

Implementation of Developments of Institute of Animal Science in Dairy Cattle Breeding in Ukraine

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Breed composition of dairy and dual-purpose cows in Ukraine

Breed	Number of cows
Holstein	83 320
Lebedin	38 605
Simmental	292 460
Ukrainian Red-And-White dairy breed	385 410
Ukrainian Black-And-White dairy breed	1 167 131
Ukrainian Red dairy breed	40 276
Red steppe	395 552
Other	77 775
Total	2 519 707

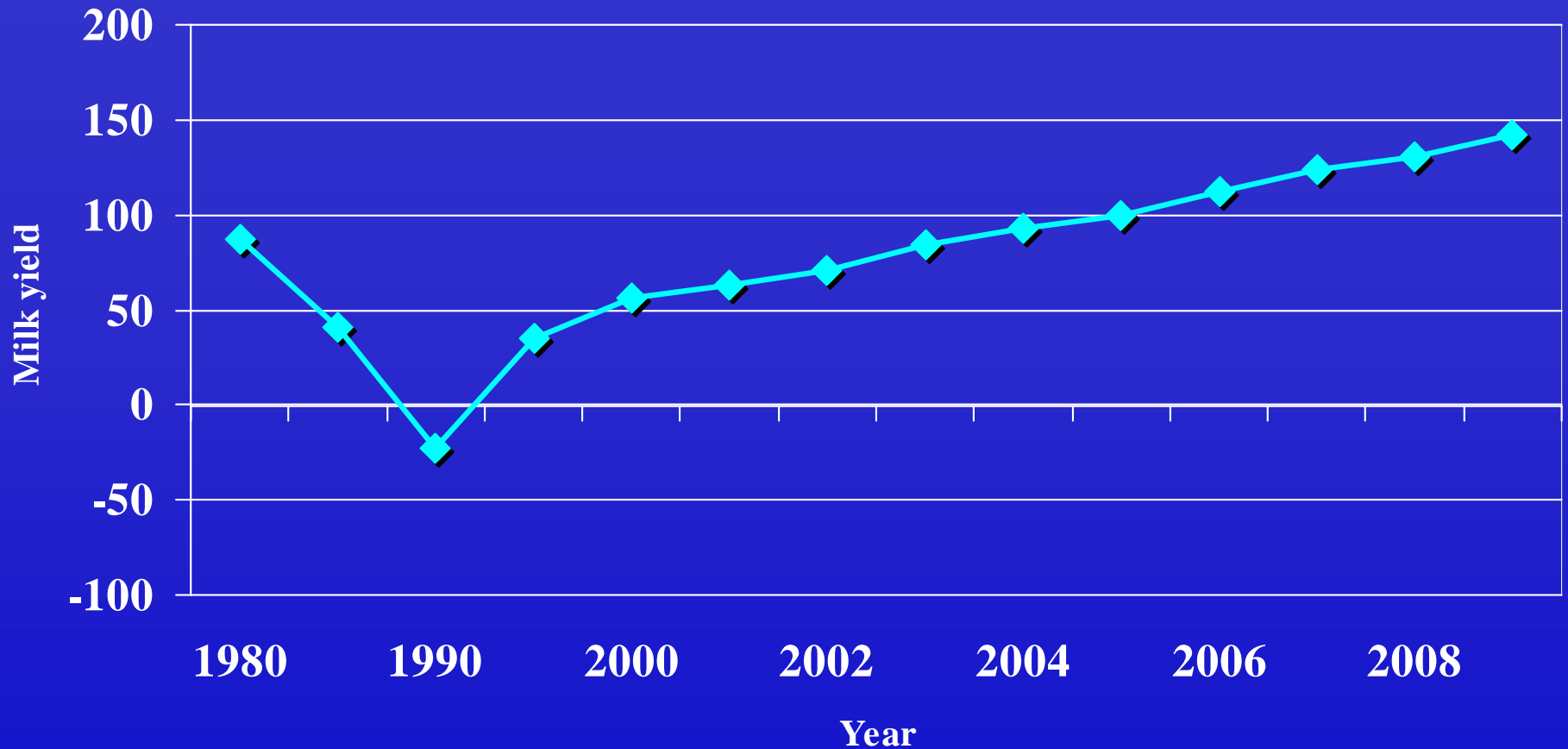
There are about two and half million cows in Ukraine.

Average milk yield of cows is about four thousand kilograms of milk per lactation.

We have seven basic dairy breeds.

