Issues Regarding Edible Nest Swiftlet Farming under Captive Condition.

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Introduction

Under true captive farming condition, the freedom of the captive generations of the once 'distance-flyer' swiftlets is confined within totally man-made structures. Nesting units (houses) are attached or enclosed in a 'Kuala Lumpur Bird Park-like' massive bird cage or aviary. Captive farming required certain capital investment in aviary, insect culture unit, feed mixing and dispensing facility, incubator-dependent hatching, brooding, manual nursing of hatchlings until fledging and other technical gadgets not seen under the conventional type swiftlet ranching. Thus, such an operation is labour demanding. There is insufficient information to aggressively promote captive farming of swiftlets since R&D is just at the initial stage. In captive farming, the focus can be on selected swiftlet subspecies known for superior nest quality. Under the captive concept, it can be assumed that more nutrients and energy are save for making bigger nest due to surplus from less flying or physical activity. Thus, with economic of scale, this captive farming venture may promise good profits despite the initial capital investment. Before jumping into the bandwagon, there are some issues regarding captive farming that should be address.

Welfare

Intense pressure demanding welfare for farmed commercial meat and laying birds has seriously affected the European poultry farming community. Beginning in 2012, cage rearing of commercial poultry will be banned in the European Union (Mench et al. 2011). Back home, and true to this part of the world, animal welfare regarding caging practice has yet to convince the population at large. As long as the local media do not go frenzy and persistent on caged animal welfare issues, the local situation will remain *status quo*. The issue on captive swiftlet is the space availability for free flying and gliding, and the exercising of routine behavior which

include possible courtship at mid air. The major importers in Asia like Hong Kong, Taiwan and China are not concern on welfare issues. Emerging consumers in Europe may be concern on welfare. Labeling should play a role in differentition of the products of captive swiftlets from free-flying swiftlets.

Product status

Malaysia has yet to come out with its local organic standard. Even the country's very developed animal industry like poultry has no organic standard. The basis of organic food is that it should be produced from practices not engaging the usage of chemicals, including antibiotics. In case of poultry, feeds should not be derived from sources using pesticide, fungicide and inorganic/chemical fertilizer (Borell and Sorensen, 2004). This means that free ranging chicken eating imported corn and soybean meal is not organic. Again, the European Union is very firm on organic standards. Clarity in certain areas such as feeding is necessary before the captive swiftlets nests can be regarded organic. Are the formulated feeds for nestlings derived from imported corn and soybean meal based ingredients? Are the insects for the feeding of youngs and adults being derived from growth cultures containing imported or local non-organic feed ingredients? However, nests of captive birds have value added potential by just modifying the contents of the diets. 'Designer nest' may be a product of the future. It had been recognized that specially formulated diets can add certain nutriceutical elements in eggs and meats of birds (Surai and Sparks, 2001). Elements in saliva may change with dietary intervention.

Phenotypes of the future

It took more than 600 years for the transformation of the lightweight (hardly 1 kg in bodyweight) flighty and colourful jungle fowl species that lay just 4 to 6 eggs per clutch to become the commercial highly productive hybrid layer and broiler chickens of today. Under captive breeding, these fowls were genetically improved through selection, crossbreeding and hybridization to produce the modern chicken breeds of today that can exceed 6kg live-weight, can hardly fly and lay in excess of 300 eggs per productive cycle (Moreng and Avens, 1985).

The appearance of the carcass of a white plumage broiler chicken generally looks better than a coloured broiler. Presence of coloured feathers, especially the pin feathers will affect the appearance of the carcass (Leeson and Walsh, 2004). Therefore, it is possible that the feathers of the white plumage swiftlet hybrids of the future will not affect the appearance of nest, thus reducing the feather removal part in nest processing.

Genetic upgrading can be very fast in swiftlets compared to the chicken since the initial captive breeding and selection of the chicken were using inferior techniques. Up-to-date genetic engineering methods like Marker-assisted selection (MAS) and transgenesis (Montaldo, 2006) are the possible tools to produce superior swiftlets that can produce heavier nest of the finest quality. It can be envisioned that commercial swiftlet hybrids will be white plumage, bigger in size, therefore producing bigger nest, fly less, eat specially formulated feed rather than live insects and may spend their whole adult life building nests since the eggs will be taken (nest harvested) for artificial incubation and artificial brooding.

Biosecurity concern

Web Images on practices associated with captive swiftlet farming are raising biosecurity concern regarding captive swiftlet premises. Swiftlet nests should be produced by swiftlets which are free from constant contact with disease vectors or carriers and handled by operators practicing top hygiene. Slackening in biosecurity can shorten the life span of swiftlets just due to constant exposure to contaminants. Unhygienic condition may invite flies which can be disease carriers, and these flying insects may be caught and consumed by the caged swiftlets. New pathogenic strains of microbes may eventually able to survive in captive swiftlet.

A bird under stress (due to restricted freedom), and undernourish have tendency to be affected by pathogens. This might be true to hatchlings from artificially incubated eggs since the nestlings may not get the normal food boluses, from their parents, which may contain gut secretions or health factors to back up the dwindling level of maternal antibodies. Underweight fledglings are usually weaker and may not withstand any extra stress. In poultry, undernourishment or underweight at early age will affect productivity in meat and egg

production. Inbred captive swiftlet may be genetically less resistant to diseases as proven in certain inbred poultry lines. Swiftlets which do not show clinical signs may eventually become carriers, and when escape may transfer disease to the wild free flying swiftlets.

Globalization of swiftlet farming

Looking back at history, chickens (the red jungle fowl in particular) originated from the South-east Asian Region. Now, other parts of the world dominated in commercial chicken rearing, placing Malaysia (also, the home of the red jungle fowl) less known in the modern global chicken market. Malaysia could not compete with the price because of the high costs of imported feeds, also coming from these dominant chicken rearing nations. History may be repeated again. Malaysia may be proud to excel in R&D on captive swiftlet farming with in-roads on productive swiftlet hybrids, and lots of potential patents on feeding and management. However, value added designer nests from special swiftlet hybrids in environmental control environment which are proven contaminant free under top biosecurity conditions, possibly from overseas commercial giant captive swiftlet operations in South America, North America and Europe may one day dominate the industry.

Conclusion

The future and sustainability of conventional type of swiftlet ranching is in the hands of the policy makers. Just by genetic engineering, environmental control and dietary intervention, captive swiftlet operations can be seen at other continents where swiftlet never existed before. On the health aspect, captive swiftlets hybrids (or inbred lines) may have greater tendency to be affected by pathogens and other metabolic conditions. No swiftlet operators out there want their free flying swiftlets succumb to potential threat brought by accidental escapee captive swiftlets hybrids.

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