

CROP YIELD INCREASE

Grains and corn take a special place among the basic agricultural production, which guarantees food safety of Ukraine, the winter wheat in particular. Grain production and development of represent the state of the whole agricultural sector.

The first steps in the further development of grain farming are to become a precautions against crop yield decrease, provision of scientifically grounded system of crop farming with the primary set of factors to increase the soil fertility by means of crop rotation, soil fertilization systems and tillage, seed grow system, weed control, system of plant protection from pests and diseases, the introduction of progressive technology of grain crops growing.

Crop farming intensification and all tasks, connected with increase of its production, put high demands to biology as a science as for developing new methods and technologies of crops growing that would ensure the full and effective use of scientific potential for getting high and stable harvest.

Many scientists took the problems of to increasing of the agricultural production efficiency in the whole and winter wheat growing in particular, at the expense of improving cultivation technologies and application of yields programming methods consideration of. These are following scientists are Bondarenko M.F., Ivanov A.F., Kayumov N.K., Lysogorov S.D., Nov G.E., Makarenko P.M., Mushkin I.S., Nerpin S.V., Poluektov R.O., Sabluk P.T., Tominh H.H., Chudnovsky O.F., Shatilova I.S. and others.

In spite of the large number of research and numerous publications, the issue of crop yield programming and improving the winter wheat cultivation technology is still topic in the current economic conditions.

Active implementation practice of modern methods of a yield planning and yield management based on wide usage of precise quantitative estimates of production situations formed at the present time can be viewed the science and to a agricultural production as one of the main ways to increase the efficiency of the field crop cultivation and the whole agricultural production.

In order to realize the best experience gained by practitioners in the field crop cultivation and mainstream, carrying out scientifically grounded technological maps of crop growing. This can provide more rational usage of available material and labor resources in enterprises for getting programmable high yields. The scientific problem, which is widely known as harvests programming is devoted to solution of these tasks.

It is necessary to distinguish the conception of programming, planning and yields prognostication (or harvest).

Harvests programming is viewed as not only as their planning, but also operational management of practically feasible processes of crop growing in the processes of their development, i.e. efficient harvest process management.

The process of operational management of crop growing technology includes operational yields forecasting and managerial decision-making methods in order to supply prospected harvest, i.e. a pre-calculated (based on available resources and climatic conditions) of yield level in certain fields with predetermined area.

Consequently, forecasting yields is a necessary part of the operational process cultivation control.

A relatively large number of methodological materials are worked out for the harvest programming. These methodological materials can be of general plan as well as specific regions of the country. They are all based on the original provisions which were formulated by I.S. Shatilova.

* *Scientific leader – Pankova O.V., Ph.D.*

The basis for obtaining high yields is keeping to the requirements of basic laws and patterns of agriculture and crop production. The whole biological science is constructed on this, scientifically-based technological processes of certain crops cultivation, the theoretical basis of the agriculture intensification is identified, including modern methods of high yields programming.

The model of the harvest formation is determined for optimization of operational agrotechnical solutions based on detailed account of the crops and variety needs in the main living factors according to phases of development. Knowledge of the numerous details, processes taking place in the soil, the surface air and in the plant is necessary in constructing of it. In each of mentioned kinds of models the same processes must be reflected with varying degree of detail. The model of crop formation (the first two types of models are mainly used when the harvest is planed) may get interested in the process of operational crop yield management.

The development and introduction of the new methods of planning and operational management of the crop yield, which are known as «program crops», is one of the prospective areas of agriculture intensification.

At the same time, the recommendations specialized institutes, which are busy with harvest programming, practically come to the instructions concerning the amount of fertilizers and scheme of irrigation, which are necessary for the obtainment of the programmed yield, while keeping to the so-called «optimal technology of cultivation processes of agricultural crops». In other words, only the individual targets, are given. The implementation of theme can ensure the expected yield, i.e. without taking account possible deviations from optimal conditions while in use of growing crops. It is obviously, definite decisions should be taken to compensate deviations, not only before sowing and during the whole vegetative period and harvesting.

Reliable projections of the impacts on the crop yield, organizational-technological and biological factors, which will give the opportunity to take appropriate management decisions, are necessary for a qualitative problem-solving of crop yields programming. To obtain accurate yield forecasts is possible by means of systemic imitating mathematical models which make possible to reproduce the production processes. The conducted researches have confirmed the possibility of using the systemic imitating mathematical models for forecasting yields.



ZAYATS Y.O.*

***Petro Vasylenko Kharkiv National
Technical University of Agriculture***

THE WORLD EXPERIENCE OF BIOFUEL PRODUCTION

Stable and effective economic development of any state depends on its provision of fuel and energy resources. Ukraine imports up to 75 % natural gas and 85 % crude oil and oil products, which threatens the energy and national security of Ukraine.

A significant increase in energy consumption for the last time, encourages the search for alternative sources of energy. Alternative sources include renewable sources, which include the energy of sunlight, wind, seas, rivers, biomass, heat of the Earth, and secondary energy resources, there are constant or occur intermittently in the environment.

Bioenergy – an independent branch of a great power, it occupies a prominent place in world production of heat, electricity and new types of biofuels. The leading countries of the world pay much attention to renewable energy sources (RES), derived from plant material, including biodiesel. Bioenergy is one of the most promising components of renewable energy of Ukraine.

* *Scientific advisor – Kolpachenko N.M., assistant professor*