RECENT TRENDS IN EGG PRODUCTION OF ASSAM

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ABSTRACT

Secondary data on egg production from local and improved birds in the state of Assam for the period from 1995 to 2008 were collected from State Directorate of Animal Husbandry and Veterinary Assam, Guwahati. Models viz. linear, quadratic, cubic and exponential were fitted to the yearly data for the period under reference. The cubic model revealed positive growth of local egg production with high co-efficient of determination (R^2 = 0.96) followed by Quadratic model (R^2 = 0.956), exponential model (R^2 = 0.956) and linear model (R^2 = 0.952). In case of improved egg production also, cubic model could explain highest percentage of variation (R^2 = 0.896) amongst all the models with negative growth rate. Further, for overall egg production also cubic model was found to be best fit with high co-efficient of determination (R^2 = 0.815) in the state during the study period. The negative correlation co-efficient of the production series (0.85) indicated the need of restructure production policy in favour of arresting negative growth of improved eggs, increase production and sustain the growth rates.

Key Words : Coefficient of determination, linear model, Quadratic model , Cubic model, exponential model.

Eggs and broilers have been growing at a rate of 8 to 10 percent per annum. It was reported that the compound growth rate of egg production in India has become 6.5 percent per year[3]. People in Assam are traditionally non-vegetarian. They practice poultry rearing as a subsidiary occupation. Recognizing the role of poultry in domestic economy and its importance in terms of nutritional value, commercial poultry farming with hybrid stock took root in the state only in sixties. The local layers constitute about 90 percent of the total layers. They contribute only 17 eggs per annum against national consumption of 41 eggs per annum. Egg production in the state has shown an increasing trend[1]. Egg production, fertility and hatchability were all competitive and there is still vast scope for improvement through encouraging record keeping[2]. In view of the earlier studies, present investigation was made to analyze performance of poultry sector with reference to egg production through analysis of the recent trends in eggs production in Assam.

The database for the study was state level secondary data in egg production from local and improved layer for the period from 1995 to 2008, collected from Directorate of Animal Husbandry & Veterinary, Govt. of Assam. To analyze the trend, four models viz liner, quadratic, cubic and exponential models were considered. The efficiencies of the models were judged by the highest value of co-efficient of determination (R^2).

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The software package SPSS for window version 16.0 was used.

The average annual egg production by overall layer population was found to be 5021.462 ± 57.569 lakhs, during the period from 1995 to 2008. The same in case of local and improved layer population were found to be 3648.462 ± 103.13 lakhs and 1373.00 ± 69.383 lakhs respectively during the period 1995 to 2008. The co-efficient of variation (C.V) for overall (4.13 percent), local (10.19 percent) and improved (18.22) revealed less than 20 percent variation. The lower value of coefficient of variation in egg production indicated stability of livestock production in Assam. This stability may be suitably utilized in making suitable egg production policies so as to increase income and employment opportunities of needy people of the state. In case of egg production by local variety, cubic model explained 96 percent of total variability followed by quadratic (R^2=0.956), exponential ((R^2=-0.956) and linear ((R^2=-0.953) models. As all the models showed high coefficient of determination, for interpretational convenience, liner model may be considered to explain the situation. In case of improved egg production, cubic model with high co-efficient of determination (R^2 = 0.896) was found to be the best amongst the considered models. In case of overall egg production also the cubic model showed high coefficient of determination (R^2=0.815).

Table no 1. Estimates of models parameters.

