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# Reintroduction of primary forms of wheat - Indian dwarf wheat and Persian wheat with increased nutritional value

Statement of the Problem: The need for a balanced supply of food with a high nutritional value is the biggest stimulus that leads to increased interest in the primary forms of wheat. The domestication of wheat and further breeding resulted in the production of high-yielding cereal species and cultivars, but this was not accompanied by an improvement in the nutritional value of the grain. The cultivation of primary wheat forms gives a chance to obtain consumption grain with a higher content of biologically active components than in the common wheat. The purpose of this study was to develop technologies for the cultivation of primary forms of Indian dwarf wheat (Triticum sphaerococcum Perc.), and Persian wheat (Triticum persicum Vav.) in a low-cost integrated and organic cropping system. Methodology: The research was based on multiyear field experiments (2018-2020) located in three voivodeships, Poland. We assessed the influence of sowing density (400, 500, and 600 grains $m^{-2}$), tillage and sowing methods (plowing, shallow tillage and strip-till), and nitrogen fertilization rates (0, 20, 40, 60 kg $ha^{-1}$) on grain yield and yield components. Findings & Conclusions: Indian dwarf wheat and Persian wheat are suitable for organic and integrated low-input cultivation. Growing primary wheats in an integrated system should include simplified methods of soil tillage instead of plowing. In organic farming it is possible to abandon plowing in favor of shallow tillage only when there is little weed infestation with perennial weeds. Regardless of the farming system, Indian dwarf wheat should be sown at a density of 600 grains per $m^2$. Persian wheat sowing density should be lower in organic system than in the integrated farming system. With an average grain yield, it is sufficient to use low doses of nitrogen: 40 kg $ha^{-1}$ for Indian dwarf wheat and 20 kg $ha^{-1}$ for Persian wheat.

## Biography

Małgorzata Szczepanek (PhD, Eng.) is employed as Assoc. Prof. at the Department of Agronomy, UTP University of Science and Technology in Bydgoszcz, Poland. She focuses on the development of innovations, scientific research, popularization of knowledge as well as academic education in the field of agricultural sciences. She has worked in the following research areas: field crops, vegetables, sustainable agriculture, cropping system, seed production, biostimulants, nutrient management, crop quality, crop storage. She is the author of more than 100 research articles and conference proceedings. She has also delivered speeches at international conferences. She is a breeder of wheat cultivars and a co-creator of patents. She has been the manager of scientific projects co-financed by EU funds. She was a member of scientific and organizational committees of international conferences (Singapore, South Korea, Turkey). She is a member of the Editorial Board in Agronomy Basel (Q1, IF 2.603).