Eradication of bovine brucellosis in Australia

Bovine brucellosis is a major disease, which if unchecked can substantially reduce a herd's productivity. Infected heifers are likely to abort or give birth to dead calves leading frequently to a significant reduction in milk production by the herd. Before a vaccine was available it was not unusual for farmers in wetter regions of Australia to report 100% of heifers aborting. Furthermore, bovine brucellosis causes undulant fever – a chronic debilitating disease in humans.

Until recently, bovine brucellosis was widely distributed throughout the world. Now, a number of countries, including several in Europe and Scandinavia, Australia, New Zealand, Canada, Israel and Japan have succeeded in eradicating the disease.

The eradication of brucellosis from Australia can be divided into three phases. In the 1930s a number of States developed herd accreditation schemes involving blood sampling of herds. However, the only State in which such a scheme could be considered successful was in Tasmania. This was due to the farmer being paid compensation by the State for culling reactor animals.

The development of an effective vaccine, an attenuated strain of *Brucella abortus* known as Strain 19, heralded the start of the second phase. Strain 19 combined the useful attributes of low virulence with the power to stimulate strong immunity. In one early experiment involving 230 farms in Victoria, the abortion rate in heifers dropped from 37% to under 5% on farms using Strain 19. Results such as this encouraged all States to either begin official vaccination programmes or encourage use of the vaccine. But, because the vaccine was only 70% effective in preventing infection it did not provide, by its use alone, an ability to eradicate the disease. But Strain 19 did provide a means to lower the prevalence of the disease to a level where a test and slaughter campaign could eradicate the bacteria.

The final phase started in 1970 with the commencement of the national brucellosis and tuberculosis eradication program (BTEC). The campaign for brucellosis eradication combined vaccination to contain the disease with test and slaughter to eradicate the infection. Most herds went through a program of herd blood tests and the culling of positive reactors until two clear tests at least 6 months apart had been achieved. Progress with eradication was monitored through milk testing, and the collection of samples from abattoirs. In the mid-seventies this monitoring led to the introduction of tail tagging, which allowed, for the first time, animals, or carcases at the abattoir to be traced back to the property of origin. Successful eradication also required implementation of complex movement controls not only between properties of different disease status, but for different area status both within and between States.

That Australia could declare itself free of bovine brucellosis by 1992 was an amazing achievement. Such an effort not only required considerable support by industry, major resource inputs by governments, but also the backup of technology providing reliable laboratory results and, although primitive by today's standards, computer support maintaining records on a national basis.

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