SYNTHESIS OF AROMATIC PROPARGYL PIPERIDOLS AND STUDYING OF THEIR GROWTHREGULATING ACTIVITY

Zhilkibaev[1] O. T, Shoinbekova[1] S.A., Kurmankulov[2] N.B.

[1]The Kazakh national university after al-Farabi, Almaty, Kazakhstan,
[2]The Institute of chemical sciences after A. Bekturov, Almaty, Kazakhstan
e-mail: zhilkibaevoral@mail.ru

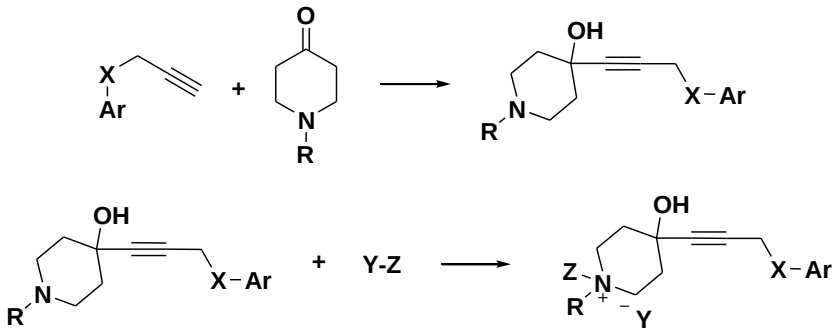
Kazakhstan traditionally occupies one of leading places on manufacture of grain crops. One of breakthrough and priority directions of scientific-technical and social-economic development of republic is development of agriculture (agrarian and industrial complex) which purpose is population maintenance with crop production, increase of competitiveness, food safety, increase in export of production. Because of environmental conditions and features of soil production the efficiency of grain in republic while still remains enough low, is characterized by instability and low competitiveness. Therefore the workings out connected with maintenance of a steady guaranteed crop of the major grain crops, are especially actual.

Perspective way of the decision of the given problem is the innovative approach which provides functioning of agrarian sector in the conditions of a manufacture intensification. It is the use of modern technologies, the information systems, capable to realize essentially new approaches to a solution of agrarian sector problems in conditions of resource-saving, the effective protection of plants against various diseases, insects-wreckers and weeds, selection of new varieties of plants, use of fertilizers. One more perspective way of productivity increase and improvement of production quality of plant cultivation recognizes application of natural or synthetic regulators of growth of plants. In the UIS countries and Kazakhstan, they practically are not used also working out of new effective synthetic phytoregulators – the analogues of phytohormones and studying of their influence on morphological and adaptogen indicators of plants growth are especially actual.

The work purpose is working out of methods of synthesis of highly effective growth regulators of plants (analogues of natural phytohormones) on the basis of aromatic propargyl piperidols, reception of their water-soluble forms, and also carrying out of laboratory screening on growth regulating activity concerning wheat seeds.

Objects of research: synthesised water-soluble aromatic propargyl piperidols under code numbers ZhOT-1 - ZhOT -12; winter wheat of 4 grades: «Steklovidnaja-24 P-2», «Almaly super-elite», «Naz P-2», «Bogarnaja-56 P-2» and grade spring wheat «Kaz-10 super-elite». As control used: tap water, phytohormones - indolyl-3-acetic acid (ИУК) «Sigma», 6-Benzilaminopurin (BAP) «Sigma».

Using techniques of thin organic and combinatory synthesis, a variation of an aromatic radical (naphthyl- of piperidine rings of the agent (hydrochloric acid, methyl iodide, succinic acid) has been synthesized new derivatives of acetylene aminoalcohols.



Studying of their influence on growth of different grades of wheat has shown that many of them possess growth regulating activity. It is established that biometric parameters of plants at preliminary 6 hour soaking above, than at the plants which have been grown up directly in a solution of the same concentration, in 0,0001 % solutions indicators were maximum, i.e. it is optimum. Screening on wheat seeds selects three compounds (activity above standards on 30 %) for the further profound tests for increase of productivity, stability to a drought, acceleration of growth and wheat development. Efficiency of developed substances is defined by their low dose of application - 0,0001 % on operating substance or 1 g on 1 ton of water.

Researches are spent with support of the Grant of KN MES RK №924 from 3/2/2012 (№Gov. Registration 0112PK00750).