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Direct and correlated responses to selection in two flocks of White Leghorn

Summary

Data on 17,588 pullets of two strains selected for egg number and egg weight along with a control line were examined over seven generations. Significant desirable realized genetic gains/generation were observed for egg number to 40 weeks (2.18 and 2.23 eggs) and egg weight (0.81 and 0.45g) in both the strains. Significant correlated responses were also observed in age at first egg (-1.54 and -1.17 d); 20 and 40 week body weights (8.8 to 19.0). Significant desirable responses were also observed for egg mass (175 and 151g), rate of lay (1.0 and 1.37%), egg production efficiency (0.08 and 0.07) and efficiency index (1.09 and 1.03 g/d/kg). Natural selection did not seem to play any role. Inbreeding of 0.28 to 0.45% per generation did not appear to be of any significance in affecting the performance and heritabilities. The additive genetic and phenotypic variances and heritabilities remained stable over generations. Realized heritabilities varied between 0.18 and 0.29 for egg number and between 0.44 and 0.66 for egg weight and indicated the effectiveness of the criterion of selection.

Key words: selection, genetic gain, inbreeding, genetic variance, realized heritability, chickens

Zusammenfassung

Titel der Arbeit: Direkte und indirekte Erfolge einer Selektion in zwei Linien bei Hennen des Weissen Leghorns in Indien

In die Untersuchungen konnten die Daten von 17588 Junghennen aus zwei Linien des Weissen Leghorns, die nach Eizahl und Eigewicht über 7 Generationen selektiert wurden sowie eine Kontrollpopulation einbezogen werden. Der in beiden Linien bei einer Legeperiode von jeweils 40 Wochen erreichte Selektionserfolg je Generation betrug 2,18 bzw. 2,23 Eier und beim Eigewicht 0,81 g bzw. 0,45 g. Signifikante korrelierte Selektionserfolge wurden beim Beginn des Legealters (1,54 bzw. 1,17 Tage), beim Körpergewicht in der 20. Woche (10,6 bzw. 8,80 g) in der 40. Lebenswoche (18,9 bzw. 17,9 g), der Verlustrate (1,00 bzw. 1,37 %) sowie verschiedenen Produktivitätsindizes nachgewiesen werden. Der Anstieg des Inzuchtkoeffizienten von 0,28 bis 0,45% je Generation hatte in beiden Populationen keinen Einfluß auf die Leistungen oder die Heritabilität. Die additive genetische und die phänotypische Varianz blieben über die Generationen unverändert. Die realisierten Heritabilitätskoeffizienten variierten beim Eigewicht zwischen 0,44 und 0,66 und wiesen dieses als effektives Selektionsmerkmal aus.

Schlüsselwörter: Selektion, Selektionserfolg, Inzucht, genetische Varianz, Heritabilität, Henne

Introduction

The economic gain in layer chickens depends on a number of mutually associated traits some of which are antagonistically correlated (FAIRFULL and GOWE, 1990). A number of selection experiments for increasing part-year egg production have yielded positive responses in egg number but also invariably produced concomitant reduction in egg weight (recent ones being those of AYYAGARI et al., 1983; JORJANI et al.,

1993; SHARMA et al., 1998). There are few reports of selection for the simultaneous improvement of egg production, egg weight and other traits in layer stocks undergoing long-term selection with sufficiently large population sizes and/or a suitable control population (GOWE and FAIRFULL, 1985; JORJANI et al., 1993). A selection experiment for the simultaneous improvement of egg production, egg weight and some other traits in two White Leghorn populations has been in progress at this Institute. Results of selection upto 12th and 9th selected generations had been reported earlier (BRAH et al., 1993) but the absence of a control population did not permit the separation of environmental and genetic trends. The present paper reports the results for the selected and unselected traits for the subsequent seven generations in which a control population was contemporarily reared.

Materials and Methods

Populations: Two single Comb White Leghorn populations (PL 1 and PL 2) undergoing selection and a pedigreed control line (PL 3) maintained at the University farm provided the experimental material. Strain PL 1 was originally derived from a reputed commercial stock imported from USA. Strain PL 2 was derived from the well-known pure-bred 'Mount Hope' stock of USA. The control line (PL3) was constituted from strain PL2, after it had undergone 8 generations of selection, by randomly choosing cockerels and pullets. The average number of progeny (pullets) tested, the effective number of sires and dams and the effective population size during the course of the present study are given in Table 1. The population structure in the earlier generations was also similar (BRAH et al., 1993).

