



BETTER CHICKENS FOR AFRICA

 by Cristina Serra

TWAS Young Affiliate Julius Hagan of Ghana studies local chickens to find breeds that best adapt to the humid weather.

Chicken breeding is a major source of income for Ghana's farmers, especially in poor areas. Local chickens, in fact, are well adapted to hot and humid tropical environment.

However, chickens imported recently from abroad to breed with local ones and increase performance have altered the market, as the newcomers suffer from the tropical climate and do not survive.

"Over the years, Ghanaian chickens have developed heat-tolerance that make them well-suited to the country's climate," explained Ghanaian scientist Julius Kofi Hagan, a 2016 TWAS Young Affiliate.

This makes them an important resource for local economy, especially in times of climate change where temperatures can cause heat stress to the birds. Heat stress, as Hagan observed, generally affects the growth and reproductive performance of the animals, especially birds.

Hagan, a senior lecturer in the Department of Animal Science at the University of Cape Coast in Ghana, presented his research on



17 November 2016 at the 27th TWAS General Meeting in Kigali, Rwanda.

"Conservation of local genetic resources is one of the surest ways of ensuring food security, especially in the developing world," he maintained. "That's why we carried out a study



◀ TWAS Young Affiliate Julius Hagan. [Photo provided]

to first describe the morphological features and how they impact on the behaviour of different populations of indigenous chickens in five ecological zones of Ghana."

A total of 1,484 indigenous chickens in several areas of Ghana – each with different rainfall pattern, temperature and humidity – were studied. Ten qualitative traits were taken into consideration, including naked-neck, frizzle feathers, dwarfism, and polydactyly [extra toes]. Two of them, naked-neck and frizzling in particular proved to be associated with heat tolerance.

From the morphological traits, Hagan and his colleagues moved to identify associated genes that govern heat-tolerance. They found two such genes and decided to incorporate them into exotic layers that were heat-stress susceptible, to make them as well adapted to Ghana as the indigenous ones.

In another line of investigation, they did similar experiments to improve egg production. Both experiments are still in progress, but results so far are promising and Hagan wants to develop commercial layers and broilers with heat-tolerant traits for the tropics, not only in Ghana but also in other African countries.

Hagan stands out high on African science. In 2014 he was named one of the world's top 20 innovators by the Technical Centre for Agricultural and Rural Cooperation, and in 2013 he placed third in a competition for the Best Young Professional Scientist in Africa, organised by the Forum for Agricultural Research in Africa.

"Local chickens are unique and represent special genetic resources in Africa and the tropics," he concluded. "We must do our best to preserve them and, possibly, improve them." ■

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