

UPDATE: Trichina Surveillance and Control

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The Illinois program is particularly significant in that it is the outgrowth of demand for action by the pork industry. Cooperation and backing has been abundant from the Illinois Pork Producers Association, National Pork Producers Association, USDA and other governmental and private sector groups. Although the incidence of trichinosis is low, the negative effect of consumer perception of something being "wrong" or diseased in pork has been shown to dramatically affect sale of pork and pork products. The misconception of having to overcook pork has dramatically decreased palatability.

The Illinois Trichinosis Control Act is progressive and still progressing toward its trichina-safe role. In the past 2½ years, we have developed two tissue digestion laboratories, conducted an epidemiological experiment on the transmission of trichinosis in a swine herd, passed the Illinois Trichinosis Control Act and have been working toward total depopulation of trichinosis-infected swine herds in Illinois.

The current program was established in January of 1984. It was based upon a study performed from 1970 to 1975 when over 50,000 swine diaphragm samples were collected from state licensed slaughter establishments and tested, using the Zimmerman Incubator Method of peptic digestion. Three foci of infection were found as a result of the 70's study. The foci of trichinosis infection within Illinois were located within the northwestern part of the state in the Knox county area, the east central part of the state in the Vermillion county area and the East St. Louis area. When the program was re-established in 1984, the state survey was reinstated, using the Stomacher pooled digestion method. We initially concentrated in the areas surrounding the three foci of infection discovered in the 1970's.

In addition to the state survey, field investigations and activities were conducted in each of the areas in which trichinosis-infected herds were identified in the 1970's.

In the eastern Illinois area, an experiment on the transmission of trichinosis within a swine herd was conducted in cooperation with Dr. K. Darwin Murrell of Animal Research Services, USDA. The manuscript was published in May of 1986. Surveillance of the resident herd was conducted through the use of the ELISA and tissue digestion.

In the East St. Louis area, random serological surveys of swine were conducted, using the ELISA. Also, rodent trap-

ping and digestion analysis of animals trapped was conducted. Infection has been found in four of the five complexes present in the East St. Louis area.

In the Knox county area, field investigations revealed that the premises housing infected swine in the 1970's no longer house livestock. To date, no evidence of infection has been found in this area.

A total of 43,106 samples have been tested since March of 1984. Thirty-four positives have been found. All positives trace back to the East St. Louis area or to the eastern Illinois farm.

The Illinois Program has now passed the research and surveillance stages and has moved into regulation, control and, hopefully, eradication of trichinosis within Illinois. The first law providing the authority for testing of suspect herds, the quarantine of suspect or infected herds and the depopulation of infected swine herds in regards to trichinosis was passed in Illinois and enacted on January 1, 1986. A companion appropriation bill provided monies to pay indemnity for swine destroyed pursuant to this act.

Pursuant to the passage of the Illinois Trichinosis Act, the trichinosis-infected farm located in eastern Illinois was quarantined and depopulated, beginning January 21, 1986. Depopulation was completed February 14, 1986. This particular farm consists of approximately 200 acres of pasture and wooded area where animals roam free. A system of gates and temporary pens was constructed in a barn on the southern portion of the farm. All market-weight animals were serologically evaluated, using the ELISA. ELISA testing was conducted at the Animal Research Services Laboratory in Beltsville, Maryland under the guidance of Dr. K. Darwin Murrell. Animal descriptions and information necessary for appraisal of the animals were recorded as they were bled and ear tagged. 298 animals were tested. ELISA results revealed 212 positives (71%).

After serological testing, hogs were sorted and the negatives were shipped to slaughter by the owner. Positive animals and animals below market weight were euthanized and disposed of through rendering.

A total of 683 swine were removed from the premises. Indemnity monies paid for depopulation of this herd totaled \$64,856.06. The total poundage of infected or positive swine disposed of equaled 77,955 pounds. The estimated pounds of consumable infected pork kept from entering the human food chain equaled 39,000 pounds.

