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Pyrus × *myloslavensis* (*P. communis* L. × *P. salicifolia* Pall.) – a new spontaneous pear hybrid

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Abstract: The paper describes a new taxon: *Pyrus* × *myloslavensis*, i.e. a spontaneous hybrid between *P. communis* (Common Pear) and *P. salicifolia* (Willowleaf Pear), found near Miłosław town (Wielkopolska province, West Poland). No such hybrid has been reported in the literature so far. *P.* × *myloslavensis* has elliptic leaves, 1.1–7.6 cm long and 1.0–2.9 cm wide, margin entire, near the apex shallowly and remotely serrate, shortly acute, silvery tomentose on both sides. Fruit of the hybrid is relatively large (mean weight 56.2 g), green-yellow, without rust-coloured patches and blush.

Additional key words: *Pyrus communis, Pyrus salicifolia, Pyrus* hybrid, *Pyrus* × *myloslavensis*, taxonomy

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Introduction

In Poland, in the wild, the most common is Wild Pear *Pyrus pyraster* (L.) Burgsd. and its frequent hybrids with the cultivated European Pear *P. communis* L. (= *P. domestica* Med.), termed *P.* × *amphigenea* Domin ex Dostálek. During floristic field research in 2001, in the village of Nowa Wieś Podgórna (Fig. 1) near the road to Pyzdry (West Poland), we found a pear tree that clearly differed from the above-mentioned taxa. It is characterized by narrowly elliptic, tomentose leaves, and relatively large fruit. A detailed analysis of characteristics of this unique pear tree suggests that it can be a hybrid between the commonly cultivated *P. communis* and *P. salicifolia*, which grows about 500 m away from the hybrid specimen. The specimen of *P. salicifolia* was planted in Nowa Wieś Podgórna about 1905–1906, in front of a 'hunter palace', which no longer exists (Kaczmarek 1970). It now grows at a distance of 200 m from the ferry terminal on the river Warta. *P. salicifolia* was grafted on a stock of

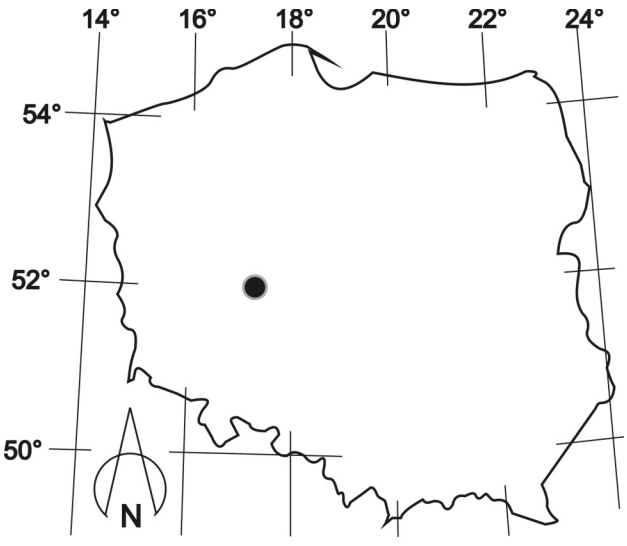

Fig. 1. Location of *Pyrus* × *myloslavensis*

P. pyraster. The trunk circumference is 1.25 m and the tree is in good condition: it produces flowers and fruits.

Pear trees hybridize easily. More than 40 interspecific pear hybrids are known (Rehder 1949, Challice and Westwood 1973, Bell 1986, Browicz 1993), including the following hybrids of *P. salicifolia*:

Pyrus × *canescens* Spach = *Pyrus nivalis* Jacq. × *P. salicifolia* Pall.;

Pyrus × *complexa* Rubtzov = probably *P. syriaca* Boiss. × *P. communis* subsp. *caucasica* (Fed.) Browicz × *P. salicifolia* Pall.;

Pyrus × *medvedevii* Rubtzov = probably *P. salicifolia* Pall. × *P. syriaca* Boiss.;

Pyrus × *pseudosyriaca* Gladk. = probably *P. syriaca* Boiss. × *P. salicifolia* Pall.;

Pyrus × *voronovii* Rubtz. = probably *P. syriaca* Boiss. × *P. salicifolia* Pall.

So far, no hybrid between *P. communis* and *P. salicifolia* has been reported in the literature.

Description of the new taxon

PYRUS × _MYLOSLAVENSIS_ A. CZARNA & W. ANTKOWIAK, SP. HYBR. NOVA (Fig. 2)

Pyrus communis L. × *P. salicifolia* Pall.

Planta inter *Pyrus communis* et *P. salicifolia* quasi intermedia et verosimiliter ex hybridatione harum specierum orta, ab illa foliis angustioribus, ramulis tomentosis, ab altera foliis latioribus, ellipticis, apice plerumque ± serratis et fructibus majoribus differt.