Table 1

Population structure and inbreeding averaged over generations (Populationsstrukturen und Inzuchtkoeffizienten)

Strain	N_m	N_f	No. of pullets	N_e	$\Delta F(\%)$
PL 1	33	195.3	1136	112.0	0.44
PL 2	33	194.1	1075	112.3	0.45
Control (PL 3)	38.4	110.6	303	183.4	0.28

N_m , N_f and N_e refer to effective number of sires, dams and population size and $\Delta F(\%)$ = Inbreeding/generation.

Main emphasis in selection was laid on egg number upto 40 weeks of age using a family index that took into account the individual performance plus dam and sire family averages for pullets, and dam and sire family averages for cockerels (OSBORNE, 1957a, b). Selection for egg weight (independent culling levels) had also been practiced from the inception of the selected strains. The strains had also undergone mild selection for liveability, fertility, hatchability and adult body weight in previous generations. For reproducing the control line (PL 3) as far as possible each sire contributed a sire and each dam contributed a dam as breeders to minimize genetic drift and inbreeding. Full- and half-sib matings were avoided in all the lines to keep inbreeding low. The chicks were obtained in 2-3 hatches every year in the months of March and April and were reared under standard nutritional and managerial conditions.

Traits: The basic traits recorded on each pullet were: age at first egg (AFE); egg number to 40 weeks of age (EN40); body weights at 20 and 40 weeks of age (BW20 and BW40), and egg weight (EW) based on average of 6-8 eggs measured between 36-38 weeks of age. Derived traits included rate of lay (ROL); egg mass to 40 weeks of age (EM); ratio of 40 to 20 week body weight (Ratio BW); egg weight as % of 40-week body weight (EW % BW); egg mass per functional day (EMFD); egg production efficiency i.e. egg mass in grams divided by body weight at 40 weeks in grams (EPE) and efficiency index i.e. egg mass per functional day in grams divided by body weight at 40 weeks in kilograms (EINDEX).

Statistical Analysis: Hatch adjusted Least-square means (HARVEY, 1988) were used for estimation of phenotypic and genetic changes. The realized genetic gain per generation was estimated as deviation of the selected line means from the control line means regressed over generations. The effective number of sires and dams were used for the computation of effective population size and inbreeding as per GOWE et al. (1959). The effective selection differentials were calculated by weighting each parent by the number of offspring available at 40 weeks of age. The standardised selection differential for the selected traits was obtained by dividing selection differential with the phenotypic standard deviation. Realized heritability was obtained as (i) simple regression of response on cumulative selection differential (b_{RS}) and (ii) the ratio of cumulative response (CR) to cumulative selection differential (CS) for the selected traits (HILL, 1972). The heritabilities were calculated from full-sib analysis as per the procedure outlined by BECKER (1984). The mean heritability across generations was obtained as simple average of the seven estimates. To calculate the standard error (SE) of h^2 , the estimate of each year was treated as a single observation and SE was calculated from the variability among these estimates (GOWE and FAIRFULL, 1985).

Results and Discussion

Control Population: The environmental trends in the control line, for different traits are presented in Table 3, and Figures 1 and 2. Regression of means on generations were negative and significant for some traits but non-significant for others. Significant systematic changes in the performance of the control for a number of traits had been reported in several selection experiments (KOLSTAD, 1980; JORJANI et al., 1993). The performance of the control showed fluctuations over generations (Fig. 1 and 2). However, the pattern of changes in means of control over generations fairly matched with those observed for the two selected lines indicating possibly these to be of the environmental origin. The selection differentials computed due to random selection of control line breeders were essentially zero thus further strengthening the lack of a genetic trend in the control line. Rate of inbreeding was very low (0.28%) and accrued to be 1.96% over seven generations and is therefore unlikely to have affected the performance and variance to any significant degree. The estimates of additive genetic variance and heritabilities did not change over generations (Table 4). Keeping in view

Table 3

Regression of response on generation numbers (b±SE) (Direkte und indirekte Selektionserfolge je Generation)

