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LOW-INPUT AGRICULTURE AS A CHANCE TO PRESERVE ENDANGERED SPECIES OF SEGETAL FLORA

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Fig. 5. *Agrostemma githago* L.

Fig. 6. *Stachys annua* (L.) L.

As a result of human activity, the rate of extinction of species is now 100 to 1000 times faster than under natural conditions. According to the FAO, 75% of the genetic diversity of agricultural crops worldwide has been lost since 1990. In Poland, about 100 species of field weeds are in danger of extinction. Archaeophytes growing on heavy calcareous soils, which are characteristic of the *Lathyro-Melandrietum noctiflori*, *Caucalido-Scandicetum*, *Kicxietum spuriae* communities, and weeds associated with the cultivation of flax are particularly endangered. Halting the loss of rural biodiversity is a priority for the EU's protection of environmental strategy.

MATERIALS AND METHODS

Research aimed at assessing the weed infestation status of agrophytocoenoses located on rendzinas in the Lublin region has been conducted since 1997. The research area is presented in Fig. 1. The research was carried out using the Braun-Blanquet phytosociological method. Based on the phytosociological records, the constancy degrees (S) of species recognized as rare and endangered were calculated.

RESULTS AND DISSCUSION

Lublin Province is located in the south-eastern part of Poland (Fig. 1). There are good conditions for agricultural production. Agricultural area covers 59,7% of total area of voivodeship (Tab. 1), of which 99.3% is agricultural land in good farming standard. In addition, there is high employment in the agricultural sector in this region. 36% more people are employed in the Lublin region compared to the national average. In such favorable environmental conditions, agriculture in the Lublin region is characterized by an unfavorable structure of farms, because over 51% of farms are those with an area not exceeding 5 ha (Fig. 2). Such a large fragmentation of farms results in a low profitability of the agricultural sector, which results from extensive farming.

Research has shown that low-input agriculture is conducive to the preservation of rare and endangered species of segetal flora (Tab. 2). *Muscari comosum* — a critically endangered (ER) species under strict protection were found on several sites in the study area. Several sites of *Caucalis platycarpos* and *Galium tricornutum*, also recognized as ERs, were found in heavy rendzinas.

Research on the state of the population of rare species is a big challenge for scientists, because only knowledge about it will provide the basis for future relevant actions aimed at maintaining biodiversity and restoring degraded ecosystems.