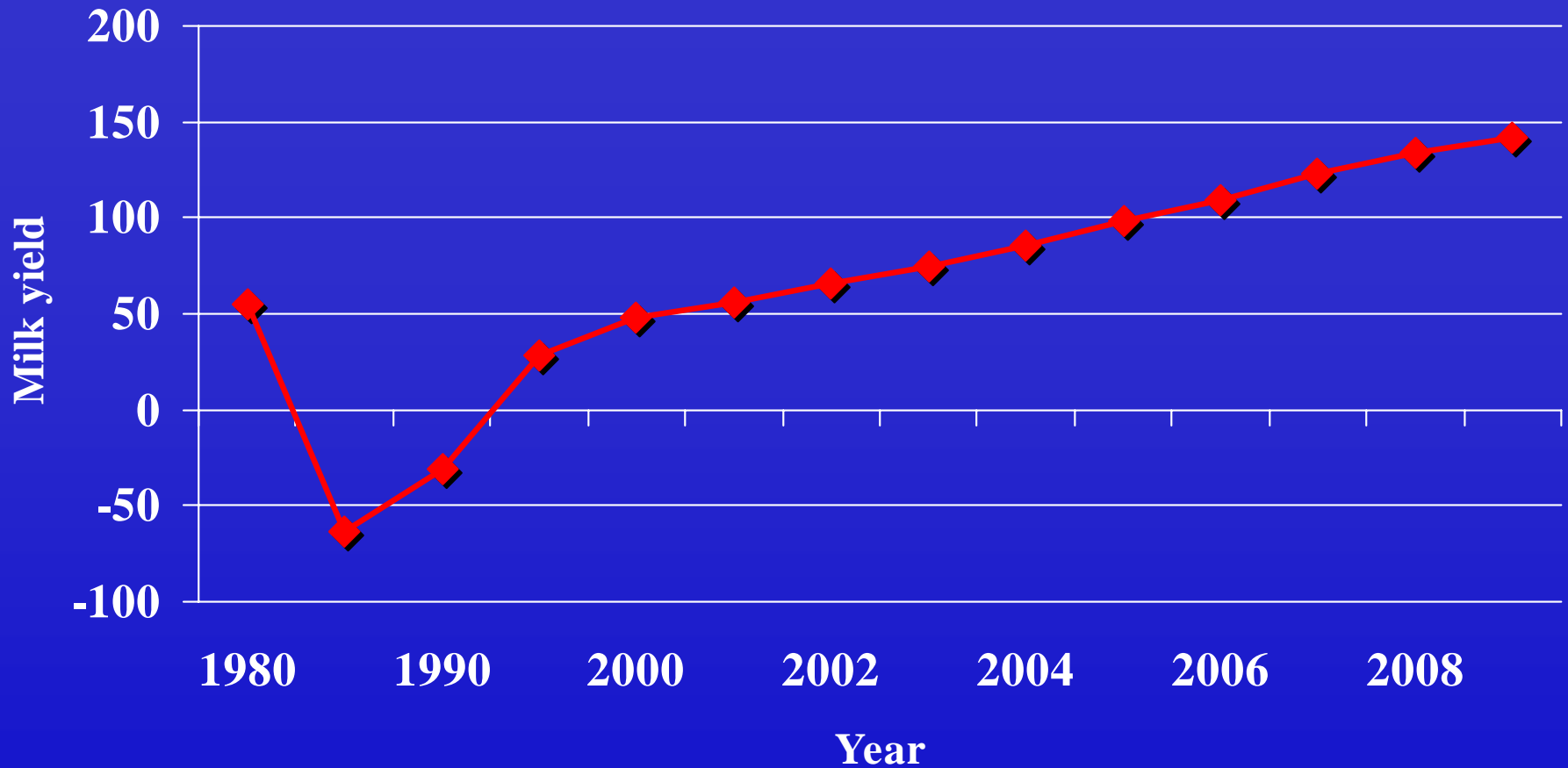
We used a crossing with Holstein and other foreign breeds for obtain Ukrainian breeds.

Genetic trend of milk yield of Ukrainian Red-And-White Dairy Breed



Genetic trends of milk yield of some Ukrainian breeds are shown on these slides.

Genetic trend of milk yield of Ukrainian Black-And-White Dairy Breed



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

**Institute of Animal Science of National Academy
of Agrarian Sciences of Ukraine is a breeding centre
for cattle, pigs, sheep, horses and rabbits**



UKRAINIAN ACADEMY
OF AGRARIAN SCIENCES
INSTITUTE OF
ANIMAL SCIENCE



The scientists of breeding centre for cattle.

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

Breeding centre of the Institute **developed some National standards** of Ukraine on:

- ✓genetic evaluation of dairy bulls using BLUP;
- ✓system of organization of dairy cattle selection.

The National standards developed in order to harmonize Ukrainian legislation with European and international requirements.