Trait	Phenotypic response		Genetic response		
	Control (PL 3)	Av. of PL 1 & PL 2	PL 1	PL 2	Av. of PL 1 & PL 2
Selected:					
EN40	-4.16± 0.84**	-1.95± 1.07	2.18± 0.89*	2.23± 0.74**	2.20± 0.72**
EW (g)	-0.26± 0.14	0.36± 0.16*	0.81± 0.06**	0.45± 0.07**	0.63± 0.05**
Correlated:					
ASM (d)	1.99± 1.54	0.64± 1.65	-1.54± 0.68*	-1.17± 0.76	-1.35± 0.68*
ROL (%)	-2.49± 0.56**	-1.30± 0.42*	1.00± 0.47*	1.37± 0.28**	1.18± 0.31**
BW20 (g)	-9.73± 11.0	-0.01±10.5	10.6 ± 4.26**	8.80± 3.34**	9.76± 2.86**
BW40 (g)	-10.3 ± 4.55*	8.12± 4.02*	18.9 ± 5.7**	17.9 ± 4.48**	18.4 ± 4.54**
Ratio BW	0.004± 0.02	7.97± 0.02	0.003± 0.07	0.004± 0.01	0.004± 0.01
EW% BW	0.07± 0.14	0.05± 0.15	0.22± 0.14	-0.13± 0.12	0.06± 0.11
EM (g)	-236±37.9**	-13.4 ±51.2	175±46.9**	151±42.0**	163±40.7**
EMFD (g/d)	-1.50± 0.27**	0.42± 0.22	1.12± 0.24*	1.06± 0.20**	1.10± 0.18**
EPE	-0.144± 0.03**	-0.070± 0.04	0.079± 0.04*	0.069± 0.03**	0.074± 0.03**
EINDEX (g/d/kg)	-1.150± 0.23**	-0.43± 0.22	1.09± 0.25**	1.03± 0.19**	1.06± 0.20**

* p ≤ 0.01; ** p ≤ 0.05

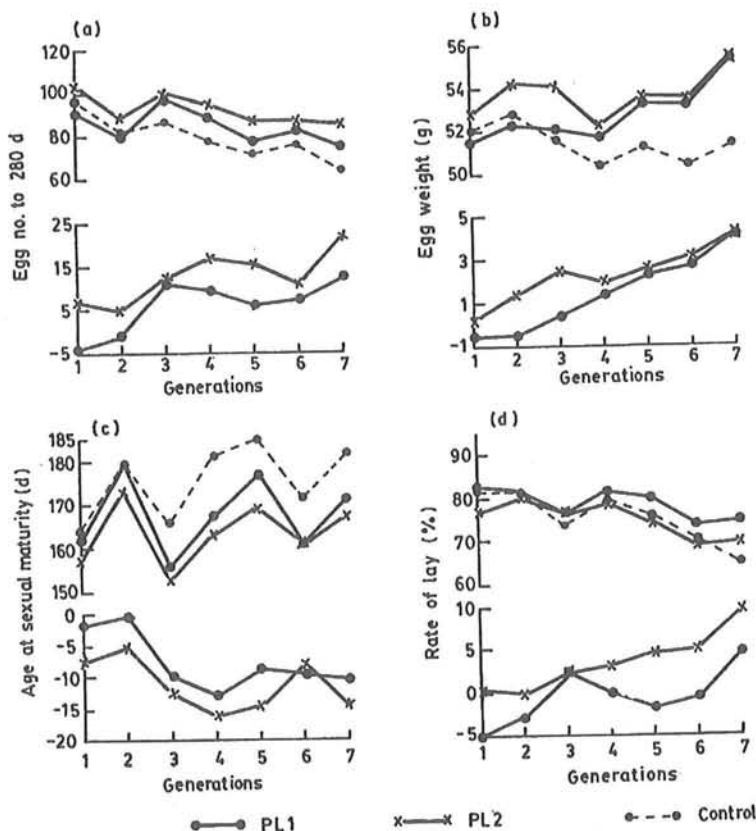


Fig. 1: Mean phenotype performance of selected and control lines (upper) and genetic change (lower) in selected lines (Pänotypische Leistungsentwicklung in den Selektions- und Kontrollpopulationen)