Follow-up on this quarantined farm consists of: 1) searches for strays due to the lack of integrity of fence lines; 2) searches for carcasses or carcass parts remaining in field or pens; and 3) rodent and wildlife trapping. The searches for strays and carcasses have been completed. We are currently conducting rodent and wildlife trapping on the premises.

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Testing of the samples has not yet been completed. After the period of rodent and wildlife trapping has been completed and it is determined that the chance for reinfection is minimal, the quarantine of this herd will be released. If this owner chooses to repopulate with swine, the Illinois Trichinosis Control Act provides for the authority to monitor the premises as deemed necessary.

Depopulation activities in the East St. Louis area swine complexes was begun in late April of 1986. Removal of swine and follow-up trapping, baiting and removal of rats from the premises has just been completed.

Data is currently being tabulated in regards to the East St. Louis area depopulation.

The goal of the Illinois Trichinosis Control Program is for Illinois to become a trichina-safe state. State surveillance will be continued by collection of swine diaphragm samples from state licensed slaughter establishments. A computer program has been designed for storage of all state survey data. This program allows data to be sorted in numerous ways, including by collection site, county, owner and numerous other means. We have done this in the hope that when the time is reached for certification of animals, carcasses, herds, geographic areas or whatever the federal government deems necessary, we will be able to sort and have data available.

The Springfield Trichinosis Laboratory now maintains two Stomacher 3500 Units for digestion analysis, a Shaker Bath

for individual analysis, and a Zimmerman Incubator for analysis of samples over 400 grams, such as large rodents. In addition to state survey samples, the Springfield Trichinosis Laboratory is now being used as an independent laboratory by private companies for protocol validation. We have extended the offer to run samples from other states which may not have laboratory facilities readily available to begin a state survey in return for in-kind commodities reimbursement. A Trichinosis Laboratory has been established within the Centralia Animal Disease Laboratory. The Centralia, Illinois facility analyzes state survey samples, using the Stomacher pooled digestion method.

The development of a laboratory manual on the Stomacher Method of Pooled Digestion Analysis is under way. The National Pork Producers Council has offered to publish such a manual in hopes that it will aid in the establishment of tissue testing laboratories in the future.

A sera bank has been established within the Springfield Trichinosis Laboratory where positive and negative sera have been catalogued and stored. These sera are available to companies and agencies needing either quality control samples or sera for test development.

The Illinois Trichinosis Control Program's endeavors continue to expand in response to the needs of the livestock industry. The primary goal of the program is to promote the goal of control and eradication of trichinosis within Illinois and the United States.

Discussion

Question: How do you reimburse these producers when you go in and kill off their entire herd? Surely, they must be concerned about this?

R. Hanbury: First of all, we don't go in and kill off the entire herd. We serologically identify negative and positive animals and then we remove all positive and below market-weight animals. The reason we use below market-weight animals is that producers cannot be compensated fairly at market for these animals. The procedure is to have an appraisal system set up. If the owners are not satisfied with our appraisal system, they can bring in their own appraiser. Following this, an independent appraiser is brought in. The negatives were also followed to slaughter. Money from the state of Illinois is available. A companion bill with the Illinois Control Act was passed by the state of Illinois to provide money to reimburse these people for their losses.

D. Kinsman: As you know, France requires that all equine meat that is imported must be trichina-free. We are doing our

equine testing for several plants in Connecticut. We are interested in knowing who is doing this testing by whole digestion and what is the cost per sample?

Hanbury: We primarily use the Stomacher thermal pooled digestion method. This method requires by law using 5 grams of tissue per sample, but you can pool 20 samples at a time. It takes about an hour and a half to run 20 samples. The cost is about a penny or two per sample, not including personnel and preparatory cost. The Trichimatic 35 has not been approved to date but it is a faster method. This method costs about two cents per sample, depending on what you want. Seven samples can be analyzed in 10 minutes; so it is a trade-off, depending on the size of operation.

E. Wiericki: In the program at Illinois, do you use irradiation as a means of trichina control?

Hanbury: No, the state cannot get involved. I'm not that familiar with the procedure, but I'm sure Dr. George Wilson can answer this better than I.