Tree up to 8.5 m high, with numerous suckers. Annual twigs densely silvery tomentose, glabrescent. The older branchlets brown, with light, visible lenticels. Buds ellipsoid, dark brown, tomentose.

Leaf blade 1.1–7.6 cm × 1.0–2.9 cm, elliptic, shallowly and distantly serrate, near the apex, tomentose on both sides, acute at apex, cuneate at base. Petiole up to 3 cm long, tomentose. Leaves do not change colour before shedding and do not turn black after drying.

Flowers in few-flowered tomentose corymbs, appearing with the leaves. Petals deep pink in buds, finally white, broadly elliptic to suborbicular. Sepals triangular, like pedicels and hypanthium, densely tomentose.

Fruit pear-shaped, up to 6.2 cm long, with an obtuse, short and wide neck; green-yellow, with numerous evenly scattered light yellow lenticels, without blush and rust-coloured patches. Pedicels mid-long, arching, placed in hollow. Sepals subpatent.

Fruit pulp white, ripening in 1–2 weeks after shedding, with very numerous large lumps of sclereids, chiefly along vascular bundles and carpels. Smaller clusters of sclereids visible throughout the fruit cross-section, but the smallest ones especially numerous and crowded below the epidermis.

Seeds large, ovoid, dark dull brown, usually 6 per fruit.

Mesophyll can be divided into a palisade layer and a spongy layer. Palisade mesophyll consists of 3 tiers of elongated cells. The longest are the cells in the tier directly underlying the epidermis. The 3rd tier is composed of the shortest and loosely distributed cells. Spongy mesophyll is loose.

Type: West Poland. Nowa Wieś Podgórna, 10.2 km S of Miłosław, 52°08'40"N, 17°35'18"E, Wielkopolska province, 15 July 2001. Leg. A. Czarna. POZB 506.

Scions collected from the hybrid were grafted on stocks of *P. caucasica* Fed. and are now cultivated at the University of Life Sciences in Poznan.

Results and conclusions

In Table 1, results of biometric measurements for leaves, flowers and fruits of *P. salicifolia* and the hybrid in Nowa Wieś Podgórna, were compared with literature data on the above-mentioned organs of *P. communis* according to Dostálek (1989) and Wagner (1995), except for anatomical features of leaves. The anatomical features were measured on the basis of leaves of *P. communis* 'Clapp's Favorite'. Fruit of *P.* × *myloslavensis* was described with the use of the terms proposed by Rejman (1994).

P. × *myloslavensis* has features that are clearly intermediate between the parental species. This applies mainly to leaf blade width, petiole length, ratio of blade length to width, leaf shape, ratio of blade length to petiole length, and leaf margin shape, as well as anatomical structure of leaf blade, in respect of adaxial epidermal cell height and width and cell width in the 1st tier of palisade mesophyll.

In respect of the number of tiers and arrangement of palisade cells, as well as abaxial epidermal cell height, the hybrid is similar to *P. salicifolia,* while in respect of cell shape and arrangement in the spongy layer, as well as abaxial epidermal cell width, it is similar to *P. communis* 'Clapp's Favorite'.

Intermediate features are also seen in sepals, fruit length, and ratio of fruit length to pedicel length (Fig. 2). Seed length and stoma length are intermediate, too.

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Fig. 2. *Pyrus* × *myloslavensis* A. Czarna & W. Antkowiak: (a) habit; (b) current-year and previous-year shoots; (c–d) flowers; (e–f) fruits, (g–h) leaves. Photo by W. Antkowiak

Table 1. Comparison of morphological and anatomical features of the pear hybrid and parental species. Data for *Pyrus communis* from Dostálek (1989) and Wagner (1995); n.d. = no data