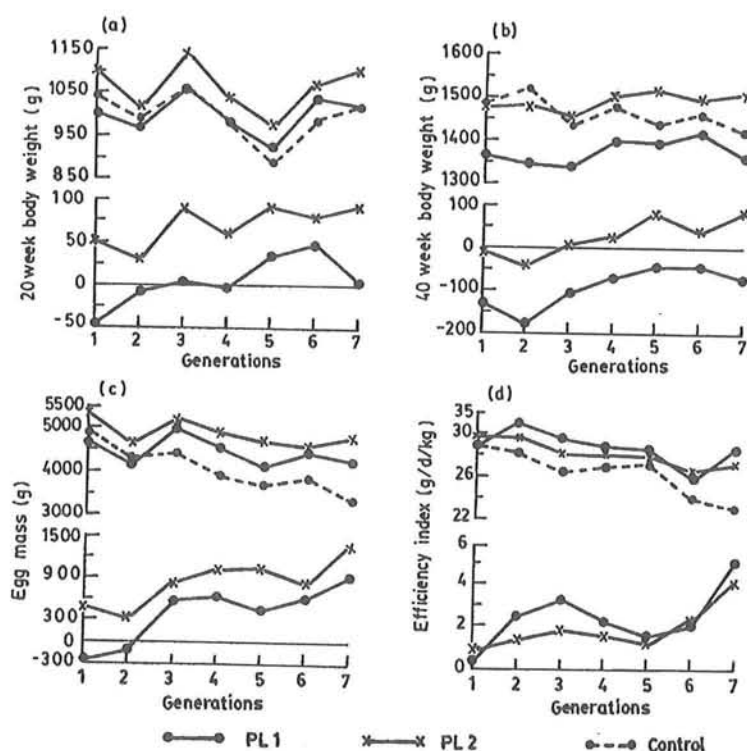


Fig. 2: Mean phenotype performance of selected and control lines (upper) and genetic change (lower) in selected lines (Pänotypische Leistungsentwicklung in den Selektions- und Kontrollpopulationen)

the size of the breeding population maintained and the mating procedure adopted to minimize the genetic drift and inbreeding, coupled with the lack of changes in genetic variance and heritabilities, there appeared no evidence of a genetic change in the control population.

Table 2

Means (\pm S.D.) for part-year egg number (Mittelwerte und Standardabweichung für die Eizahl der drei Linien bei einer Teiljahresleistung (40 Wochen))

Strain	Generation						
	1	2	3	4	5	6	7
PL 1	90.2 ± 19.9	79.6 ± 14.9	95.8 ± 17.9	88.6 ± 14.8	77.2 ± 16.7	82.9 ± 15.2	75.7 ± 15.6
PL 2	101.7 ± 18.9	85.7 ± 19.3	97.0 ± 24.0	95.4 ± 18.3	88.4 ± 18.3	87.4 ± 14.2	85.4 ± 15.0
Control	94.8 ± 18.1	81.1 ± 16.1	84.9 ± 20.4	78.4 ± 20.3	71.7 ± 19.8	76.1 ± 16.7	63.8 ± 15.3

Mean performance and genetic gains: The mean phenotypic performance of the selected and control lines and the means of the selected lines expressed as deviations from the control means for some important traits are presented in Fig. 1 and 2 while the estimates of genetic gains for all the traits are given in Table 3. The means for egg number to 40 weeks of age for the three lines are given in Table 2.

Selected traits: The realized genetic gain for egg number to 40 week of age was significantly positive in both the strains (2.18 and 2.23 eggs/generation). The significant improvement observed for egg number in the selected lines resulted due to desirable correlated responses in age at sexual maturity and rate of lay. This was because of the fact that egg number selection is also negative selection for age at first egg and positive selection for rate of lay. Reduction in sexual maturity and improvement in laying intensity due to selection for egg number alone has been observed in a number of experiments (FAIRFULL and GOWE, 1990). In the few selection experiments that included simultaneous selection for egg number and egg weight (KOLSTAD, 1980; LILJEDAHN and WEYDE, 1980; SORENSEN et al., 1980), reduction in age at first egg to the extent of 2 days/generation was observed while the rate of lay showed either an increase or remained static. As a consequence of mild selection applied for egg weight, it exhibited significant genetic improvement in both the strains (0.63 and 0.81 g/generation). Earlier results of selection experiments for a combination of egg number and egg weight have also reported significant increase of 0.2 to 0.4 g/generation over short-term periods (FAIRFULL and GOWE, 1990).

