Mastitis is the dairy industry's number one herd health problem. Virginia dairymen launched a state-wide campaign to combat this disease early in 1958 when the Virginia State Dairyman's Association initiated the organization of a State Mastitis Prevention and Control Committee. The committee membership includes representatives from every state organization and agency that works with dairy farmers. Those represented are the Virginia State Dairyman's Association, Virginia Dairy Fieldmen's Association, Purebred Cattle Clubs, Federation of DHIA's, Artificial Breeding Associations, Veterinarians Association, Dairy Products Association, State Department of Agriculture, V.P.I. Department of Agricultural Education, and the V.P.I. Agricultural Extension Service. In 1966 the State Committee added representatives from the Extension Agents' Association, the Vocational Agricultural Instructors' Association, and the Milking Machine Manufacturers' Council. Additional representation from V.P.I. was provided as follows: A representative from Administration, a representative from the Dairy Science Department and a representative from the Veterinary Science Department. The Virginia State Dairyman's Association was empowered to appoint 5 producers instead of one.

The program developed by this committee is the result of careful and systematic planning. The planning procedures used and the program that has resulted are outlined below.

Review of the Situation

Mastitis is a costly infection. U.S. dairymen lose over $350,000,000 each year because of mastitis. It causes greater losses than any other disease of dairy cattle. In fact, it is responsible for 1/3 of the total dairy cattle disease cost. It is estimated that Virginia dairymen lose at least $10,000,000 per year and possibly $25,000,000 in milk poured down the drain, loss of potential production, excessive cow depreciation, and the cost of extra labor and drugs used in treatment.

Characteristics of Mastitis

Every disease has certain characteristics that dictate the methods used to reduce or eliminate it. Mastitis is a non-specific disease. It can be caused by any one or a combination of many different "germs." Many of the organisms that can cause mastitis are found around most dairy barns. They become active when conditions are right. For this reason, a test and slaughter program would be futile. There is no effective vaccine, and indiscriminate use of drugs has not been effective in reducing the incidence of mastitis. Lowered resistance, brought on by stress or injury, is the greatest predisposing factor. Most stress is either man-made or can be prevented by proper management.
Type of Program Needed

The characteristics of mastitis indicate that a program aimed at prevention is the best approach. Prevention through good herd management and managed milking can reduce the incidence of mastitis by 75 to 80%. Reduced incidence makes control of the remaining cases easier. With fewer cases to deal with, accurate diagnosis to identify the specific germs is easier. Specific treatment can be more effective. The educational program developed by the Virginia Mastitis Prevention and Control Committee was based on these facts. Major emphasis is placed on prevention, but proper control procedures are included.

Organization of the Program

Recognizing that sound organization is the key to success of any program, the original State Committee set up the following subcommittees: Program, Educational, Editorial, and Clinical. In 1966 a Research Committee was added, the Program Committee was deleted, and the Educational and Editorial subcommittees were combined. The following responsibilities were outlined by the secretary as follows:

Educational and Editorial Subcommittee:

1. To develop plans for implementing the various phases of the educational program and to put these plans into action.

2. To edit all published material to insure that practical, uniform recommendations are included with no contradictory statements. All materials published under this program bear the seal of the Virginia Mastitis Prevention and Control Committee.

3. Encourage activity of Task Force groups in individual herds.

4. Cooperate with Research Committee in planning ways to give results of abnormal milk screening tests to farmers and to tie these test results in with educational committee programs.

5. Keep State Committee informed of programs and activities.

Research Subcommittee

1. Evaluate Abnormal Milk Screening Test results and recommend courses of action for herds in trouble to follow.

2. Evaluate results of various tests used and keep state committee informed about most suitable test to use in the Screening Program.

3. Evaluate various milking practices necessary for good milking operations.

4. Cooperate with Educational and Editorial Subcommittee in getting Screening Test results to the farmers.

Clinical Subcommittee:

1. Make recommendations on the diagnosis and treatment phase of the program.

2. Work closely with the Educational and Editorial Subcommittee to keep veterinarians informed as to the status of the mastitis program.
3. Teach dairymen and veterinarians to recognize their role in the clinical phase:
   a. dairymen to contact the veterinarians
   b. veterinarians to utilize state laboratory facilities to help diagnose problem areas.

