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5.5.7

Egg laying in two grey partridge (Perdix perdix L.) lines differing for the breeding technology: artificial egg hatch or mother egg hatch

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The artificial breeding by-pass the effect of the natural selection and, inevitably, subject the game birds to the selection carried out by the breeding technology. For this reason we made a research to evaluate if different breeding technologies, carried out for six generations, may be enough to differentiate two Grey partridge lines.

For the trial we tested two lines of Grey partridges, obtained by the same population of Mediterranean Grey partridges reared in the same farm (experimental breeding farm of the Ministry of Agriculture - Castelnuovo Garfagnana - Tuscany): the animals of the line "Broody" had been hatched directly by their own mothers for six generations; the animals of the line "Incubator" had been always hatched in incubator from the eggs layed by the cage-reared Grey partridges.

Day old chicks from the two lines were reared under the same conditions till December, then 27 pairs for each lines were constituted by force pairing, bred in net floor cages (m 0,5 x 1,5 x .3h) and submitted to an extended fotoperiod in spring (February to May). Two years of production were monitored.

The results showed that in the first year of production the grey partridges, coming from six generation of natural brooding "brooding line" (22 productive pairs), show a shorter and more delayed laying period and, consequently, a lower egg production then the "Incubator line" (24 productive pairs): length: 58 days vs. 75 days, p<.01; 1st egg through fotostimulation-start: 61days vs. 42 days, p<.01; egg layed: 46 vs. 58, p<.01.

In the second year of production, 16 couples of the "brooding line" and 20 couples of "incubator line" remained in production. The results of the first year were confirmed: the laying period in the "brooding line" was again shorter and more delayed (length: 63 days vs. 66 days, p<.05; 1st egg through fotostimulation-start: 51 days vs. 44 days, p<.05;)and, again the "brooding line" showed a lower egg production then the "Incubator line" (egg layed: 45 vs. 66, p<.01).

The results of the trial confirmed the supposition that the natural brooding differentiated a new grey partridge line. The line selected by the natural breeding technology is characterised by lower egg production and delayed egg laying start and, consequently, it is more fitted for release in the wild.

5.5.8

Effect of alternative protein and lipid source on productive performances of pheasants

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Objectives: Game rearing offers the possibility to yield meat with valuable organoleptic and nutritional feature (Bonomi, 1975; Ciruzzi et al., 1983; Sarra et al., 1985). Pheasant meat contains a high amount of proteins, along with a low concentration of lipids, ashes and N-free extract (Vicenti et al., 1997). The present study aimed to evaluate the productive performances of pheasants fed by using lipid and protein alternative feeding sources.

Methods: A total of 58 pheasant chicks, of both sexes (F and M)and born from the same hatch, were subdivided into 3 homogeneous groups and fed ad libitum from 15 up to 120 days of age with isoenergetic, isoproteic and isofibrous feeds (C: commercial feed; ω3: experimental feed enriched with ω3 oils at 2%; L: experimental feed containing 25% of sweet lupin meal). Pheasants were checked for their daily food intake and weighed in order to determine their weight gain and food conversion index. At slaughtering, breast was dissected from the carcass and sectioned into its tissue component (skin, meat and bone). Statistical analysis of data was performed using the GLM (1996) procedure of the SAS system.

Results: Pheasants fed by w3 and L diets showed live weights and daily weight gains better and similar to the control group. The w3 feeding treatment showed the lowest feed consumption (C: 53g; ω3: 48g; L: 63g) but the best feed conversion index. With regard to the bird sex, males showed significantly better growth rates and reached higher incidence of feather compared to control birds. Furthermore, supplementation with ω3 fatty acids affected breast weight (P<0,01)but in turn it improved the proportion of meat in this cut (P<0,05). All the parameters investigated were significantly better in males compared to females, which showed also a higher incidence of skin (P<0,01).

		C	ω3	L	F	M	SED (DF=52)
Live weights	g	1070	1155	1112	980B	1252A	195.693
Weight gain	g/d	9	10	10	8 B	11 A	1.831
Feed conversion index	kg/kg	5.9	4.8	6.3			
Feather	% on live weight	7.49 B	10.18A	8.87	8.74	8.95	1.900
Yield	%	78.20	77.38	77.13	76.93b	78.20a	3.393
Breast 22.013 weight	g	263 A	239 B	233 B	220 B	269 A	
Meat	%	88.73b	90.13a	89.65	88.83b	90.18a	2.494
Skin	%	5.72	5.04	4.75	5.87 A	4.50B	1.711
Bone	%	5.56	4.83	5.73	5.30	5.32	1.513

Productive performances (A,B: P<0.01; a,b: P<0.05)

Conclusion: On the whole, the use of ω3 fatty acids, as lipid source, and of sweet lupin (OGM free), as protein source instead of soya, in pheasant diets seems to be positive for productive performance as well as for birds plumage.

5.5.9

Lipid and carotenoids supplementation in laying hen diet and its effects on egg characteristics

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Objectives: To determine the effects on egg characteristics produced by layers supplementing the diet with innovative lipids and carotenoids.

Material and Methods: The experiment was conducted on commercial laying hens to determine the effect of diet supplementation with different lipid and carotenoid sources on bird performance and egg quality. A standard layer diet (control - C) with 3% tallow was compared with three experimental diets using 1% tallow and 2% soybean oil (S), fish oil (F) and Ribes nigrum seed oil (R). A natural red pigment (capsanthin extract from Capsicum aunum - paprika)(P)or capsanthin + lycopene (tomato extract) (PL) was also added to the experimental diets. 140 Isabrown-Warren laying hens of 18 weeks of age were fed for two months with the experimental diets according to the following scheme: SP, SPL, FP, FPL, RP, RPL. Laying rate, mortality, egg weight,