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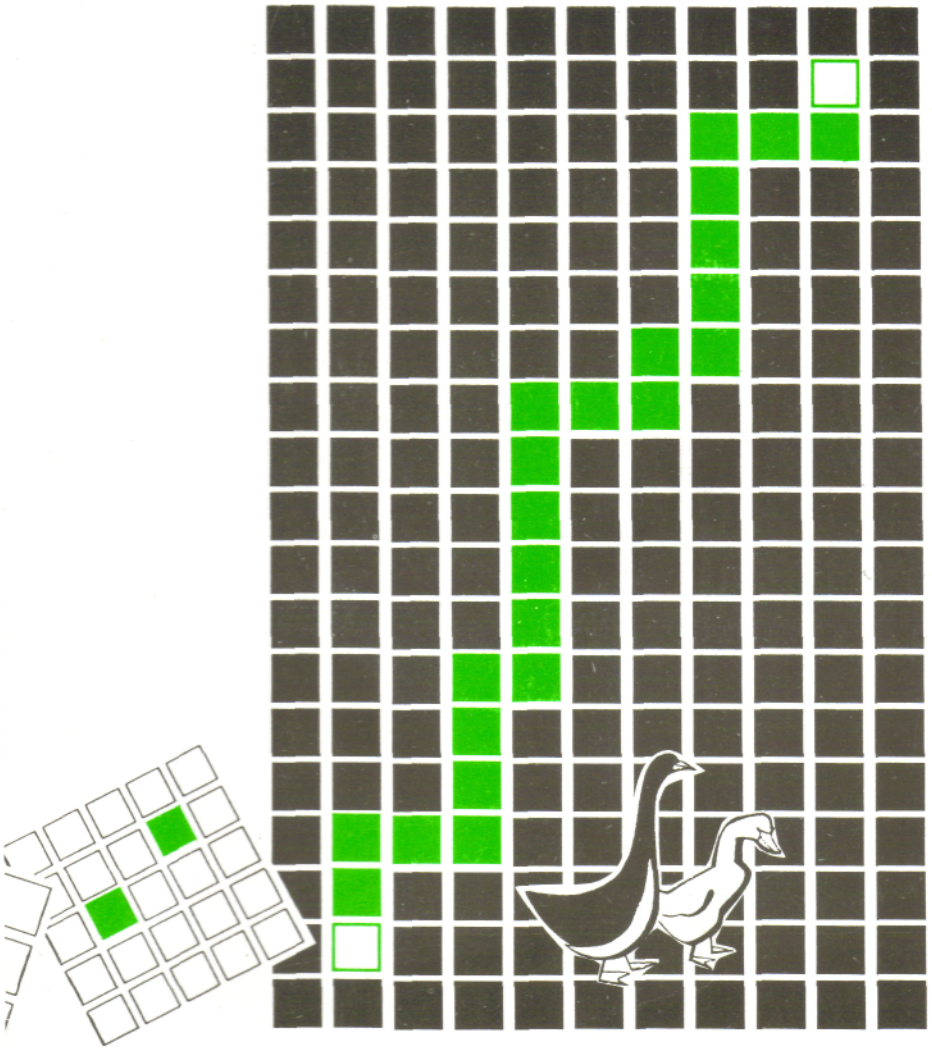

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TROPICAL POULTRY INTO THE 21ST CENTURY

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If you think about it. chickens are tropical animals. Their ancestors are the jungle fowls of southeast asia. As the birds evolved and were domesticated by man, new breeds and strains were produced. Through the science of genetics we have fine tuned these birds to produce more meat and eggs with less feed.

We in the 20th century have been witnesses to numerous advancements in the field of poultry production. Through the decades geneticists and breeders have greatly improved the performance of both broilers and egg layers. Table 1 shows the improvements in broiler performance over the last 70 years. We have seen a dramatic increase in growth rates as demonstrated by the decrease in time it takes to achieve market weights. At the same time, less feed is needed to produce a kilogram of meat. Together with good management and improved disease prevention and control, liveability of broilers have been significantly improved.

