, no Holstein or Jersey record shall start earlier than the fourth day after calving, the day of calving being counted as the first day. In the case of Ayrshires and Guernseys, the record may start as soon after calving as practical. The Guernsey Cattle Club and the Holstein-Friesian Association do not permit the first semiofficial test to be conducted before the seventh day after calving, but this does not prevent the reporting of the milk record previous to this time.

Length of Semiofficial Tests.—It should be borne in mind that the semiofficial test in the case of the Holstein and Ayrshire is a lactation test of not more than 365 days and that only one calving or abortion is allowed. However, in the Jersey and Guernsey the semiofficial test period represents 365 consecutive days with no restriction as to one lactation period. Therefore, in the case of Jersey and Guernsey cows, the animals may start testing in one lactation, be dry for a time, and finish the year in another lactation. In the latter breeds, a test may be continued for more than 12 months and the best 365 days selected, provided it does not average into another record period. The new Jersey 305-day semiofficial test calls for 305 days, no more and no less, consecutive days *in milk* of one lactation.

Credit for Back Production.—In all the breeds, the production for 30 days only may be credited to any cow prior to her first official test of that period.

Checking Owner's Scales.—The supervisor must check the scale of the owner of the cows under test and report condition of same. The scale must weigh in pounds and tenths of a pound and not in ounces.

Number of Milkings Per Day.—Four times a day is the maximum number of times per day that a cow may be milked. No cow may be milked more times during official supervision than she has been milked previously, except in the case of tests of seven days or longer.

Official Testing with Milking Machine.—The Department of Dairy Husbandry requires that the man operating the milking

machine must do the stripping also, and this stripping must be done immediately after the teat cups are taken off the cow. Only one cow may be milked at a time, and where double chambered buckets are used, only one chamber may be used at a time when milking cows on test.

The above rules have been adopted to clarify some of the breed association rules for the supervisor. They are not supposed to conflict with the breed association rules. In a few cases, however, they have been formulated by the dairy department to unify the rules of the various associations. These rules and regulations are not complete in themselves, and the supervisor should acquaint himself with all of the breed association rules and regulations and conduct himself accordingly. When a conflict arises, these rules shall take priority over the breed association rules.

SPECIAL RULES FOR COW-TESTING ASSOCIATION TESTERS

Methods of Payment of Testers.—A tester may collect for semiofficial testing, but the bill must be paid by check made out to the treasurer of association. No cash collection shall be made by tester or direct payment made to him in any form. In case of official tests of seven days or longer, the tester must present a bill to the dairy department and receive his pay through this department.

Arrangement of Itinerary.—The tester should arrange his itinerary so that all Holstein herds are tested between the 10th and 20th of each month if possible, and 15 days should elapse between monthly tests in all breeds.

Taking Composite Samples.—A composite sample must be sent in to the dairy department for every cow on either official or semiofficial test. The sample must be sent prepaid, but may be sent by either mail or express. The dairy department will furnish graduated pipettes, but the breeders must furnish bottles or jars. Sample jars will be returned at breeder's expense if so desired.

Official Test Made by Testing Association.—Semiofficial testing done by a cow-testing association tester will be accepted by the dairy department if all the department and cattle club rules are observed in conducting these tests. The association testers will be interchanged every three or four months, or a

man will be sent from the college to check up on their work, which is according to the breed association rules.

Tester Must Be Approved.—All associations must have a tester approved by the dairy department before semiofficial or official tests will be accepted.

Must Follow Official Rules.—The association tester must be equipped with a steel lock box in which to keep his samples and must follow all the rules laid down for official supervision.

Must Have Lock Box.—Each association must provide the tester with a lock box which has been approved by the dairy department.

DIRECTIONS FOR MAKING OUT REPORTS

Tests of Seven Days or Longer.—Make out Form 4 in ink for the Holstein-Friesian Association. Begin report on first line and insert month and date in ink in "Date" column. Select the seven consecutive days totaling the most fat and place a bracket around days chosen. The seven days need not be calendar days. If the cows are milked four times a day, the best 28 consecutive milkings may be chosen. Make out dairy department reports (labeled "Official Tests") with pencil and in duplicate. At the conclusion of the test the reports are to be filled out in full and all of them sent to the dairy department. In case of very high production, reports should be sent to the dairy department every three days. (See Form 5.)

Semiofficial or Two-Day Tests.—Make out club reports in ink, and dairy department reports (labeled "Yearly Tests") in pencil. Make the latter out in duplicate. Immediately on completion of the test, make out a preliminary report card and send to the cattle club. The Ayrshire Association does not require a preliminary report card. The carbon copy of the dairy department report will be sent back to the breeder after being checked. Get your reports in promptly and do not omit anything.

Decimal Places.—In making out the reports, figure the percent of fat to three decimal places and bring it up to two places by dropping the third place if it is under five or bring it up as one if it is five-or over. The pounds of fat in every case are figured to four decimal places and brought up to three decimal places according to the above method.

Use of Barn Book.—A pocket barn book is furnished the supervisor by the dairy department. This book is for the convenience of the supervisor and the data should be sent to the dairy department. All other reports except the preliminary applications should be sent direct to the dairy department.

How to Figure Age and Requirements.—In making out reports on Holsteins, the age and requirements should be reckoned from day of calving; while in case of Guernseys, Jerseys, and Ayrshires, they should be reckoned from date of starting the test. In all the breed associations a month is considered 30 days, except in the case of the Ayrshire Association which considers the first six months 183 days. (See Ayrshire rules.)

