NOTE

AN INTER-STRAIN OBSERVATION
ON THE RELATIONSHIP BETWEEN PERFORMANCE
AND ITS HERITABILITY IN THE FOWL [1]

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SUMMARY

In a comparison between strains, for three traits, the rank correlation between mean value and heritability was estimated. This correlation was negative for 8-week weight and laying intensity, positive for sexual precicity.

In 1960-61, we have estimated the heritability of some traits in several strains used by breeders of the *Syndicat national des aviculteurs Agréés*. Notwithstanding the very large differences between the environmental conditions supplied to the diverses strains (meat and egg-laying types) it is interesting to consider the general results and to compare the mean performances with the heritabilities estimated from hierarchical analysis of variance.

Thus, we draw,

1. *For the 8 wks live weight* (grams) :

strain	V11	C11	A77	F11	WA	WB	WC
mean	998	945	866	806	769	694	643
h^2 p. 100	8	21	24	43	30	62	75

The ranking coefficient of correlation is $p = 0.98$.

The whole range of h^2 is present. This can be an indication that in the case of the live weight, the main part of the genetic variance is an additive one.

[1] Cet article a été présenté à la réunion du groupe de travail n° 3 (sélection et testage) de la Fédération des Branches européennes de la W. P. S. A., Nouzilly-Ploufragan, 6-10 septembre 1971.

2. *For the age at first egg* (days) :

strain	BC	C11	T11	WA	F11	WB	WC	L	A77
mean	154	159	162	167	169	171	177	181	210
h^2 p. 100	67	52	40	57	27	10	34	30	16

Here, better is the precocity, higher is the heritability. This may be suggestion to think that precocity is governed by recessive genes. In terms of age at first egg, the ranking coefficient of correlation is $p = 0,77$.

3. *For laying intensity* (p. 100) :

strain	S11	T11	L	C11	A77	BC	V11	F11	WA	WB	WB
mean	46	49	50	52	63	65	65	65	72	75	76
h^2	17	26	37	18	16	21	30	10	26	40	20

The low range of heritability (10-40 p. 100) can manifest the importance of non-additive effects. The ranking coefficient of correlation is $p = 0,44$. So there seems, in all cases, to be a negative relationship between performance and its heritability. This can be viewed as an indication that selection, partly at least, improves the performances at the cost of erroding the genetic variability. The case of WC strain intensity is noticeable because the highness of both average value and heritability. This fact suggests to estimate the two parameters before to begin a selection program. All in all, these results encounter somewhat a paradox with the frequently observed fact that better is the management, better is the performance and better the heritability So, it is proposed that a clear discrimination has to be made between « improvement by selection », which erodes the genetic variance, and « improvement by environment », which, on the contrary, realizes a hidden variation. The play of the two factors does permit to hope an environment resource to be found, each time the heritability becomes too low before calling for a migration of new strains.

RÉSUMÉ

OBSERVATION ENTRE SOUCHES DE LA RELATION ENTRE NIVEAU
DE PERFORMANCE ET HÉRITABILITÉ CHEZ LA POULE

Dans une comparaison entre lignées, pour 3 caractères, la corrélation de rang entre la valeur moyenne de la performance et son héritabilité a été estimée. Cette corrélation est négative en ce qui concerne le poids à 8 semaines et l'intensité de ponte, positive pour la précocité sexuelle.