

Egg Quality

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to calcium.

"Any time you alter the diet you can have an effect on egg quality," he said. "It's a touchy balance."

Food safety has become a major focus of the NEQS in addition to the traditional emphasis on physical factors such as shell strength, shape, cleanliness, and soundness; as well as quality of the white, visibility of the yoke, and size of the air cell when eggs are viewed with a candling light.

NEQS laboratory director and Maryland grader Jim Greer said that egg grading focuses on interior and exterior physical qualities of eggs as opposed to microbiological concerns.

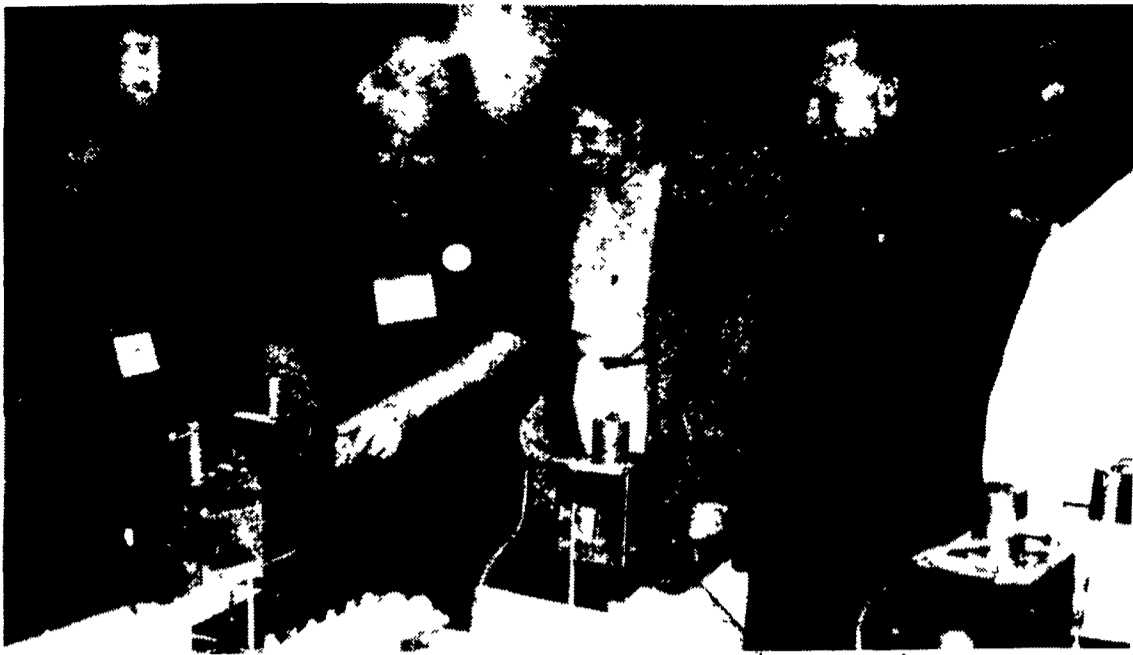
At time of laying, most eggs are of AA quality — the highest grade, Greer said. After that, the protection of egg quality depends on how the eggs are han-

dled and stored. Cartoned eggs sold in Maryland grocery stores must be Grade A quality or higher.

Using a small laboratory version of a candling light, Greer demonstrated how candling is used to examine the interior physical quality of eggs, showing how with increasing age the yolk becomes more visible and the air cell within the egg grows larger, aging signs that lower the grade from AA through A then B quality. Candling also reveals blood spots inside the egg that reduce grade quality.

According to Greer, an older egg is not always a bad thing. "It depends on what you want to do with (it)," he said, pointing out that when hard-boiled, older eggs are easier to shell than fresher eggs.

Focusing on the safety of eggs as food, several of the training sessions introduced principles of the USDA's Hazard Analysis and Critical Control Points (HACCP) program as it could



National Egg Quality School (NEQS) laboratory director Jim Greer, second from left, demonstrates egg candling to Ken Anderson, NEQS director; Deanna Baldwin, Maryland program manager for food grading services; Brad Powers, Maryland deputy secretary of agriculture; and Robert Halman, Maryland assistant secretary of agriculture.



