

3. There was found a significant linear regression of average milk yield on ketosis and significant curvilinear regressions of average herd milk yield on milk fever, on fertility disease, and on all diseases. There was found no significant regression of average herd milk yield on mastitis frequency.

THE RELATION BETWEEN LOCUS TRANSFERRIN AND THE BREEDING QUALITY TRAITS OF COUNTRY CATTLE RACE : *LOWLAND BLAK-WHITE* AND *LOWLAND RED-WHITE*

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In 3 343 cows of *Lowland black-white* and 1925 cows of *Lowland red-white* the relations between the breeding value of traits : birth weight, daily gain of weight, weight in 365th day, milk yield, fat yield, fat percentage and the determined type of transferrins were studied. It has been found that such relations occur only in *lrw* race for the traits : birth weight, daily gain of weight, milk yield and fat yield. In all remaining cases the relations were insubstantial. Allel T^B influenced positively for the formation of a/m traits. Allel T^D in all cases had a negative influence.

EINFLUSS GENETISCHER VARIANTEN DER MILCHPROTEINE AUF MILCHZUSAMMENSETZUNG

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Von 2 261 deutschen *Fleckviehkühen* (Tochter-Mutter-Paare) wurden die genetischen Varianten der Caseine und des β -Lactoglobulins, der Serumeiweißgehalt, der Caseingehalt und der Gesamteiweißgehalt der Milch bestimmt. Für die Haplotypen des Casein-Komplexes und für die Allele des β -Lactoglobulin-Locus wurden die Effekte der Gensubstitution, der Dominanz und der Epistasie geschätzt.

Die Differenzen zwischen den Haplotypen waren für den Caseingehalt signifikant. Die Allele des β -Lactoglobulin-Locus zeigten einen hochsignifikanten Einfluß auf den Serumeiweißgehalt und in einer ausgeprägten negativen pleiotropen Wirkung auch auf den Caseingehalt. Dies führte zur Kompensation im Gesamteiweißgehalt. Epistatische Effekte waren signifikant für den Casein- und Serumeiweißgehalt. Dominanzeffekte waren nicht signifikant. Beim Serumeiweißgehalt konnte Prozent der Varianz durch die β -Lactoglobulin-Genotypen erklärt werden. Die genetischen Varianten zeigten bei den Milchproteinfraktionen größere Effekte als beim Gesamteiweißgehalt.

THE IMPORTANCE OF COAT COLOUR AND COAT TYPE FOR PRODUCTIVE PERFORMANCE OF BEEF CATTLE UNDER SUBTROPICAL CONDITIONS

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The effect of coat colour and coat type on growth performance of beef cattle under subtropical conditions has been investigated. It involved 3 097 *Afrikaner* ($Z \times Z$), *Afrikaner* \times Dual purpose ($Z \times D$), and *Afrikaner* \times British breed ($Z \times M$) dams and their offspring from matings with Z, D, and M sires. Variation in coat colour has no significant effect on weight of dams and weaning weight of offspring. Highly significant differences in coat type exist between breeding group of dam and breed group of offspring. The highly significant effect of coat type on body weight of dam is similar for the three dam breeding groups. Coat type of dam affects actual weaning weight of calves but not weaning weight per unit cow weight. Weight gain of

youngstock in a given period is slightly better correlated with coat type at the end of the period than with coat type at the beginning of a period. Differences between breed groups do not exist. Partial correlation of coat type and youngstock weight do not differ significantly from zero.

VI. — Séance ouverte et boîte aux suggestions. II

MAXIMAL UTILIZATION OF HETEROSIS IN MILK AND BEEF PRODUCTION

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Authors worked out a breeding scheme in order to utilize the yearly genetic progress in milk and beef production as well as "hybrid vigor" and "type heterosis". Latter term is proposed to be introduced into the terminology of animal production. This scheme which integrates milk and beef production, keeps space with the international genetic progress and attains a heterosis effect over 60 per cent in milk production and at the same time assures a heterosis effect (hybrid vigor as well as type heterosis) of 100 per cent in the single suckler cow stock as well as in the population for direct fattening. In this scheme pure breeding is practiced only in herds meant for producing sires of high genetic quality whereas in milk and beef production only crossbred populations are involved. The scheme is already in practice within a large scale experiment of 6 000 cows in criss-cross breeding by using the best genetic material of *USA-Canadian* and *Danish Jersey* breeds and of three types of beef breeds. In this conception breeds are no more the objects of production but the building bricks of the production systems.

HITCH-HIKING EFFECT AND LINKAGE DISEQUILIBRIUM: THE EXAMPLE OF TWO CLOSELY LINKED LOCI IN THE PIG, HALOTHANE SENSITIVITY (*Hal*) AND PHOSPHOHEXOSE ISOMERASE (*PHI*)

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The gene for halothane sensitivity (*Hal*^s) is favoured in the selection for muscle development which has occurred in some modern breeds of pig (e.g. *Pietrain*). Such a selection tends to increase the frequency of another gene (*PHI*^B) at the closely linked locus for *PHI*, by virtue of a so-called "hitch-hiking effect", the *PHI* locus itself being selectively neutral. Another effect of selection at the *Hal* locus is to generate a linkage disequilibrium between the two loci, *Hal* and *PHI*, the evolution of this disequilibrium depending on the type of selection applied at the *Hal* locus. This point is demonstrated by the observation of two lines of pigs selected differently for 4 generations, and thus confirms a recent theoretical work (THOMSON, 1977) showing that a possible source of linkage disequilibrium may be the hitch-hiking effect of a selected locus on another closely linked neutral locus.

GRENZEN DER MAST- UND SCHLACHTLEISTUNG BEIM SCHWEIN UND SELEKTION ENTLANG VON LEISTUNGSGRENZEN

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Anhand von integral leistungsgeprüften Herden werden Papierselektionen durchgeführt. Die daraus resultierenden Merkmalsmuster zeigen, dass Niveaugrenzen auftreten können, welche das Zusammenwirken der Teilleistungen in ungünstiger Weise verändern. In einer Arbeitshypothese wird gezeigt, wie die Merkmalsmuster von Tieren, deren Leistungen Niveaugrenzen