

Gregor: Apomicts in the Vegetation of Central Europe

Appendix S1. Central European taxa where seeds are to a large part produced by apomixis.

Anhang S1. Mitteleuropäische Taxa, bei denen Samen zu einem großen Teil durch Apomixis produziert werden.

AS^{AP} = apospory (autonomous/pseudogamous).

DS^{AP} = diplospory (autonomous/pseudogamous).

NE^A = nucellar embryony (autonomous).

A^{AP} = apospory or diplospory (autonomous/pseudogamous).

A = apospory or diplospory.

Taxon	Apomixis type	References
<i>Alchemilla</i>	A ^A	MURBECK (1897, 1901), STRASBURGER (1905), IZMAÏLOW (1986, 1994)
<i>Bothriochloa ischoemum</i>	AS ^P	BROWN & EMERY (1957), CELARIER & HARLAN (1957), MA & HUANG (2007)
<i>Callitriche palustris</i> s.str.	A ^A	SCHOTSMAN (1954)
<i>Calamagrostis phragmitoides</i>	DS ^A	NYGREN (1946, 1949)
<i>Calamagrostis rivalis</i>	DS(?) ^A	CONERT (1989)
<i>Chondrilla juncea</i>	DS ^A	ROSENBERG (1912), PODDUBNAJA-ARNOLDI (1933), BERGMAN (1950), BATTAGLIA (1949)
<i>Cotoneaster</i>	A ^{A(+P?)}	SAX (1954), HJELMQVIST (1962), HYLMÖ & FRYER (1999), PLOOMPUI (1999), BARTISH et al. (2001), NYBOM & BARTISH (2007), FRYER & HYLMÖ (2009). – All naturalized tri- and tetraploid taxa, e.g. <i>C. acutifolius</i> Turczaninov, <i>C. ambiguus</i> Rehder & E. H. Wilson, <i>C. dielsianus</i> , <i>C. divaricatus</i> , <i>C. moupinensis</i> Franchet.
<i>Crataegus macrocarpa</i>	A	PTAK (1989)
<i>Erigeron annuus</i> s.l. (incl. <i>Erigeron annuus</i> subsp. <i>strigosus</i>)	DS ^A	HOLMGREN (1919), TAHARA (1921), FAGERLIND (1947), NOYES (2000, 2007), FREY et al. (2003)
<i>Erigeron karvinskianus</i>	DS ^A	FAGERLIND (1947), BATTAGLIA (1950)
<i>Euphorbia dulcis</i> s.l.	NE ^A	HEGELMAIER (1903), CARANO (1926)
<i>Festuca gigantea</i>	A ^P	SHISHKINSKAYA (1983), MATZK (1991)
<i>Hieracium</i> subgen. <i>Hieracium</i> – except <i>H. intybaceum</i> , <i>H. umbellatum</i> , <i>H. porrifolium</i>	DS ^A	MURBECK (1904), OSTENFELD & RAUNKJÆR (1903), OSTENFELD (1906), SKALIŃSKA (1962). – Diploids are sexual, tri- and tetraploids are apomictic. <i>H. umbellatum</i> (OSTENFELD 1906), <i>H. intybaceum</i> (FAVARGER 1997), and <i>H. porrifolium</i> (FAVARGER 1965; SCHUHWERK 2010) are sexual. SCHUHWERK (2010) found a diploid <i>H. valdepilosum</i> beneath tri- and tetraploid plants.
<i>Hieracium</i> subgen. <i>Pilosella</i> – except <i>H. echioides</i> , <i>H. hoppeanum</i> , <i>H. lactucella</i> , <i>H. onegense</i> , <i>H. peleterianum</i>	AP ^A	MENDEL (1870), OSTENFELD (1904, 1906), ROSENBERG (1906), CHRISTOFF (1942a). – Diploids are sexual. Triploids are apomictic or sterile. Tetraploids and hexaploids are sexual or apomictic. Pentaploids are mostly apomictic (SKALIŃSKA 1971; GADELLA 1991; KRAHULEC et al. 2004; KRAHULCOVÁ & KRAHULEC 1999; KRAHULCOVÁ et al. 2000, 2001; ROTREKLOVÁ 2004; ROTREKLOVÁ et al. 2002, 2005; MRÁZ et al. 2008). In <i>H. cymosum</i> the prevailing pentaploids are facultative apomictic (KASHIN & CHERNISHOVA 1997); sexual diploids are known from the Czech Republic and Germany (see ROTREKLOVÁ et al. 2005). <i>H. echioides</i> (ROTREKLOVÁ et al. 2002), <i>H. hoppeanum</i> (SCHUHWERK & LIPPERT 1997), <i>H. lactucella</i> (ROTREKLOVÁ et al. 2002), <i>H. onegense</i> (SKALIŃSKA & KUBIEŇ 1972), and <i>H. peleterianum</i> (SCHUHWERK & LIPPERT 1997) are sexual.
<i>Hierochloë hirta</i>	A	WEIMARCK (1971, 1986)
<i>Hierochloë odorata</i>	A	WEIMARCK (1967)
<i>Hypericum desetangsii</i>	A ^P	LIHOVÁ et al. (2000), MATZK et al. (2003)
<i>Hypericum dubium</i>	A ^P	MATZK et al. (2003), MÁRTONFI (2008)
<i>Hypericum perforatum</i>	AS ^{(A)P}	FAHRENHOLTZ (1927), NOACK (1939), MATZK et al. (2000, 2001), PANK et al. (2003)
<i>Nardus stricta</i>	DS ^A	DE COULON (1923), RYCHLEWSKI (1961)
<i>Nigritella archiducis-joannis</i> Teppner & E. Klein	NE ^A	TEPPNER & KLEIN (1985a)