Feature	*P. salicifolia*	*P. communis* × *P. salicifolia*	*P. communis*
Leaf			
Leaf blade length (cm)	5.3 (1.6–7.6)	5.0 (1.1–7.6)	5.0–8.4
Leaf blade width (cm)	1.0 (0.3–1.4)	2.0 (1.0–2.9)	(2.1) 3.1–4.2 (> 5.0)
Petiole length (cm)	0.8 (0.3–1.3)	1.5 (0.6–3.0)	(2.3) 2.8–7.2
Ratio of blade length to width	5.5 (3.0–10.2)	2.6 (1.1–3.8)	2.1–1.8
Ratio of blade length to petiole length	7.1 (2.6–13.0)	3.4 (1.8–5.4)	(1.4)–1.3
Leaf shape	oblong	narrowly elliptic	broadly to narrowly elliptic (3:1), ovate to ovate-lanceolate
Leaf base	cuneate	cuneate	rounded, obtuse, cuneate
Leaf apex	acute	acute	acute pointed, sometimes obtuse
Leaf margin	entire	entire, near apex shallowly and remotely serrate	serrulate to unclearly crenate-serrate
Tomentum	on both sides, denser on underside	on both sides, denser on underside	lacking
Stoma length (μm)	41.0 (32.4–51.3)	40.5 (32.4–45.9)	36.3 (27.0–45.9)
Stoma width (μm)	31.9 (21.6–37.8)	29.0 (24.3–32.4)	27.2 (21.6–29.7)
Leaf blade thickness in cross-section (μm)	195.4 (175.5–229.5)	162.0 (151.2–180.9)	201.6 (189.0–216.0)
Adaxial epidermal cell height (μm)	19.9 (13.5–29.7)	20.4 (17.6–27.0)	21.5 (16.2–24.3)
Adaxial epidermal cell width (μm)	22.9 (14.9–37.8)	25.1 (13.5–43.2)	29.4 (18.9–45.9)
Total height of palisade mesophyll (μm)	92.6 (79.3–114.4)	80.2 (69.9–88.8)	82.5 (64.8–94.5)
Cell height in 1st tier of palisade mesophyll (μm)	36.5 (29.7–43.2)	30.9 (27.0–37.8)	52.7 (32.4–59.4)
Cell height in 2nd tier of palisade mesophyll (μm)	28.2 (17.6–37.8)	25.4 (18.9–32.4)	32.4 (24.3–37.8)
Cell width in 1st tier of palisade mesophyll (μm)	9.3 (6.8–13.5)	8.0 (5.4–10.8)	5.7 (4.9–8.1)
Cell width in 2nd tier of palisade mesophyll (μm)	8.8 (5.4–13.5)	7.3 (5.4–9.5)	8.1 (5.4–10.8)
Total height of spongy mesophyll (μm)	66.6 (42.2–85.4)	48.9 (36.8–59.7)	84.9 (72.9–99.9)
Abaxial epidermal cell height (μm)	12.4 (10.8–17.6)	12.4 (9.5–16.2)	9.1 (6.8–13.5)
Abaxial epidermal cell width (μm)	14.3 (8.1–24.3)	17.2 (8.1–29.7)	17.3 (10.3–27.0)
Mesophyll	Palisade layer of 3 tiers. Spongy mesophyll compact, its cells resemble palisade cells. Palisade layer clearly thicker than spongy layer.	Palisade layer of 3 tiers. Spongy mesophyll loose. Palisade layer clearly thicker than spongy layer.	Palisade layer of 2 tiers. Palisade cells in 1st tier (underlying epidermis) clearly longer than in 2nd tier. Spongy layer very loose. Palisade layer roughly as thick as spongy layer.
Flower			
Petal length (cm)	1.2 (1.1–1.3)	1.4 (1.0–1.7)	1.2–1.7
Petal width (cm)	0.9 (0.7–1.0)	1.1 (0.8–1.3)	n.d.
Ratio of petal length to width	1.3	1.3	> 1
Petal shape	ovate broadly ovate	broadly elliptic, suborbicular	broadly elliptic, ovate
Sepal length (cm)	0.3 (0.26–0.34)	0.4 (0.3–0.6)	> 0.7
Sepal width (cm)	0.2 (0.18–0.26)	0.3 (0.3–0.4)	> 0.3
Ratio of sepal length to width	1.3	1.3	n.d.
Sepal shape	triangular, apex blunt	triangular, apex acute	n.d.
Pubescence	sepals, calyx and hypanthium densely pubescent	sepals, calyx and hypanthium densely pubescent	sepals, calyx and hypanthium loosely pubescent
Pedicel length (cm)	1.3 (0.7–1.8)	2.7 (1.2–3.9)	n.d.
Flower number per inflorescence	5.4 (2–9)	6.7 (4–11)	6–7

Feature	*P. salicifolia*	*P. communis* × *P. salicifolia*	*P. communis*
Fruit			
Fruit length (cm)	3.3 (2.6–4.0)	4.9 (3.6–6.2)	4.7–7.6
Fruit diameter (cm)	2.9 (2.2–4.0)	4.2 (2.9–5.1)	n.d.
Pedicel length (cm)	1.1 (0.6–1.5)	2.6 (1.0–9.0)	2.0–4.4
Ratio of fruit length to diameter	1.2	1.2	usually > 1
Ratio of fruit length to pedicel length	3.1	2.1	1.9
Fruit shape	broadly ovoid	broadly ovoid	pear-shaped, shortly pear-shaped, rarely obovoid
Seed length (cm)	0.8 (0.6–1.0)	0,9 (0.8–1.1)	1.0–1.1
Seed width (cm)	0.5 (0.3–0.6)	0.6 (0.5–0.7)	n.d.
Ratio of seed length to width	1.6	1.6	n.d.
Seed thickness (cm)	0.3 (0.3–0.4)	0.3 (0.3–0.6)	n.d.

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