

actual cultivation practice that India has to learn from Japan. The organization and the strength of personnel is every different in the two countries. That Japan has a technician for every two or three square miles is something which India cannot hope for even after several years. Even in Indian provinces where there is an agricultural demonstrator for each *taluka*, there is not much personal contact between him and the farmers. Things have become even worse in recent years as most of the demonstrators' time is taken up in the business aspects of selling seeds, manures, iron, etc.

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Useful Span of Life of the Fowl in India

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In commercial poultry farms where economic production is the prime concern layers are seldom kept for table eggs during the second and subsequent years. The common practice is to retain a third of the pullets after the first year of laying for a year more and sell the remaining birds for table. Unfortunately this procedure will not enable the poultry-keeper to test his birds for their breeding worth.

Rice¹ *et al*, working in the Cornell University, analyzed the production records of 1,434 birds over a period of years and observed that careful selection would pay to keep some best hens for commercial production for two or even three years. The number of individuals represented in the averages from the third or fourth year onwards was meagre. Such a practice on the whole was useful for the maintenance of vigour and viability among the flock. In the ordinary circumstances, says Jull,² the decline in egg production from year to year is about 20 per cent of the preceding year's production and relatively greater decline in the second year has been experienced in the case of very heavy laying pullets.

Poultry-keepers in India are anxious to know the utility life of the domestic fowl in the tropics and an answer to this being an impending necessity, this note has been prepared.

Age and egg production : The hatching season at Izatnagar in the Uttar Pradesh, extends from November to March when the replacement stocks are usually produced. All the chickens hatched were wing-banded and pedigree records carefully maintained. Routine vaccinations against Fowl-pox and Ranikhet disease were carried out between 8 and 12 weeks of age. The general health of the stock was satisfactory during all stages of growth. At the completion of 24 weeks pullets were selected, transferred to the layer houses and trapnested for one full year with a view to calculate the total annual egg production of individual birds. In the following September, or at the end of the first year of laying, regular culling on the basis of the first year performance was carried out and the selected breeders were mated to sires of known pedigree. No changes in the strain of the three breeds—White Leghorn, Rhode Island Red and the improved indigenous (*Desi*) pullets—were made during the experimental period (1944-48) in order to avoid any possibility of getting variable results by the introduction of fresh blood.

All the birds were fed on balanced layer's ration from maturity onwards. They suffered little or no parasitic infestations. Selected hens were utilized as breeders for three or four years to perpetuate not only the factor for livability among the progeny but also the potentiality for long-term production. The total number of birds maintained for this purpose was small but it could not be helped as the birds had to be culled at all stages so as to remove the boarders; only such of those birds which have survived the strain of production and the environment for longer periods have been considered for the collection of data. Thus, individual birds were trapnested as accurately as possible from the date of first egg

¹ Rice, J. E. Marble, G. O., and Hall, D. B. (1930) *Fudging Poultry for production*, John Wiley & Sons, N. Y.

² Jull, M. A. (1928). *Poultry Science*, 7, 226-30.

until the death of the bird or as otherwise stated. Their production records in successive years have been calculated and the decline in egg production with age in the three breeds is given in Table I.

TABLE I
Egg production in the first and subsequent years

Bird No.	White Leghorn			Bird No.	Rhode Island Red			Bird No.	Improved indigenous (<i>Desi</i>) Fowl)		
	Number of eggs				Number of eggs				Number of eggs		
	First year	Second year	Third year		First year	Second year	Third year		First year	Second year	Third year
264	163	140	57	29	183	151	44	64	187	157	66
701	156	116	100	40	263	181	137	74	182	161	116
77	155	91	46	520	142	78	70	79	130	115	73
				590	145	111	32	99	176	49	68
				120	189	134	79	172	148	138	91
								161	176	120	89
								162	144	112	12
Average egg production for the breed	158	115.7	67.7		184.4	131	72.4		163.3	121.6	73.6
Percentage of decline on the production of the previous year		26.8	41.5		...	28.9	44.7		...	25.5	40.7

Table I shows a definite reduction in the egg production from year to year. Individual birds showed wide variations in the annual decline. Birds that laid well in the first year were inclined to lay better in the second and in some cases third year also. One bird laid more eggs during the third year than in the second. Extremely heavy production in the pullet year was followed by a relatively greater fall in the subsequent years whereas the decline in the case of low producers was relatively less. The greatest decline was noticed in the case of Rhodes in the second year while the indigenous (*Desi*) fowls showed the least decline. The decrease in the third year was exceptionally high in all the three breeds and did not compare favourably with the western standards of 20 per cent annual decline, the influence of environment being obvious. About 45 per cent decline was noticed in the case of Rhodes as compared with the other two breeds. The improved indigenous fowl has behaved just as the light breed in the matter of annual decline in egg production.

Average economic life: The production in the second year in general was quite satisfactory and in several instances the retention of layers for a full period of two years from the date of the first egg was justified, the birds paying for their maintenance. The average economic life of a hen in India, therefore, seems to be two years, though individuals may lay well in the third year also, rendering them most efficient breeders.

Though long-term producers are but few, this character can be well-established in a flock by selective breeding over many generations. Commercial producers who as a rule do not trapnest their birds will be well-advised to retain all the high persistent producers towards the close of the first laying year and thus avoid the concomitant cost of raising new pullets. The inheritance of the ability to lay eggs over a period of years is therefore of tremendous economic importance. Despite the poor fertility combined with low egg production in the oldest stock, the egg size is definitely larger and the chickens hatched have been found to be far superior in respect of vigour and long utility life, whereas the pullet progeny in the long run is likely to suffer from lowered vigour as well as shortened span of life unless proper selection is made. The cockerel for the breeding pens should come from the oldest hens in the flock. As progeny testing depends upon long life together with persistent production it is preferable to use an old but vigorous hen that had proved her worth to transmit desirable qualities to her offspring. By such a practice constitutional vigour and high laying potentialities with little or no chick mortality can be well-established.

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Season: The most important single factor for Paddy Yield: More than anything else, timely sowing and planting is the important factor for high yield in paddy. By waiting for channel supply and then beginning preliminary cultural operations for raising Kuruvai nursery, the ryots of Tanjore district are not making the maximum effective use of water. The ideal procedure would be to dry-plough the nursery area and bring it to tilth far in advance with the help of summer showers which rarely fail in this tract. Nearly a fortnight before the receipt of channel water, water lifted from wells or ponds may be let into the levelled beds, each not exceeding a cent in area and seeds sown. This method of preparing beds dry and sowing after the first wetting from wells or ponds and levelling immediately as against puddling after receipt of channel water and sowing wet, not only saves precious time at sowing but also advances all other subsequent operations like preparation of fields and planting. Repeated trials on the Agricultural Research Station, Aduthurai have clearly proved the out-standing merits of advancing Kuruvai cultivation by raising nurseries under lift irrigation in respect of grain yield availability of labour etc. The Tanjore ryots are quite alive to this fact, but the