



## Implementation of developments of Institute of Animal Science in Dairy Cattle Breeding in Ukraine

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### **Abstract**

Institute of Animal Science of National Academy of Agrarian Sciences of Ukraine implements its developments in dairy cattle breeding in Ukraine. Breeding centre of the Institute developed some National standards of Ukraine on genetic evaluation of dairy bulls using BLUP and system of organization of selection in order to harmonize Ukrainian legislation with European and international requirements. Breeding centre has developed and implemented on-farm computer programs for dairy cattle recording as well as breeding programs for main dairy breeds in Eastern region of Ukraine. Laboratory of ecological monitoring of the Institute provides testing of milk, meat, food and others samples from the farms of the region using equipment of Bentley Instruments for wide range of traits.

*Keywords: Institute of Animal Science, breeding centre, Ukraine, evaluation, cattle, prediction, ecological.*

## **1.0 Introduction**

Institute of Animal Science of National Academy of Agrarian Sciences of Ukraine (NAASU) is breeding centre for cattle, pigs, sheep, horses and rabbits. The Institute conducts studies on adaptation of animal breeding to European standards. We have developed new methods of evaluation of breeding values of sires and dams.

### **1.1 Methods**

We have analyzed the status of recording, evaluation, selection and mating in Ukraine. On the basis of comparing current status with requirements of ICAR and INTERBULL we have developed measures to improve system of recording and genetic evaluation in dairy cattle breeding.

### **1.2 Results**

There are about two and half million cows in Ukraine. Average milk yield of cows is about four thousand kilograms of milk per lactation. We have seven basic dairy breeds. We used a crossing with Holstein and other foreign breeds for obtain Ukrainian breeds.

Genetic trends of milk yield of Ukrainian breeds have increased, but not rather fast.

Institute of Animal Science has developed and implemented "Complex program of development of agrarian sector in Kharkov region". This program includes a set of breeding, technological and management approaches to modernize animal production.

Among others our breeding centre for cattle has developed breeding programs for Simmental, Ukrainian Black-and-White and Red-and-White breeds in the farms of Eastern region of Ukraine. We develop mating plans for farms.

Breeding centre implements the system of computer recording on the farms for cattle. On the basis of the data of recording in these farms the central database of breeding animal was created.

Breeding centre of the Institute developed some National standards of Ukraine on genetic evaluation of dairy bulls using BLUP and system of organization of selection in order to harmonize Ukrainian legislation with European and international requirements.

We have fixed the Multitrait Animal Model for procedure of Genetic evaluation model of dairy cattle in National standards of Ukraine .

Breeding values of 247 sires were evaluated by progeny testing.

Dairy breeding centre of the Institute has developed the methods of early prediction of milk yield, milk fat, milk protein, fat yield, protein yield, reproductive efficiency, calving interval, live weight and other economic-useful traits of cows on the basis of indirect traits of heifers.

We use indices of body measurements, skin histology, selection, blood, reaction on the stress and live weight of heifers as indirect traits for the prediction.

We use procedures of multiple regression, discriminant analysis, general linear model and neural networks for creating of prediction model.

The best models for early prediction of milk yield have high effectiveness for 15% culling at early age according to the predicted milk yield of heifers. The difference between average milk yields of breeding and culled groups was significant and was about 1000 kg.

Laboratory of ecological monitoring of our Institute provides testing of milk, meat, food and others samples from the farms of the region for wide range of traits.

The laboratory has International and Ukrainian certificates of conformity to requirements.

Laboratory of ecological monitoring of the Institute provides testing of milk, meat, food and others samples from the farms of the region using equipment of Bentley Instruments for wide range of traits.

The Institute of Animal Science comprises 157 scientific workers including 20 doctors and 60 candidates of sciences.

The institute consists of 20 laboratories

The institute is the scientific center on technologies of animal product manufacture of Ukraine.

The institute collaborates with the scientific establishments of Ukraine, Russia, Belorussia, Poland, Slovenia, France and the USA.

The institute trains high-qualified personnel at the post-graduate and doctorate courses on the seven professions with the subsequent attestation.

Specialists of the breeding centre take part in work of attestation commission of Ministry of agrarian policy of Ukraine to consider materials of subjects of animal breeding.

Institute of Animal Science of NAASU permanently conducts workshops, training for specialists, competitions etc.

In 2009 there were two workshops: "Basic principles of dairy cattle breeding" and "Testing milk quality using modern instrumental methods", competition of reproduction technicians, training for regional and district specialists on problems of implementing advanced methods of selection. The Institute takes part in international and European scientific grants in animal production, agrarian and ecological areas.

Institute of Animal Science of National Academy of Agrarian Sciences of Ukraine propose a co-operation to all organizations in the areas of researches in breeding, technology, housing, feeding, physiology, ecological monitoring for a stock-raising.

We would like to take part in implementation of the international programs and grants in the animal science.

## 2.0 Conclusions

The Institute of animal Science of NAASU develops and implements modern methods of milk testing, recording, genetic evaluation of dairy cattle and early prediction of performance. This allowed to increase milk production of dairy cattle in Eastern region of Ukraine.