Correlated traits: Significant positive correlated responses were observed for 20- and 40- week body weights in both the strains. A trend for increase in housing and mature body weight with selection for egg production plus egg weight probably due to the influence of egg size has been observed in most of the lines in such selection experiments (KOLSTAD, 1980; LILJEDAHN and WEYDE, 1980; SORENSEN et al., 1980). This is in contrast to the results of single-trait selection for egg production (Ayyagari et al., 1983; SHARMA et al., 1998) in which housing and mature body weights showed a downward trend. The ratio of 40- to 20-week body weight did not change indicating that both the body weights were equally altered. Egg weight expressed as % of body weight did not change over generations which implied that the increase in mature egg weight was associated with a corresponding improvement in adult body weight.

Egg mass output showed significant genetic improvement in both the lines (Fig. 2 and Table 3). The rate of genetic improvement was more in PL 1 because of its higher rate of genetic improvement for egg weight as compared to PL 2. The magnitude of responses for egg mass in the present study match fairly well with those reported for short-term selection experiments for egg production plus egg weight (KOLSTAD, 1980; LILJEDAHN and WEYDE, 1980) but are slightly higher than those reported by JORJANI et al. (1993) over 10 generations of selection. Egg mass per functional day also showed significant genetic improvement (Table 3).

The direct measurement of efficiency of feed conversion in layers is cumbersome and

expensive. NORDSKOG et al. (1974) have shown that egg production efficiency (egg mass/body weight) and efficiency index (egg mass/functional day /kg body weight) are useful indirect measures of feed efficiency for egg production. Efficiency index has also been found to be correlated with the margin of profit over feed cost in commercial stocks (SHALEV, 1980). Both these measures of efficiency showed significant genetic improvement of essentially similar magnitude in both the selected strains. AYYAGARI et al. (1983) in a single-trait egg production experiment failed to observe any significant improvement in efficiency index.

Selection differentials: The effective selection differentials for egg number varied between 8.1 and 11.7 eggs in PL 1 and between 9.3 and 12.2 eggs in PL 2 over generations. These values match fairly well with those reported by AYYAGARI et al. (1983) and SHARMA et al. (1998) from single-trait selection, and also with those of GOWE and FAIRFULL (1985) from multi-trait selection experiment. The effective selection differentials for egg weight varied between 0.87 and 1.64 g in PL 1 and between 0.16 and 1.42 g in PL 2 over generations. The regression coefficients of selection differential on generation number were negative for egg number but significant in PL 2 only and positive and significant for egg weight in both the strains (Table 4). This implied a tendency for selection for egg number to decrease gradually with increased emphasis being laid on the improvement of egg weight over generations. The selection emphasis for egg number was marginally higher in PL 1 as compared to PL 2. However, egg weight received about 47% more selection weightage in PL 1 as compared to PL 2. A high degree of agreement between the expected and effective selection differentials suggested that natural selection did not influence the artificial selection for egg number and egg weight (Table 4). The direction of the selection differentials of correlated traits was in accordance with the direction of their realized genetic gains (Table 3).

Table 4

Mean selection differential (S) and change in selection differential per generation ($b \pm SE$) (Selektionsdifferenzen und mögliche Selektionserfolge je Generation)

Trait/Statistic		PL 1		PL 2	
		Effective	Expected	Effective	Expected
Selected Traits:					
EN40	S	9.57	9.56	10.73	10.47
	(b±SE)	-0.09±0.26	-0.09±0.26	-0.34±0.14*	-0.27±0.13*
EW (g)	S	1.28	1.34	0.87	0.93
	(b±SE)	0.11±0.04**	0.07±0.03*	0.20±0.04*	0.20±0.03*
Correlated Traits:					
ASM (d)	S	-3.93	-4.18	-4.31	-4.17
ROL (%)	S	5.70	5.51	6.04	5.94
BW20 (g)	S	30.3	31.1	28.5	29.1
BW40 (g)	S	32.0	31.2	18.1	18.0
EM (g)	S	621	626	667	659
EPE	S	0.37	0.37	0.40	0.40
EINDEX (g/d/kg)	S	3.97	3.92	3.99	3.98