   **Educational Phases of the Program**

   Although much information has been published in the past under the leadership of the Virginia Mastitis Prevention and Control Committee, only the following subject matter materials are presently available.

   A. **Dairy Guidelines**
      Series 275 - Recommended Milking Procedures--What, How, Why
      Series 277 - Leucocyte Screening Tests and Dairy Herd Improvement
      Series 478 - Cleaning and Sanitizing Milking Equipment
      Series 479 - Treatment of Rubber Milking Machine Parts

   B. **Herd Management Calendars**, with Special Emphasis on Mastitis Prevention and Control, were developed for 1962 through 1968. Ten thousand copies were distributed each year.

   C. **Instruction Sheet** - accompanies screening test results reported to each producer by the Department of Agriculture. This sheet interprets the test results and suggests corrective measures and professional people who can assist in herd, equipment, and milking procedure problems.

   D. **Vocational Education Teaching Plan** - A teaching plan was developed in cooperation with the State Agricultural Education Staff and distributed to all Vo-Ag teachers throughout the Virginia system.

   E. A set of slides and a script on the Prevention and Control of Mastitis was prepared. Sets are available to any group, and can be secured from any of the 6 District Extension Agents, area supervisors of vocational agriculture, or from the V.P.I. Extension Service.

   F. Additional mimeographed materials that have been prepared are:
      1. Steps in Organizing a County Mastitis Program.
      2. A survey form to evaluate milking equipment and milking methods.
      3. Suggested activities of county managed milking task force.
      5. Opportunities and needs in the Virginia managed milking program.
      6. County progress report form.
      7. Managed Milking Demonstrator Certificate.

   **Educational Activities**

   A. **Preparation of Informational Material** - The Educational Subcommittee of the Virginia Mastitis Prevention and Control Committee recognized that reduction of
the incidence of mastitis could be achieved only by knowledgeable people who manage and care for the herds. The next phase of the educational program, therefore, consisted of publishing and distributing information of a general and specific nature about mastitis and its prevention. Each publication prepared on mastitis is edited by the Educational and Editorial Subcommittee to ensure its usefulness to the dairyman. As more knowledge on causes, prevention, and control measures is gained through research, new and revised publications help bring this information to the dairyman.

B. Development of County Programs - This phase involves those people who actually care for and milk cows. The long-time objective of this program is for all dairymen to practice recommended steps of managed milking. It involves the formation of county mastitis teams made up of dairymen and local professional people, who organize, plan, and sponsor herd surveys and demonstrations. Local task forces, made up entirely of professional people, such as fieldmen, extension agents, veterinarians, and equipment people, assist in surveying milking procedures and equipment in many herds, selecting prospective demonstrators and training these dairymen and their milkers in methods of managed milking and equipment care.

Beginning in 1966, one specialist in Dairy Science was assigned to devote the majority of his time to the development of county programs with assistance from others when needed. County program development involves training task force teams to make herd surveys and educational meetings, followed by herd surveys in all possible herds and gradual development of demonstration herds and qualifying herds.

C. Abnormal Milk Screening Test Program - This program, initiated January 1, 1964, is another phase of the educational efforts of the Virginia Mastitis Prevention and Control Committee. Its purpose is to assist dairymen in detecting mastitis in their herds and to provide recommendations and personal assistance to individual dairymen to eliminate possible causes of the infection.

The Modified Whiteside Test is run on herd milk samples picked up routinely by dairy inspectors of the Virginia Department of Agriculture. Test results are reported to dairymen on the laboratory transcript with bacteria and chemical test results. If only a negative, trace, or 1+ reaction is detected, an accompanying interpretation is enclosed with the transcript. If the reaction is classified 2+ or 3+, special letters accompany the test results. These reports not only give the interpretation of the test, but also recommend corrective measures that the dairyman should take.

