Historic Iris Preservation Society most modern tall bearded irises descended from 'Amas', an early tetraploid collected by Sir Michael Foster in 1885 in Turkey (Historic Iris Preservation Society). In this sense, the "nameless" old genotypes identified by Blažek (2016) in Romania could be of great interest for breeding ornamental irises, specially disease resistant ones. Although most cultivars sold today as garden plants are the known breaded hybrids some species might present interest too. *Iris pontica*, also found in Romania, was once considered to have great potential as a rockery plant (White *et al*., 1997).

Today bearded garden irises can present flowers with various colors displayed in a variety of ways, and is one of the main characteristic that distinguishes them. Most pigmentation of the flower is in the upper and lower epidermal cells. The water-soluble violet, blue, maroon, and cardinal red anthocyanin pigments are in the central fluid vacuoles. The lipid soluble yellow xanthophyll and carotenes as well as pink, red, and orange lycopene pigments are in the cytoplasm (Spoon, 2011).

Besides the one-colored flowers called Self-type, there are several others. The IA gene by inhibiting anthocyanin pigments in standards, style arms, and falls is responsible for most white, yellow, pink, and orange in single colored flowers. One dominant dose can remove most of the anthocyanin. Amoena flower type presents white standards and colored falls and it had as starting base the species *Iris reichenbachii* and two TB cultivars. Due to dosage effect, four doses of dominant (IAs) leads to obtaining an Amoena with no anthocyanin in the standards while four doses of recessive (ias) gives an anthocyanin Self type flower. The Bicolor type flower presents standards and falls of different colors. The Bitone type flowers present different shades of the same color on their falls and standards, Blend type flowers present a combination of different colors. There are also other types of flowers like Luminata, Neglecta, Plicata, Glaciata, Zonal and Variegata type flowers (Beresford-Kroeger, 2004; Cundy *et* Bartlett, 2007; Spoon, 2011; Norris 2012; Historic Iris Preservation Society).

The emblematic blue and purple flowers rich in anthocyanins remain the preferred colors for iris lovers to this day, from fine blue-violet to nearly black. Also, a very sought color in *Iris* is red, which preoccupied many breeders (Norris, 2012). In many cases the carotenoids and not the anthocyanins, are responsible for red and orange hues of *Iris* flowers (Lim, 2016). It is acknowledged that it is a challenge to obtain a cultivar with intensely red spectrum. Pink, peach, red, yellow-orange, and orange in *Iris* are produced by the carotenoid pigment, lycopene. The recessive allele (t) for lycopene expression in four doses (tttt) produces the "tangerine factor"

(Spoon, 2011). Many widespread iris cultivars display orange, white and yellow colors. Pink was the second color after yellow that triggered the interest of breeders in the XXth-century. To less interest were green flowers. Most black iris cultivars that have reached the highest point in 1990, have arisen from crosses between dark purple and blue cultivars, and *Iris aphylla* (figure 1) is credited with the intensifying pigmentation of today black iris cultivars (Norris, 2012).

Fig.1. *Iris aphylla* in Botanical Garden of UASVM Cluj-Napoca (2017)

Variegated foliage admired most notably in certain cultivars of *Iris pallida* and *Iris pseudacorus* (Ondra, 2007), is controlled both by cytoplasmic genes of the chloroplasts and modifying genes in the chromosomes that give a dosage effect, as a result only 5 to 10 % of the seedlings have variegated foliage. Allan Ensminger worked many years to obtain irises with variegated flowers and foliage with some degree of success (Spoon, 2011).

CONCLUSIONS

Most irises cultivated today are tetraploids and modern traits of flowers are caused by recessive genes.

The efforts of hybridizers in past decades are remarkable especially since to obtain the expressing of recessive traits in

tetraploids is much harder compared to diploids. However, some recent authors and hybridizers have thrown a shadow of doubt on the old trend of breeding for exacerbated increased number and size of flowers in new cultivars at the cost of the elegance of wild flower, that now tend to meet also practical difficulties for plants in opening their blooms during raining weather and their proneness to rot. Also, the rebloomers having lost the wild type dominant traits are susceptible to pests, lack of vigor, sensitivity to drought and need special care. It might seem that wild traits could still be helpful in breeding more resilient garden irises today, with more graceful lines too.

Several autochthonous iris species have a decreasing trend of their populations, as it was acknowledged by many authors and IUCN, indicating the need for sustained conservation efforts.

Species that had a contribution in obtaining some ornamental classes of irises can still be found in Romanian flora and could be used in plant breeding.

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