Taxon	Apomixis type	References
<i>Nigritella bicolor</i> W. Foelsche	NE	FOELSCH (2010)
<i>Nigritella buschmanniae</i> Teppner & T. Ster	NE ^A	TEPPNER & STER (1996)
<i>Nigritella dolomitensis</i>	NE ^A	TEPPNER & KLEIN (1998)
<i>Nigritella hygrophila</i> W. Foelsche & Heidtke	NE	FOELSCH & HEIDTKE (2011)
<i>N. miniata</i>	NE ^A	TEPPNER & KLEIN (1985a)
<i>Nigritella minor</i> W. Foelsche & Zernig	NE	FOELSCH & ZERNIG (2007)
<i>Nigritella nigra</i> subsp. <i>austriaca</i>	NE ^A	TEPPNER & KLEIN (1990)
<i>N. stiriaca</i> (K. Rech.) Teppner & E. Klein	NE ^A	TEPPNER & KLEIN (1985a)
<i>Nigritella widderi</i>	NE ^A	TEPPNER & KLEIN (1985b)
<i>Poa alpina</i>	DS ^P	MÜNTZING (1933, 1940), HÅKANSSON (1943), MATZK et al. (2000), KELLEY et al. (2009)
<i>Poa compressa</i>	AS ^P	CHRISTOFF (1942b), NYGREN (1954), MATZK (1991), KELLEY et al. (2009)
<i>Poa glauca</i>	DS ^P	NYGREN (1954), KELLEY et al. (2009)
<i>Poa granitica</i>	AS ^P	SKALIŃSKA (1959)
<i>Poa nemoralis</i>	DS ^P	MATZK et al. (2000), KELLEY et al. (2009)
<i>Poa palustris</i>	DS ^P	KIELLANDER (1935, 1937), KELLEY et al. (2009)
<i>Poa pratensis</i> s.l. (incl. <i>P. angustifolia</i> and <i>P. humilis</i>)	AS ^P	MÜNTZING (1933), ÅKERBERG (1936, 1939), MATZK (1991), MATZK et al. (2000), KELLEY et al. (2009)
<i>Potentilla argentea</i>	A ^P	MÜNTZING (1928), POPOFF (1935), GENTCHEFF & GUSTAFSSON (1940), MÜNTZING & MÜNTZING (1941), HÅKANSSON (1946), HOLM & GHATNEKAR (1996)
<i>Potentilla cinerea</i> s.l. × <i>verna</i> (incl. all hybridogenous taxa of this combination)	A ^P	RUTISHAUSER (1943), DOBEŠ & VITEK (2000) – Plants with five or more sets of chromosomes are apomictic.
<i>Potentilla collina</i> s.l.	A ^P	MÜNTZING (1928, 1958), GENTCHEFF & GUSTAFSSON (1940), HÅKANSSON (1946), RUTISHAUSER (1940, 1943)
<i>Potentilla inclinata</i>	A ^P	RUTISHAUSER (1943)
<i>Potentilla intermedia</i>	A ^P	ASKER (1970)
