ACIAR Partner in Research for Development RN 23 12/99
RESEARCH NOTES

Measurement and Maintenance of Duck and Hen Egg Quality in Vietnam

The albumen quality of duck and hen eggs declines very rapidly when eggs are stored at ambient temperature especially in hot climates. Refrigeration is effective in maintaining quality for several months. Oiling eggs on the day of lay preserves quality for several weeks. In Vietnam where there is little refrigeration oiling is a feasible alternative.

A staff member at Hue University, Vietnam learns about egg quality during Stage 1 of the project in July 1997.

ACIAR Research Notes summarise results and benefits from selected ACIAR projects, with the aim of ensuring the widest possible application. We invite extension and research departments to reprint or translate either the whole document or any part considered useful.

Background

The Haugh Unit (HU) is recognised internationally as a measure of albumen quality and therefore the freshness of the egg. It is a function of the height of the thick albumen and the weight of the egg.

Recommended minimum values for hen eggs are:

- 82 HU at the farm
- 77 HU at the wholesaler
- 60 HU at retail outlets.

A literature search has found no such recommended values for duck eggs.

In the absence of refrigeration oiling eggs on the day of lay preserves quality and gives the consumer a better product. Oiling within 24 hours of lay and constant refrigeration maintains quality even better and for much longer.

Research in north Queensland on hen eggs has shown that oiling with a medicinal or technical oil on the day of lay maintains albumen quality for several weeks when eggs are stored at ambient temperature. When oiled eggs are refrigerated quality is maintained for several months (Figure 1).

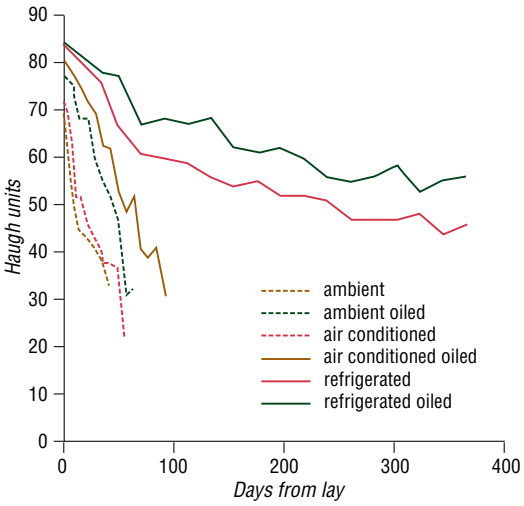

Figure 1. Long-term trial–average HU.

Two experiments were conducted, one with fertile duck eggs from Nhill, Victoria and one with fertile and infertile duck eggs from Quirindi, New South Wales (NSW). The results (Figures 2–5) showed that oiling was effective in preserving albumen quality in duck eggs but not to such a pronounced degree as in hen eggs.

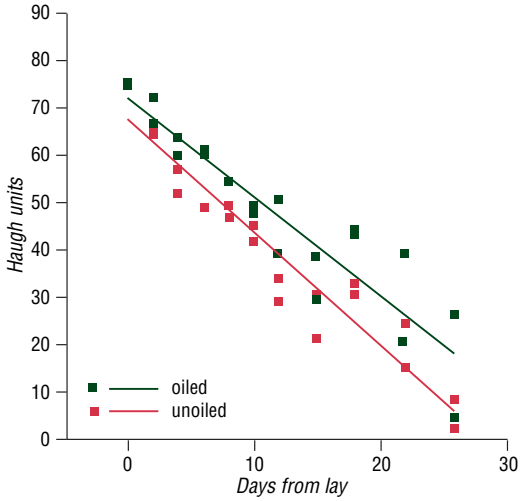

Figure 2. Nhill trial—average HU for eggs held at ambient temperature.

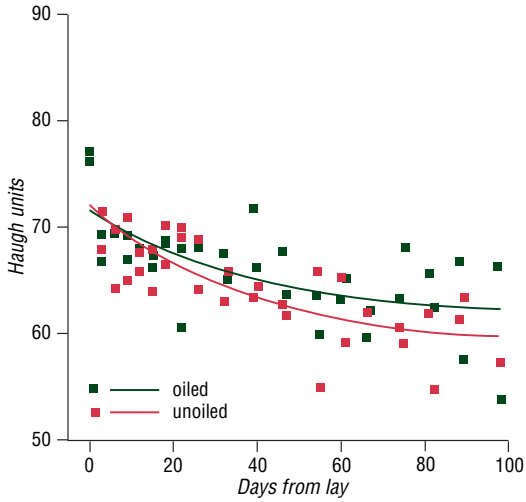

Figure 3. Nhill trial—average HU for eggs held at 6°C.