Bird	Model	a	b	c	d	R^2
	Linear	3648.461**	93.192**			0.953
	SE	23.421	6.26			
	t	155.775	14.888			
	Quadratic	3625.951**	93.192**	1.608(NS)		0.956
	SE	35.79	6.345	1.913		
Local	t	101.312	14.688	0.84		
	Cubic	3625.951**	78.558**	1.608(NS)	.585(NS)	0.96
	SE	35.863	16.239	1.916	0.596	
	t	101.105	4.837	0.839	0.979	
	Exponential	3631.032**	.026**			0.956
	SE	22.603	0.002			
	t	160.642	15.369			
	Linear	1733.731**	- 51.533**			0.644
	SE	91.774	11.563			
	t	18.891	4.457			
	Quadratic	1506.441**	39.383(NS)	-6.494		0.756
	SE	132.489	43.525	3.025		
Improved	t	11.37	0.905	2.1454		
	Cubic	1886.398**	- 236.539 *	41.001*	- 2.262 *	0.896
	SE	141.963	84.56	13.772	0.648	
	t	13.288	2.797	2.97	3.489	
	Exponential	1825.680 **	-.044 **			0.543
	SE	175.247	0.012			
	t	10.418	3.613			
	Linear	5021.462 **	41.659**			0.611
	SE	37.505	10.023			
	t	133.889	4.156			
	Quadratic	5089.867 **	41.659 **	- 4.886(NS)		0.703
	SE	51.778	9.179	2.767		
Overall	t	98.303	4.538	1.765		
	Cubic	5089.867 **	83.566 **	-4.886(NS)	- 1.676 *	0.815
	SE	43.068	19.502	2.302	0.718	
	t	118.183	4.285	2.122	2.335	
	Exponential	5017.526 **	.008 **			0.615
	SE	37.124	0.002			
	t	135.155	4.191			

*Significant at 5% level, **Significant at 1% level, NS not significant

The estimated model for local indicated that about 93.192 lakhs eggs was added to the egg production per year in the prevailing socio economic and environmental conditions of the state. The increment was found to be statistically significant. The model for improved egg production showed a significant negative growth rate of 236.539 lakhs eggs per year. In order to arrest this sharp decline in improved egg production, appropriate monetary and fiscal support stimuli from the government is the only long term strategy to bail out the poultry farmers in the state. In case of overall production, the cubic model showed a positive growth of about 83.566 lakhs eggs annually. A negative correlation co-efficient of the local and improved egg production(-0.848) further indicated that emphasis on local production will result in decrease in improved egg production and vise versa. This also indicated the need of structural reforms of the sector in favour of higher egg production and sustains the growth rates.

The study revealed that local egg production is an output of backyard poultry is viable alternative in the state because of the fact that local poultry survive on kitchen waste and small quantities of spilt and waste grains besides they are good brooders, mothers and scavengers. However, lacks of artificial balanced feed, continuous supply of light together with incidence of disease viz. bird flu, ranikhet, gumboro etc., in improved poultry are impediments for negative growth of improved egg production. It is also fact that 90% of poultry population in the state is indigenous with low yield for poor genetic makeup. They are without adequate feed. Further, poor market infrastructure with low health care, low rate of technology diffusion due to small range in research extension linkage are also discouraging the farmers to take up commercial rearing. Despite having 22 government run poultry and duck farms in the state to demonstrate and attract rural youth to this vocation in recent years, have although attracted many unemployed youth in rural areas for poultry faring as their livelihood, yet, limited extension services are one of the causes that only few of them had their success stories in favourable market environments. The present scenario in the state shows that most of the state owned firms in the state with an exception of farm at Guwahati and Silchar under the financial assistance of Integrated Poultry Development Program and one at Kaliabor under North East Council (NEC) had been either non-operational or poorly performed due to lack of inadequate and discontinuous flow of fund.

Location specific input strategies for poultry production in terms of supply of of birds, feed and health cover and prophylaxis measures, proper marketing network would restructure production policy in favour of arresting negative growth of improved eggs and sustain the growth rates.

REFERENCES

1. Borah, R.S., (1999). The progress of Poultry sector in Assam. Indian Poultry Review. 31(4): 18-20.

2. Dzoma, B.M. and Motshegwa, K. (2009). A Retrospective Study of Egg Production, Fertility and Hatchability of Farmed Ostriches in Botswana. International Journal of Poultry Science 8 (7): 660-664.

3. ILDEX India, 2009. http://www.ildex.com/content-india-2009.

4. Gujarati, Damodar N. 1995. Basic Econometrics, McGraw-Hill, Inc. New York.

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