If a dairyman has received 2 or more consecutive positive tests, assistance is offered to him in the detection and correction of faulty equipment and methods which may be contributing to mastitis in his herd. In the more severe and persistent cases, the personnel and facilities of diagnostic laboratories of the Virginia Department of Agriculture are made available to do complete evaluation, and bacteriological and sensitivity testing. Others involved in providing assistance to dairymen are Extension Agents, dairy fieldmen, veterinarians, Extension Dairy Specialists, vocational agricultural instructors, state dairy inspectors, and other professional people who make farm contacts.

Results of all tests are being tabulated monthly, by county, on machine data processing cards. Individual herd records by month are also tabulated. Yearly summary and analysis of these cards will serve as a guide to the state committee on where the most serious mastitis problem areas are within the state. It will also serve as a means for evaluating the progress of the total program of the Virginia Mastitis Prevention and Control Committee.
D. Virginia's Abnormal Milk Program - The following Abnormal (Mastitis) Milk Program enforced by the Dairy Section of the Division of Animal Health and Dairies will comply with the requirements of Phase II of the Abnormal Milk Program approved by the National Conference on Interstate Milk Shipments. The Board of Directors of the Virginia State Dairymen's Association have approved this program.

1. Each Grade A producer's milk supply will be sampled and tested for leucocytes at a minimum of 4 times each 6 months.

2. The Modified Whiteside Test will be used to test producers' milk for leucocytes.

3. A leucocyte count of 1,500,000 or more is considered abnormal milk. Whiteside tests of positive 2+ or positive 3+ indicate the presence of 1,500,000 or more leucocytes.

4. The following is the method which will be used to notify the producer when one or more of his milk tests show a leucocyte count of 1,500,000.
   a. A warning notice will be mailed to each producer when his milk test for leucocytes is 1,500,000 or more.
   b. When a producer receives the second consecutive high leucocyte count, he will be notified by letter that this is his second leucocyte count of 1,500,000 or more and that his dairy inspector will make an inspection of his facilities and operation. The inspection report will be posted in the milk house and/or discussed with the producer. A copy of this inspection report will be included in the producer's official record.
   c. When a producer receives a third consecutive high leucocyte count of 1,500,000 or more, he will be mailed a violation warning letter requiring definite corrective measures. These corrective measures are:
      (1) Have his milking equipment checked by his milking equipment service-man.
      (2) Have his individual milking cows checked by his veterinarian.
      (3) Exclude abnormal milk from milk being offered for sale.
      The producer will be required to sign a statement that the above 3 corrective measures have been taken. This signed statement shall be mailed to his dairy inspector.
   d. If the corrective measures required in the third violation warning letter are not taken or if the recommendations of the dairy inspector, serviceman, or veterinarian are not followed, and if the next sample still shows a leucocyte count of 1,500,000 or more, the producer shall receive a letter requiring him to show cause as to why his permit should not be suspended.

Summary

The Virginia Mastitis Prevention and Control Program is an industry program. This organized effort arose from a recognized need of the industry. The industry assembled the leadership to study this situation, evaluate the chances of success, outline the problems, and set forth their objectives. Subcommittees were appointed to plan and
activate work programs designed to accomplish the objectives. Active dairymen were named to serve as chairmen of all committees, and they have carried the leadership burden. These leaders have met as needed to evaluate progress of the program and to institute desirable changes as the program continued.

The current program is as follows:

1. Train professional task force. (Eventually they should function by themselves at direction of Extension Agent.)

2. Hold educational meetings on mastitis prevention and control.

3. Have task force build interest in the managed milking program and herd surveys among individual dairymen they visit.

4. Have equipment check--preferably by equipment dealer.

5. Have task force members (2 or 3 at a time) complete the survey of milking procedures in as many herds as possible and offer suggestions for improvement.

6. Resurvey to check on progress.

7. Develop demonstration herds and hold demonstrations on proper milking procedures when possible.