

Episode

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INNOVATION

SHOWCASE

Broiler genetic selection
through the decades... and the
consequences to broiler breeders

Featuring Dr. Valerie Carney, PIP Lead, University of Alberta



50 YEARS OF BROILER SELECTION

The University of Alberta has maintained heritage and benchmark poultry lines since 1986. As other Canadian Universities and research stations faced loss of funding and housing for these historical lines, over the years the University of Alberta accepted the birds to avoid their elimination. Funding to maintain the birds comes largely from the public and industry sponsors. Included in the collection are two meat control strains unselected since 1957 and 1978.

Using the meat control strains from 1957 and 1978, Zuidhof et al. (2014) demonstrated that 56 d broiler bodyweight increased over 400% as a result of quantitative genetic selection between the years of 1957 and 2005.

The study also showed that feed efficiency also improved significantly with the feed usage of the 2005 commercial strain being 67% that of the 1957 strain. Some of the differences in feed usage could be attributed to feed wastage in the 1957 strain, although the amount of wastage has not been measured.

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POULTRY INNOVATION PARTNERSHIP

visionary

change

collaboration

opportunity

“More research is needed to optimize broiler breeder feeding programs”

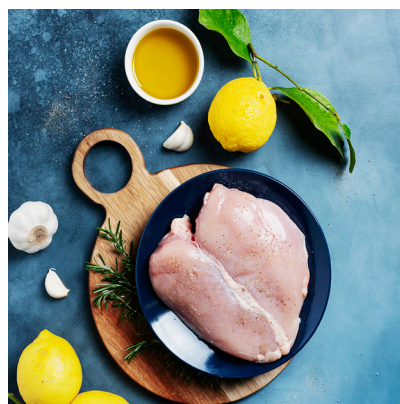
LOOKING TO THE FUTURE

To manage for reproductive output, feed restriction programs have been implemented to limit growth of the breeder and thereby affect the number of large yellow follicles on the ovary. Studies have shown that ad libitum feeding can result in poor reproductive performance. The evolution of maternal feed restriction practices was investigated using the 1957 and 1978 strains from Alberta, and 1995 and 2015 control strains developed at the University of Arkansas. So, with limited nutrients, no energy reserves and a drive for breast growth, the modern bird has fewer fat reserves to draw upon when faced with the typical stress and challenges experienced by breeders under commercial conditions.



BODYWEIGHT

Similar to the previous broiler study the BW of the most modern strain (Arkansas Randombred 2015) was 400% that of the 1957 strain from 5 wk of age.



BREAST

Not surprisingly, given the selection emphasis on breast yield over the years, the breast weight at sexual maturity was significantly larger in the 2015 line.



FAT

As fat is energetically expensive, the unintended consequence has been to select for reduced fatness. However, fatness is important to initiate puberty and store energy.

The Innovation Showcase is presented monthly by the Poultry Innovation Partnership and hosted by Brenda Reimer & Valerie Carney. Learn more at: poultryinnovationpartnership.ca/innovation-showcase