Improvements in layer performance have also been dramatic (Table 2). Within the last 10 years primary breeders have increased egg production to more than 300 eggs/hen-housed in a 60-week laying cycle. Feed conversion has been reduced to 2.14 kilograms of feed to produce a kilogram of eggs. Layers now mature earlier and are able to produce eggs with acceptable sizes as early as 18-19 weeks of age.

We also have seen new discoveries and improvements in the field of technology. Virus isolation techniques, Enzyme-Labelled Immunosorbent Assays (ELISA) and other tests have been developed for use in the field of diagnostics. More vaccines and antibiotics have been developed for the prevention and control of various diseases. Infrastructure, farm equipments and growing conditions have been improved with the use of computer-controlled environment houses, automatic feeders, nipple drinkers, to mention a few.

Our increased understanding of immunology, pathology, nutrition and other aspects of the bird's physiology have been instrumental in all these developments. However, even with these technological advancements, poultry production in the tropics have been limited by a number of other factors.

There are physiological constraints that limit poultry performance in the tropics. Most available breeds or strains have been bred in temperate countries and may not perform well in hot and humid environments. This is complicated by the

increased disease challenge present and the unavailability of effective vaccines and medicines to control them.

With the improvements in technology there is also the increased need for skilled personnel. However, training facilities are usually absent or inadequate. A number of countries are not able to afford the high cost of such new technologies which limits their ability to conduct research locally. The lack of direction or coordination between countries and institutions limit affectivity of whatever little research that is conducted.

Feed ingredients are usually of poor quality or insufficient in many tropical areas. With feed as the major cost of poultry production, the importation of good quality feedstuffs may not be possible or economical. Performance is therefore limited. More developed countries with more productive and efficient poultry industries compete with the local producers and limit their development.

Despite these limitations, poultry in the tropics will continue to develop. Broiler breeders project further improvements in the performance of their birds. Broilers will continue to improve their feed conversion by 1-1.5 points, weights by 35-40 grams and yields by 0.15% per year. Liveability will also improve with better resistance of the birds to diseases and improved management. The breeders themselves will increase egg production by 1 egg/hen-house/year. Hatchability will also be improved.

Breeders foresee that development of new strains for different poultry markets. Local market preference will influence the type of birds grown or sold in the area. Strains will also be developed for different types of food products, e.g., ethnic foods.

Layer breeders also foresee improvement in their birds. They project an increase in egg production by 2 eggs/hen-housed/year. Feed conversion will continue to improve by 2 points per year. Birds will be selected for resistance to environmental stressors and diseases, e.g., Marek's disease, which will improve their liveability.

Strains of layers, like broilers, will be developed to supply demands of the market. Egg breakers and manufacturers of special egg products will demand more egg mass. The quality of the yolk and albumen will be selected based on the egg product to be produced. Layers may be used to produce and deliver antibodies or other proteins in the future.

There will also be further advancements in technology. Biotechnology will be extensively used in the future. The insertion of specific genes will be used by breeders to improve their genetic stocks. DNA probes and monoclonal antibodies will be available and affordable for use in field diagnostics. New vaccines will be developed with the use of subunit immunogens. Interferons and other immune modulators will be commonly used. Housing and equipments in tropical countries will improve and be competitive.

Nutritionists will better understand the influence of nutrition to the health and performance of the birds. Research on the use of local or alternative feedstuffs will provide the farmers cheaper ingredients for their flocks. Enzymes and other products will be used not only to improve performance but also to help minimize environmental pollution, e.g., phosphorus and nitrogen levels in the manure.

To be able to compete with the more developed countries, producers in the tropics will have to learn to be more efficient. Whether we like it or not, increased integration of the poultry industries will result even in many tropical

countries. More managerial, business and technical skills will therefore be required of the people and producers for them to be successful.

As we develop the poultry industries in our countries, we have to be better stewards of our environments. More responsible farming methods will have to be implemented. Improved manure and dead bird disposal methods, e.g., composting, will be used. Nitrogen and phosphorus levels in the manure will be minimized. Animal welfare concerns will be addressed without compromising efficiency and performance.

In 1993, the Food and Agriculture Organization (FAO) projected that poultry meat production in developing countries will further increase by 5.1% during the years 1990-2010. A lot of these countries will be in the tropics. Tropical poultry production will therefore be instrumental in alleviating malnutrition and world hunger in the 21 st century.