<i>Potentilla nivea</i>	A	ERIKSEN & FREDRIKSON (2000), NYLÉHN et al. (2003)
<i>Potentilla norvegica</i>	A ^P	ASKER (1970)
<i>Potentilla recta</i>	A	POPOFF (1935), CHRISTOFF & PAPASOVA (1943)
<i>Potentilla verna</i>	A ^P	MÜNTZING (1928), RUTISHAUSER (1943), HÅKANSSON (1946), SMITH (1963)
<i>Ranunculus auricomus</i> s.l. – except <i>R. cassubiciifolius</i> , <i>R. notabilis</i> Hörandl & Guterm.	AS ^P	ROZANOVA (1932), SØRENSEN (1938), HÄFLIGER (1943), RUTISHAUSER (1954), IZMAIŁOW (1976), HÖRANDL et al. (2000)
<i>Ranunculus kuepferi</i>	AS ^{A+P}	VUILLE & KÜPFER 1985, HUBER 1988, HÖRANDL et al. 2008, BURNIER et al. 2009, COSENDAL & HÖRANDL 2010,
<i>Ranunculus parnassifolius</i> subsp. <i>heterocarpus</i>	AS	HUBER (1988), VUILLE & KÜPFER (1985)
<i>Rubus</i> subgen. <i>Rubus</i> – except the diploid taxa <i>R. canescens</i> , <i>R. incanescens</i> , <i>R. ulmifolius</i>	A ^P	FOCKE (1877), GUSTAFSSON (1930, 1942, 1943), THOMAS (1940), BERGER (1953), KOLLMANN et al. (2000: degree of sexuality), ŠARHANOVÁ et al. (2012)
<i>Sorbus intermedia</i>	A ^P	HEDLUND (1948), LILJEFORS (1953)

Taxon	Apomixis type	References
<i>Sorbus</i> subgen. <i>Aria</i> Pers. × subgen. <i>Chamaemespilus</i> (Medik.) K. Koch – all hybridogenous taxa	A	JANKUN & KOVANDA (1986), JANKUN (1993)
<i>Sorbus</i> subgen. <i>Aria</i> Pers. × subgen. <i>Sorbus</i> L. – all hybridogenous taxa	A	LILJEFORS (1934, 1953), JANKUN (1993)
<i>Sorbus</i> subgen. <i>Aria</i> Pers. × subgen. <i>Torminaria</i> (DC.) K. Koch – all hybridogenous taxa	A ^P	JANKUN & KOVANDA (1987, 1988), JANKUN (1993)
<i>Taraxacum</i> – except <i>T. bessarabicum</i> , <i>T. erythrospermum</i> , <i>T. pienicum</i> , <i>T. serotinum</i>	DS ^A	RAUNKJÆR (1903), MURBECK (1904), MAŁECKA (1962a: sexuality in <i>T. pienicum</i>), MAŁECKA (1962b, 1967), DEN NIJS & STERK (1980)

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