* $p \leq 0.01$; ** $p \leq 0.05$

Inbreeding: Inbreeding averaged to be 0.45; 0.44 and 0.29% per generation for the selected strains PL 1 and PL 2 and the control line (PL 3) respectively for the seven generations reported herein (Table 1). Identical rate of inbreeding prevailed during the first phase of selection in these strains (BRAH et al., 1993). The level of inbreeding upto the end of the present study (i.e. 19th and 16th generations in PL 1 and PL 2) thus accrued to be 8.25 and 7.54%. These levels of inbreeding particularly with the avoidance of matings of relatives are unlikely to have influenced the performance of the selected lines. Earlier reports suggest that 10-15% or even higher levels of inbreeding did not much affect the performance of the selected lines (NORDSKOG et al., 1974; ABLANALP, 1990). The drift and error variance per generation, computed as per HILL (1980), were low suggesting that these factors were well controlled.

Table 5

Mean sire-component h^2 and linear regression ($b \pm SE$) of h^2 , additive genetic and phenotypic variance on generations (Heritabilitäts- und Regressionskoeffizienten)

Trait	Strain	$h^2 \pm S.E.$	$b \pm S.E.$		
			h^2_S	σ^2_A	σ^2_P
EN40	PL 1	0.199 \pm 0.044	0.019 \pm 0.024	-2.34 \pm 4.95	-15.23 \pm 11.8
	PL 2	0.163 \pm 0.035	0.020 \pm 0.019	-1.69 \pm 4.94	-26.99 \pm 14.3
	PL 3	0.200 \pm 0.068	-0.019 \pm 0.034	-4.85 \pm 14.4	-1.24 \pm 13.2
EW	PL 1	0.653 \pm 0.143	-0.095 \pm 0.073	0.68 \pm 0.64	-0.22 \pm 0.24
	PL 2	0.543 \pm 0.066	-0.007 \pm 0.039	-0.09 \pm 0.37	-0.04 \pm 0.17
	PL 3	0.585 \pm 0.107	0.026 \pm 0.055	0.27 \pm 0.59	-0.04 \pm 0.15
ASM	PL 1	0.286 \pm 0.058	0.029 \pm 0.032	5.14 \pm 5.19	6.50 \pm 6.58
	PL 2	0.357 \pm 0.027	0.029 \pm 0.031	5.15 \pm 5.20	6.50 \pm 6.58
	PL 3	0.207 \pm 0.062	-0.039 \pm 0.034	-0.13 \pm 8.53	14.50 \pm 8.20
BW20	PL 1	0.467 \pm 0.068	0.003 \pm 0.036	244 \pm 346	383 \pm 404
	PL 2	0.406 \pm 0.038	-0.019 \pm 0.018	22.6 \pm 212	527 \pm 391
	PL 3	0.522 \pm 0.105	-0.054 \pm 0.061	190 \pm 876	585 \pm 443
BW40	PL 1	0.534 \pm 0.052	-0.057 \pm 0.017	-850 \pm 431	-12.25 \pm 385
	PL 2	0.547 \pm 0.061	-0.016 \pm 0.035	-317 \pm 529	-22.11 \pm 245
	PL 3	0.466 \pm 0.136	0.001 \pm 0.052	-229 \pm 560	584 \pm 963

Variance and heritability estimates: The two principal traits under selection showed fluctuations over generations in heritabilities and variances (Fig. 3) but there seemed no time-trend over generations with the regression coefficients being non-significant (Table 5). The heritabilities and variances for the correlated traits also remained unchanged (Table 5). The mean heritabilities of the control line for the selected and the correlated traits were similar to those of the two selected strains. The heritabilities estimated in the earlier generations (1-12 and 1-9) for the principal traits under selection as well as for other traits (BRAH et al., 1993) were of similar magnitude as observed for these seven generations. Theoretically selection is expected to reduce genetic variation and heritability though the magnitude of its effect will be dependent on the intensity of selection and the level of heritability (FALCONER, 1989). The selection intensities in the present study were moderate for egg number (0.56 and 0.59 σ_P) and low for egg weight (0.39 and 0.29 σ_P) in the two strains. The lack of reduction in heritability and genetic variation may thus in part be attributable to moderate intensity of selection applied and also due in part to mutations which have been shown

to play a significant role in long-term selection experiments (FRANKHAM, 1980).