NEQS student Jose Ambriz of the Mexican Department of Health learns candling technique used to examine interior physical quality of the egg.

be applied to the egg industry.

Maryland and Pennsylvania already have their own egg quality assurance programs in place (MEQAP and PEQAP, respectively.)

According to Dr. Deana Jones of the USDA Agricultural Research Service, HACCP is already being applied to meat and poultry production, but has not yet been mandated for the egg industry. However, in response to market demands such as egg buyers requiring uniform safety standards, some egg production and processing facilities are already employing their own programs similar to HACCP.

Jones said that HACCP is a "self-monitoring, proactive" program for evaluating the production and handling of animal products for human consumption. The goal is to identify potential hazards, then apply solutions at "critical control points" to lower the incidence of

food safety problems, she said.

An example of HACCP in egg production would be the identification of an incorrect washing temperature or pH level causing higher than acceptable levels of bacteria.

Jones said that HACCP applied to eggs will differ from its application to meat and poultry because many of the nation's eggs are produced and processed at the same site.

"With meat and poultry, HACCP starts at the door of the processing plant," she said. "Eggs are produced at the facility (where they are processed.)"

In-shell pasteurization of eggs was the topic of another training session offered at NEQS.

Deanna Baldwin of the Maryland Department of Agriculture (MDA) food grading service said that in-shell pasteurization uses new technology that heats the egg to just under the temperature at which the white coagulates.

Intended to increase microbial safety, pasteurization will likely be applied to certain types of eggs such as those going for uses that involve little or no cooking, she said.

Baldwin has worked with MEQAP since its start in the early 1990s.

Essentially identical to PEQAP, Baldwin said that MEQAP "is all about safety" and includes biosecurity, environmental and Salmonella testing in all stages from egg production through processing.

Not a mandatory program, MEQAP involvement is nevertheless in demand because of competition in the market, Baldwin said.

Maryland Deputy Secretary of Agriculture Brad Powers said that egg production has made a solid contribution to the state's diverse agriculture for years.

Compared to other types of production such as dairy, "The egg industry has been more stable in Maryland," Powers said, pointing out that the last decade has seen relatively little change in the numbers of eggs produced in the state.

Including eggs bound for hatcheries, about 900 million shell eggs are produced in Maryland per year, Powers said.

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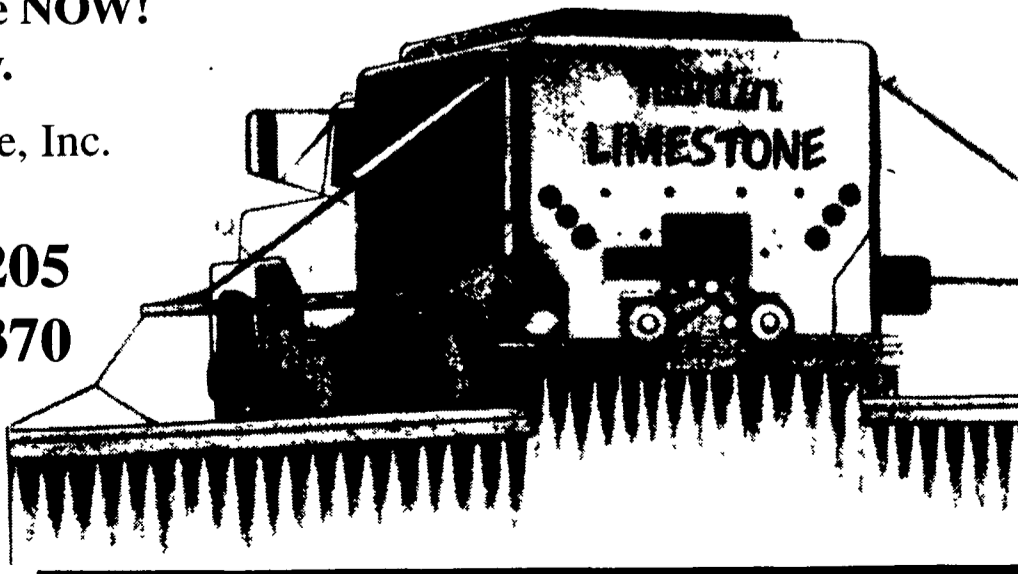
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