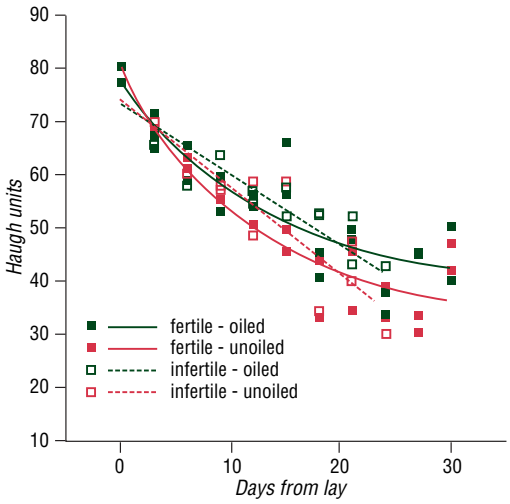

Figure 4. Quirindi trial—average HU for eggs held at ambient temperature.

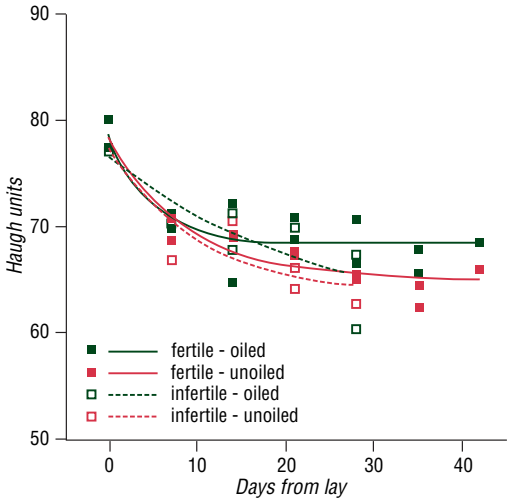

Figure 5. Quirindi trial—average HU for eggs held at 6°C.

Subsequently this ACIAR project was set up in Vietnam after Mr Bernie Davis and Professor David Farrell had made a preliminary visit to Vietnam to identify interested organisations.

A set of equipment for the measurement of HU was sent to each participating centre prior to the start of the project.

The project was organised in three stages.

Stage 1

Planning and conducting surveys to assess the quality of duck and hen eggs from farms, wholesalers and retailers in Can tho, Hanoi, HCM City and Hue (July 1997).

In this stage as many Vietnamese researchers as possible were taught to:

- plan a survey
- decide how many outlets to sample
- randomly select eggs from the various outlets
- use the equipment (micrometer, yolk colour fan etc.)
- take measurements from which to calculate Haugh Units
- calculate Haugh Units
- collate and report the results.

Measurement of HU in Can tho (Stage 1 July 1997).

Stage 2

Setting up duck and hen egg storage trials in the same four cities (September 1997).

In this stage as many Vietnamese colleagues as possible were taught:

- stratification by weight procedures
- oiling techniques
- setting up treatments
- sampling procedures
- break-out and measurement procedures
- various checks built into the procedure to ensure that all treatment samples were as uniform as possible.

A hands-on demonstration of cooking responses to the various treatments was also conducted.

Setting up oiling and storage trials in Hanoi (Stage 2 September 1997).

Most of the experience of these Vietnamese scientists was in animal production. This project quickly acquainted them with egg quality and egg hygiene saving them the years of work required if they had initiated the research themselves.

Comparing cooked eggs from different storage treatments (Hanoi—September 1997).

Demonstrations of cooked eggs which have been stored correctly and those which have not are very effective in convincing viewers that eggs should be oiled and if possible refrigerated.

Stage 3

An informal evaluation exercise in Hanoi and a formal Evaluation Workshop in HCM City (July 1998).

At HCM City a report was presented from each participating centre. A questionnaire was also drawn up to get individual views of the success of the project.

The informal evaluation in Hanoi and the formal evaluation in HCM City were very rewarding experiences. The consensus of opinion of Vietnamese participants was that the project had been very successful. They found the equipment robust and easy to use. Their knowledge was reinforced by teaching other colleagues how to measure HU and by repeating the oiling and storage trials as soon as the first trials were completed.

Evaluation Workshop in HCM City (Stage 3 July 1998).

The information in the Research Note was gathered in conjunction with ACIAR Project 1996/050, Duck egg oiling trials (Queensland Department of Primary Industries; Institute of Agricultural Sciences of South Vietnam, HCM City; National Institute of Animal Husbandry, Hanoi; Hatay Duck Research and Breeding Centre; Can tho University; Hue University; University of Agriculture and Forestry, HCM City; Vietnam National Livestock Corporation, Hanoi)

Project staffing: *Australia:* Mr Bernie Davis with Professor David Farrell and Mrs Honor Stephenson; *Vietnam:* Dr La Van Kinh

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