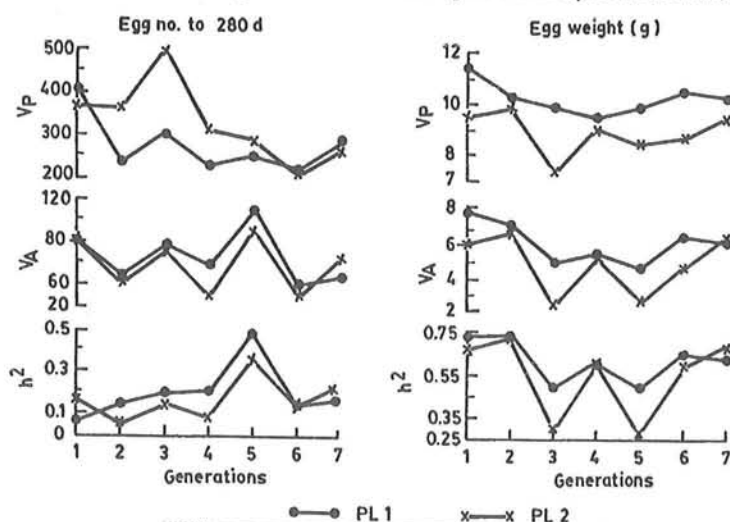


Fig. 3: Heritability (h^2), additive genetic variance (V_A) and phenotypic variance (V_P) for egg number and egg weight in selected lines (Heritabilität, additiv genetische und phänotypische Varianz bei Eizahl und -gewicht in den Selektionslinien)

Table 6

Estimates of realized h^2 for egg number and egg weight (Realisierte Heritabilitäten für Eizahl und -gewicht)

Method	Egg number		Egg weight	
	PL 1	PL 2	PL 1	PL 2
b_{RS}	0.238±0.089	0.216±0.069	0.609±0.034	0.439±0.070
CR/CS	0.178	0.292	0.464	0.663
Average	0.210	0.254	0.530	0.550

Realized heritabilities vis a vis effectiveness of selection:

Selection in the present study for egg number was based on multi-sources of information and selection was truly not of the truncation-type since independent culling levels were also used for the improvement of egg weight. Therefore, the realized heritabilities reported in Table 6 may not be considered valid estimates of heritability of individual values for egg number in these strains. However, the realized heritabilities provide the most useful empirical description of the effectiveness of selection (FALCONER, 1989). The values of realized heritabilities averaged over the two methods and strains worked out to be 0.23 and 0.54 for egg number and egg weight respectively. The high degree of correspondence between the realized and estimated heritabilities for egg weight implied that the magnitude of the realized genetic gains was as per the expectation based on theory. The excess of realized heritability of egg number over the sire-component heritability by 28% implied that use of family averages in addition to individual's own performance, improved the rate of genetic progress over individual selection. With an average effective selection differential/generation of about 10.1 eggs and an average realized heritability of 0.23,

the expected genetic gain of 2.32 eggs is close to the realized gain of 2.20 eggs (Table 3). For egg weight, with average selection differential of 1.07 and average realized heritability of 0.54 across the two strains, the expected gain of 0.58 g also matched with the average realized gain of 0.63 g for the two strains.

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Sonderausstellung

150 Jahre FERDINAND v. LOCHOW - Petkus, 125 Jahre KARL MÜLLER - Ruhlsdorf Große Landwirte, Pioniere, Freunde, bedeutende Förderer der deutschen Schweinezucht

**im Deutschen Schweinemuseum Ruhlsdorf bei Teltow (Land Brandenburg),
vom 23.4.1999 bis zum 31.8.1999**

Die Schweinehaltung und -fütterung war bis zum 1. Weltkrieg, v.a. in der Masse der bäuerlichen und Kleinstbetriebe, noch ziemlich unterentwickelt. Zwar war mit den beiden weißen Rassen seit Beginn des Jahrhunderts bereits eine gute Basis vorhanden, doch fehlte es an wissenschaftlich begründeten Verfahren und ihrer Verbreitung in der Praxis. Die Tiere wurden überwiegend nicht tiergerecht und wenig effizient gehalten und gefüttert. Nachdem die 1. Schweinemeisterschule in Grubschütz/Sachsen und der Vorläufer einer Versuchswirtschaft in Karstadt/Prignitz wieder eingegangen waren, gab es noch während des Krieges seitens fortschrittlicher Züchter, Mäster und Viehverwerter v.a. in Preußen Bestrebungen, durch Gründung einer „Versuchswirtschaft Deutsche Schweinehaltung“ für die praxisorientierte Versuchsdurchführung, die Ausbildung von Landwirten und Fachpersonal und die betriebliche Beratung eine Hebung der Effektivität des Betriebszweiges zu erreichen.