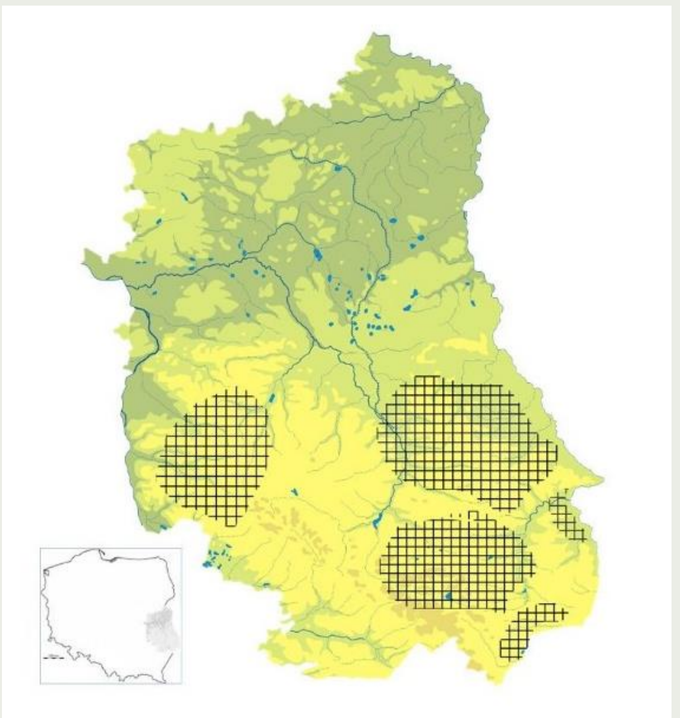

Fig. 1. The research area in the Lublin region

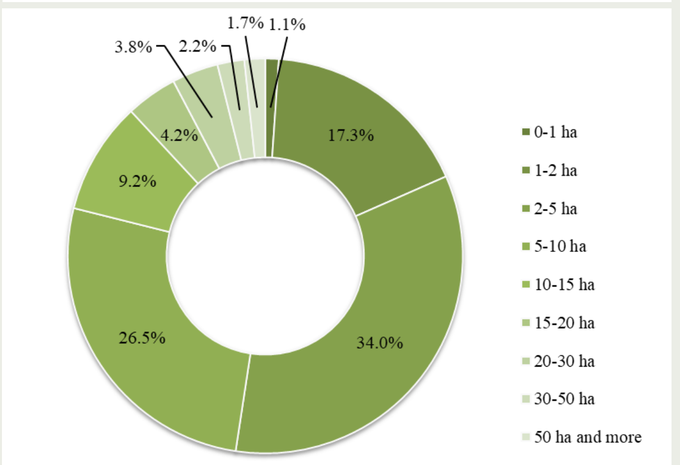

Fig. 2. Structure of agricultural holdings with agricultural land by area groups of agricultural land in Lublin region

Tab. 1. Selected rate of sustainable agriculture in Poland and Lublin region in 2018 [https://stat.gov.pl/en]

Rate		Poland	Lublin region	
			Value	in relation to the country (Poland = 100)
Agriculture area in thousand ha		14,689.5	1,454.1	9.9
Fallow land area in thousand ha		157.1	20.2	12.9
Number of organic farms	Certified	15.353	1,659	10.8
	Under conversion	3,284	292	8.9
Sown area in thousand ha	Total	10,897.7	1,121.7	10.3
	Basic cereals with cereal mixed	7,132.6	779	10.9
	Potatoes	308.2	18.5	6.0
	Sugar beets	240.8	37.8	15.7
	Rape and turnip rape	875.2	114.9	13.1
Employed persons in agriculture per 100 ha of agricultural land		15.9	21.6	136.0
Utilised agricultural area under integrated farm management		22,119	1,628	7.4

Fig. 3. *Muscari comosum* (L.) Mill.

Fig. 4. *Anagallis foemina* Mill.

Tab. 2. Degrees of constancy (S) of rare weed species of segetal habitats in 2016 –2020 (original data), 1997–2003 and 2005–2015 (Staniak et al.) and in the Lublin region

Species	2016-2020	2005–2015	1997–2003
Adonis aestivalis L.	I	I	I
Agrostemma githago L. (Fig. 5)	I	I	I
Anagallis foemina Mill. (Fig. 4)	I	II	I
Anthemis tinctoria L.	I	I	I
Camelina sativa (L.) Crantz	I	I	I
Caucalis platycarpos L.	I	I	I
Chaenorhinum minus (L.) Lange	II	II	I
Euphorbia exigua L.	II	II	I
Fumaria vaillantii Loisel.	II	III	II
Galium tricornutum L.	I	I	I
Lathyrus tuberosus L.	II	II	II
Muscari comosum (L.) Mill. (Fig. 3)	II	I	I
Neslia paniculata (L.) Desv.	II	II	II
Sherardia arvensis L.	I	II	I
Stachys annua (L.) L. (Fig. 6)	I	I	I
Thlaspi perfoliatum L.	I	I	I
Thymelaea passerina (L.) Coss. & Germ.	I	I	I
Valerianella dentata (L.) Pollich	I	I	I
Veronica agrestis L.	I	I	I
Veronica polita Fr.	I	I	I

References: Staniak, M.; Haliniarz, M.; Kwiecińska-Poppe, E.; Harasim, E.; Wesołowski, M. Diversity of agrocoenoses in the Lublin region, Poland. Acta Agrobot. 2017, 70, 1722.