Investigation of Cyclicity Patterns of Tuberculin Reactor Disclosure in the South East Region

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Introduction
To determine the likelihood of any evidence of long term trends and patterns emerging in the rate of disclosure of reactor animals to the Tuberculin test, data were collected nationally for the years 1989 to 1994. A 7-point moving average for each month of this time period (May - December) was examined in conjunction with the raw figures, in order to identify any patterns in reactor disclosure rates across a variety of test types. Graphs for the South East Region (Carlow, Kildare, Kilkenny, Laois, Tipperary Sth., Waterford, Wexford, and Wicklow W.) only are displayed here.

Methodology
A range of variables was considered for analysis for the 5-year period. In particular it was necessary to distinguish between the “Clear” herds (Round and Special Check tests) and “Restricted” herds (Reactor Retests). The following 4 variables were of principal interest: (1) reactor animals per thousand tests (APT) for Round and Special Check tests only; (2) Reactor animals per thousand tests (APT) for Reactor Retests only; (3) percentage of herds restricted; and (4) percentage volume of all animal tests, i.e. the number of animal tests expressed as a proportion of the number of animals in the South East region. A 7-point moving average was then calculated for each of the principle variables.

Results
The percentage volume of animal tests for the South East Region, together with its 7-point moving average, are shown in Figure 1.

Figure 1. South East Region 1989 - 1994 % Volume Testing: 7-Point Moving Average
APT values for Clear herds, based on Round & Special Check tests, and the 7-point moving average are shown in Figure 2.

**Figure 2.** APT values for Clear herds (Round & Special Check test)

APT values for restricted herds, based on Reactor Retests, and the corresponding 7-point moving average are displayed in Figure 3. The apparent increase in APT for Clear and Restricted herds in 1991 may be attributed to the reduction in the level of testing nationally in the same year.

**Figure 3.** APT values for Restricted herds (Reactor Retests).
The percentage of herds restricted together with the 7-point moving average are shown in Figure 4.

**Figure 4. Percentage of Herds Restricted. South East Region 1989 - 1994**

![Graph showing percentage of herds restricted from December 1989 to December 1994. The graph indicates a downward trend with peaks and troughs that align with seasonal patterns.](image)

**Discussion**

While there are no clearly apparent APT patterns with respect to reactor disclosure rates, for either the "Clear" or "Restricted" herds, there appears to have been a downward trend in the percentage of herds restricted each year in the South East Region over the period. The rising peaks and falling troughs of the curve in Figure 4 are a product of the seasonality of the testing regime. Even though the slope of this downward trend was strongly influenced by the starting point of the data (the period leading up to 1989), this apparent reduction in the proportion of herds restricted annually requires to be taken into account when assessing the progress of the eradication programme.