An der Spitze dieses Vereins stand der große, wissenschaftlich gebildete brandenburgische Landwirt, geniale Züchter und erfolgreiche Agrarunternehmer FERDINAND von LOCHOW - Petkus. Dieser erste und bedeutendste deutsche Pflanzenzüchter, dessen *Petkuser Roggen* in den 30er Jahren 50% der Weltroggenerzeugung beeinflusste, war auch ein erfolgreicher Rinder-, Schweine- und Geflügelzüchter. Seine erste Liebe hatte der Tierzucht gegolten. Der Schweinestall „System Lochow“ zuerst 1909 in Petkus gebaut, galt bis in die 50er Jahre als beispielhaft. Die von Lochow 1918 mitbegründete und als Verwaltungsratsvorsitzender maßgeblich mitgestaltete „Versuchswirtschaft für Schweinehaltung, -fütterung und -zucht GmbH Ruhlsdorf“ wurde in wenigen Jahren zur bedeutendsten Versuchs- und Lehranstalt ihrer Art, für die es in Europa noch kein Vorbild gab.

Sie wurde unter Leitung und nach den Vorstellungen Karl MÜLLERS praktisch aus dem Nichts bis zu einer für damalige Verhältnisse einmaligen und weit über die Grenzen Brandenburgs und Deutschlands hinaus wirkenden Einrichtung entwickelt.

Große Landwirte waren beide! Der eine als Vertreter des brandenburgisch-preußischen Landadels, bei Julius Kühn in Halle mit dem wissenschaftlichen Rüstzeug ausgestattet, war schon als Inspektor auf einem anhaltinischen Gut ein Suchender und Beobachtender; er untersuchte die Milchleistung der Kühe. 1879 übernahm er das Gut Petkus und bemühte sich durch Leistungssteigerung und intelligentes Wirtschaften das Maximale herauszuholen. So wurde er sowohl in der Pflanzenproduktion, vom Roggen bis zu den Kiefern, als auch in der Tierproduktion, seine „Butterkühe“ waren berühmt und die Edelschweinherde gehörte zu den ersten auf Zuchtleistung selektierten überhaupt, zum genialen Züchter.

Es war eine sehr glückliche Fügung die Karl MÜLLER, obwohl eine Generation jünger, mit „dem alten Herrn auf Petkus“ zusammenführte. MÜLLER, der einem Geschlecht bodenverbundener sachsen-anhaltinischen Bauern entstammt, Studium in Leipzig und Tätigkeiten in Schlesien und Posen, erfuhr nach Übernahme der Leitung Ruhlsdorfs, stets den fördernden Rat des Verwaltungsratsvorsitzenden v. LOCHOW. Ruhlsdorf entwickelte sich unter seinem ersten Leiter KARL MÜLLER zu einer für damalige Verhältnisse einmaligen weit über die Grenzen Brandenburgs hinaus wirkenden Einrichtung. Müllers einfache und praxisrelevante Versuchsanstellungen und seine umfangreichen populärwissenschaftlichen Publikationen und Bücher trugen ihm große Anerkennung in Fachkreisen ein. „Aus der Praxis - für die Praxis“ war sein Wahlspruch und sein Wirken hat die Schweinehaltung in ganz Deutschland in bedeutendem Maße beeinflusst. Seine Schule durchliefen Assistenten die später segensreich für die Schweinezucht und -haltung wirken sollten wie Stahl, Haring, Immler, Richter, Jung, Goehner, Wowra u.a.

Das Deutsche Schweinemuseum Ruhlsdorf gedenkt dieser Persönlichkeiten der deutschen Tierzucht, welche die Schweineproduktion bedeutend förderten, durch diese Sonderausstellung.

GUNTER NITZSCHE, Trebbin