



Title	The effect of enterprise type on the prevalence of tuberculin reactors in the East Offaly project
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Publication date	1995-07
Publication information	O Máirtín, Dónal. "The Effect of Enterprise Type on the Prevalence of Tuberculin Reactors in the East Offaly Project." University College Dublin. Centre for Veterinary Epidemiology and Risk Analysis, July 1995.
Series	Selected Papers, 1994
Publisher	University College Dublin. Centre for Veterinary Epidemiology and Risk Analysis
Item record/more information	http://hdl.handle.net/10197/8948

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The Effect of Enterprise Type on the Prevalence of Tuberculin Reactors in the East Offaly Badger Research Project

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Introduction

In order to ascertain how the risk of a herd breakdown is influenced by the enterprise type in the East Offaly Badger Research Project Area, during the period 1988 - 1993, a number of different response variables were analysed. The history of a herd was summarised over each of the respective years, 1988 -1993, in terms of herd size and total number of reactors, for the Project and Control Areas. Three different definitions of a herd breakdown were employed in the analysis in order to stratify the severity of reactor disclosure rates. Each of the responses were of a binary nature, i.e. success/failure on each outcome - a Bernoulli trial. This approach was considered important, as the reactor disclosure programme mirrored this type of event, i.e. a herd is restricted if one or more reactors are disclosed at a tuberculin test.

Methodology

The first response considered (Y1) was that of a herd in which one or more reactors were disclosed at a tuberculin test during the year in question. The second response (Y2) was that of a herd in which -

- (a) one or more standard reactors,
- (b) one or more non-standard reactors (i.e. inconclusive or non-reactors) in which lesions of tuberculosis were disclosed during that year.

Finally, the third response (Y3) was that of a herd in which two or more standard

reactors in which lesions of tuberculosis were disclosed in one or more animals. This latter response (Y3) was the most severe and was regarded to be more indicative of the presence of a tuberculous animal in that herd.

Herds in the East Offaly Project were categorised into the following four enterprise groups, viz.

1. Dairy
2. Suckler
3. Drystock
4. unknown

Each of these categories are defined as follows:

1. Dairy - herds which had:
 - a) been assigned a milk ring test result in 1993, based on milk supplied to a creamery;
 - b) did not have any cows eligible for beef cow premia; and
 - c) had cows in the herd in 1993.
2. Suckler - herds which were:
 - a) eligible for beef cow premia payments in 1992 and or 1993; and
 - b) herds which had cows in 1993.
3. Drystock - herds which had:
 - a) no cows in 1993;
 - b) no milk ring test results in 1993; and in which:

c) no cows were eligible for beef cow premia in 1992 and or 1993.

4. Unknown - herds which had:
- a) Cows in 1993 but were not assigned an MRT in 1993 or were not eligible for beef cow premia in 1992 or 1993;
 - b) herds which had both dairy and beef cows present in 1993; and
 - c) No test in 1993 and had animals present during any of the previous 5 years.

The null hypothesis was that there was no difference between enterprise types with respect to the risk of a tuberculin breakdown. Each of the 3 responses (Y1, Y2, & Y3) were included in the analysis. Fisher's Exact test (Lehmann, 1986) was used to determine if there were any significant differences for the risk of a breakdown amongst the four enterprise groups.

Results

The percentages of each enterprise type within the Project/Control regions of the East Offaly Project for 1993 are presented in Table 1. These proportions did not change significantly over the 6-year period of the study.

Table 1. Percentage enterprise types in East Offaly Badger Research Project 1993

	Dairy	Suckler	Drystock	unknown
Project	12%	52%	24%	12%
Control	13%	51%	27%	9%

On initial inspection of the data there appeared to be a difference with respect to tuberculin reactor disclosure rates among enterprise types. However, after adjusting for herd size, there was found to be no significant difference between enterprise types when comparing the Control/Project areas. Herd size was considered to have been a confounding factor in the analysis.

Conclusion

There was no systematic evidence of a risk-related effect attributable to enterprise type in the East Offaly Project Area, with respect to the risk of disclosure of a tuberculin reactor (ranging from a mild to severe breakdown) in the period, 1988-1993.

References

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