

INSTITUTE OF PLANT PRODUCTION
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1. The study and the utilization of collections of maize.

The compilation and study of the world collections of maize is the subject of the work of a collective of scientific workers of the institute. This is considered to be of primary importance, because its aim is the evaluation of the economic, botanical, genetic, and morphological characters and properties of *Zea mays* L. with regard to their further utilization in theoretical and applied research, in practical growing, and in plant production in general. For this reason we evaluate on microparcelles the various forms of maize, for which, in the course of one vegetation cycle, we determine 74 indices by means of mechanical and chemical analyses. The sum total of these factors enables us to arrive at conclusions regarding the width of the genetic basis of each form and regarding its adaptability to the conditions existing in this country. Through the determination of the biometric values of the plant organs and of the curves of growth in the various stages of growth, we obtain bases for the calculation of the correlative relations and their mutual effects on the heredity of characters and properties. As our collections of maize are comparatively wide, especially as regards the representation of the various varieties and forms, we are able to draw conclusions regarding the utilization of the favourable properties and characters characterizing each variety or form for the conditions existing in this country. The territory of this country comprises habitats of maize, which differ from one another substantially both geographically and climatically. For this reason special investigation of world collections of maize with regard to the factors of frost resistance, chemical composition, earliness, etc. are of far-reaching significance.

This work also includes the collecting of regional varieties and populations of maize growing on the territory of this country. This enables us to form a real picture of the botanical variability of maize in this country, to obtain valuable starting material for the growing of lines that would be suitable for the conditions of this country, and to obtain indices for the integration of hybrids in the various regions, especially in marginal ones. By means of the above mentioned collecting we obtain a survey of the historical penetration of the various varieties into the territory of this country in the course of their spreading in Europe.

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