Genetic evaluation model (Multitrait Animal Model)

$$y_{ijk} = \mu + b_i + g_j + p_k + a_l + e_{ijk}$$

y_{ijk} – phenotypic value of traits (milk yield, fat yield, protein yield, reproductive efficiency (365*100%/calving interval);

μ – general mean;

b_i – fixed effect of i^{th} herd-year-season;

g_j – fixed effect of j^{th} age of a cow;

p_k – permanent environmental effect of k^{th} cow;

a_l – breeding value of l^{th} animal;

E_{ijk} – random residual effect.

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

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.



Managers of Laboratory of ecological monitoring

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

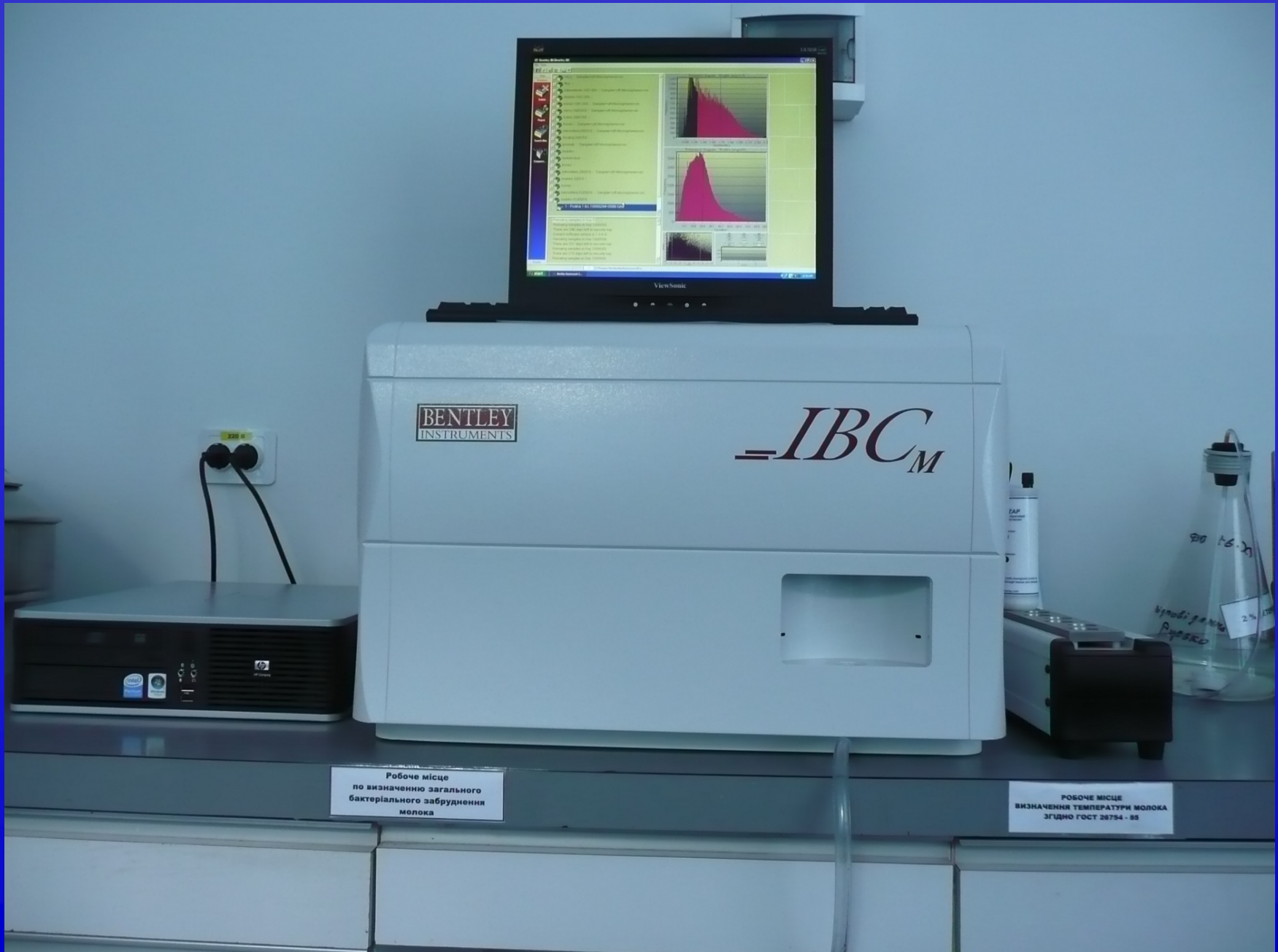


The equipment of laboratory (BENTLEY Instruments)



The laboratory provides **testing of milk samples** using equipment of Bentley Instruments for wide range of traits of milk qualities.

The equipment of laboratory (BENTLEY Instruments)



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.

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.

Thank you!

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