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CURRENT STATUS OF MAIZE PRODUCTION FOR GRAIN AND FUTURE PROSPECTS

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Maize is one of the most important crops worldwide with an annual cultivation area of more than 150million hectares and an annual harvest of almost800 million tonnes of grain (FAOSTAT 2007). The annual total yield was 48.5 million tonnes of grain. Yield and quality of maize (as for other crops) are at risk by animal pests, weeds and pathogens. During the last 50 years, agricultural production has been increased dramatically because of the availability of high yielding varieties and synthetic fertilizers. However, the increased use of pesticides in agriculture resulted in adverse effects on human and animal health, environmental pollution (water and soil), and side effects on beneficial organisms including pollinators, decomposers and natural enemies [1].

Integrated production is a farming system that produces high quality food and other products while preserving and improving soil fertility and a diversified environment as well as respecting ethical and social criteria [2]. Biological, technical and chemical methods are balanced carefully to minimize polluting inputs and to secure sustainable, yet profitable farming. Within this context, integrated pest management (IPM) promotes the use of different techniques in combination to control pests efficiently, with an emphasis on methods that are least harmful to the environment and most specific to the particular pest. A set of decision rules is used to identify the need for and selection of appropriate control actions that provide economic benefit to farmers and the society while keeping chemical control of pests to a minimum.

A common set of weeds, arthropod pests and fungal diseases are responsible for the main problems in most regions, even though some differences exist particularly between the northern and southern regions. Pesticides are currently the most common method to control weeds, arthropod pests and fungal diseases in maize production. Nevertheless, several weeds and arthropod pests cause increasing problems, while decreases were reported only rarely (diseases remained fairly stable). With the continuously high or even increasing traffic of humans and commodities, new introductions and the spread of arthropod pests, diseases, and to a lesser extent weeds, is likely to cause more problems in the future. In addition, warmer climatic conditions may lead to a further expansion of pest population boundaries. This illustrates that the goal of reducing pesticide applications is a big challenge [3].

Options to reduce the input of pesticides into the maize agro-ecosystem include the choice of varieties, cultural control measures, biological control, the optimization of application techniques of pesticides and the development of more specific and less toxic treatments. While some strategies need further development or more field research to become agricultural practice, other methods have already proven to work under commercial conditions. This includes mechanical weed control, biological corn borer control, or the use of genetically modified maize varieties [4]. However, restrictions in availability, organization, and education and knowledge, need to be overcome before

environmentally friendly pest control strategies can replace pesticides in an economically competitive way. The presence of several problems that need to be tackled simultaneously indicates the need for IPM approaches, which combine the most efficient environmentally friendly methods to maintain the ecological balance of the cropping system. The fact that different control strategies, in particular cultural methods, may interfere with each other demonstrates that pest control needs to be seen in the context of the whole cropping system (including other crops in the rotation) and on a regional scale [5]. If the cropping system comprises several crops and is able to counteract unfavorable conditions, pest control failures in one crop with one specific method become less important. While short-term consequences may be limited to the reduction of pesticide doses and the suspension of some harmful active ingredients, better education and training of advisors and farmers may lead to a more balanced, sustainable and truly integrated production in the long term. The compilation and analyses of pest problems, pesticide input and alternative options and restrictions provided in this study should provide a good basis for further discussion and development of advanced crop protection strategies with reduced input of chemical pesticides in maize production.

In Kazakhstan, the corn is grown in the southern regions of the country, and in the northern regions, particularly, corn is not cultivated. Practically the technology of corn growing for grain has not studied yet. Therefore, manufacturing experience in the cultivation of corn for grain will be first laid under conditions of LLP "Yesil-Agro" in Burabay district of Akmola region. Moreover, in recent years the number of different pests has increased in Akmola region. To struggle with them it is necessary to conduct full and efficient assessment of maize varieties cultivated on grain and to recommend technology of cultivation of corn. The species composition of pests will be determined and recommendations on measures of struggling with them will be given.

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