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**ROOT AND STEM SUCKERS ON COMMON
HORSECHESTNUT – *AESCULUS HIPPOCASTANUM* L.**

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ABSTRACT. Seven root and stem suckers are described that developed on stumps of felled common horsechestnut trees.

Key words: *Aesculus hippocastanum*, root and stem suckers

Roots suckers on common horsechestnut were described in Poland for the first time in 1994 (Czekalski and Przymęska 1994). I observed stem suckers on that species before 1994, but I did not report that finding. Some species of woody plants have the ability of producing adventitious buds on the roots undergoing the secondary growth. The above ground root suckers develop from such buds. When adventitious buds are formed on the above or below ground stems and root collar, stem suckers may arise. Root and stem suckers have identical appearance but differ in the place of origin (Botanika 1991). Initiation of adventitious buds in roots takes place usually in tissues located outside the stelar cylinder.

Members of the families: Araliaceae, Anacardiaceae, Celastraceae, Elaeagnaceae, Fabaceae, Hamamelidaceae, Juglandaceae, Oleaceae, Rutaceae, Salicaceae, Simaroubaceae, Ulmaceae, Fagaceae and Hippocastanaceae, among others, develop root suckers (Zimmermann and Brown 1981, Czekalski and Przymęska 1994, Czekalski 1999). Trees-of-heaven *Ailanthus altissima* found in many country parks in Poland originated often as roots suckers on older trees, which had since died.

Stem suckers develop from adventitious buds formed in undamaged stems exogenously, for example, in the outer cell of cortex or phellogen, which usually undergo divisions when lenticels are being formed. On older trees stem suckers usually develop on the root collar. They are commonly found on littleleaf linden *Tilia cordata* and bigleaf linden *Tilia platyphyllos*, European alder *Alnus glutinosa*, Russian elm *Ulmus laevis*, and many others. Stem suckers are utilized to propagate some species of trees and shrubs by air-layering. In addition, they allow regeneration of coppiced forests.

Root and stem suckers on common horsechestnut were found in Cracow in 2003, Kluczbork (Opole Province), Polanica Zdrój (Dolny Śląsk Province) in 2005, and in Poznań in 2005. In 2002, a large specimen of common chestnut growing in a city square near the Basilica of St. Francis of Assisi on Franciszkańska Street in Cracow was cut down. A stump, 78 cm tall and 350 cm in circumference, was left. Photo 1 shows this stump, still alive, in late August of 2003. There were numerous, vigorous stem suckers that had developed along nearly the entire circumference of the stump from its cambium layer. There were also stem suckers that had developed from the root collar, although they were not as numerous. In addition, roots suckers developed from adventitious buds formed on roots in three locations around the trunk. Each consisted of several vigorous stems (Phot. 1, 2). Two were 80 cm, while the third was 120 cm from the stump. It is not known if the stem and root suckers continued to grow in 2004. When the site was visited again in late August 2004, the suckers were absent (Phot. 3). They were probably removed during routine maintenance.

On July 15, 2005 two root suckers were found on common chestnuts growing in a park-like grove near the hospital on Curie-Skłodowska Street in Kluczbork. The tree was 280 cm in circumference. One root sucker was 4 m from the trunk of that tree and consisted of eight leafy stems. The other one was 5 m from the trunk and had only one leafy stem.

On September 1, 2005 two root suckers were found on a tree, 8 m tall and 93 cm in circumference, growing in a grove along Dworcowa Street in Poznań, near the train station. One of them was 2 m from the trunk of the tree and consisted of two leafy stems 70 cm tall. The other, also 2 m from the tree, consisted of four leafy stems. The leaves that had developed in the spring were senescing, while those that had developed in the second flush of growth were bright green.

On July 7, 2005 stem suckers were found on six stumps of common horsechestnuts in Zdrojowy Park in Polanica Zdrój. The stumps were smaller than the one in Cracow described above. Each of the six stumps had several vigorous stem suckers.

In addition to the common horsechestnut, there is only one other species of *Aesculus* cultivated in Poland, *A. parviflora*, which develops root suckers. This species grows into a large shrub and is native to the southeastern United States. It is rarely cultivated in Poland, despite its ornamental attributes, late flowering (July-August) and cold hardiness (Czekalski 2004).

In total, there were ten roots suckers on common horsechestnut found between 1994 and 2005. They developed on partially exposed or shallowly buried portions of the roots of trees growing in parks in Dąbrówka and Radojewo near Poznań (Czekalski and Przyłęska 1994) and in a city square in Cracow, in a park-like grove in Kluczbork, and a grove along a street in Poznań. The suckers developed 30 cm (Radojewo) to 5 m (Kluczbork) from the trunks of the trees. They reached the height of 30 cm (Cracow) to 3 m (Dąbrówka). The largest root sucker in Dąbrówka has DBH of 13 cm and can be considered by now as a separate tree which can develop on its own.

These findings are corroborated by Dolatowski (1994, personal information) who found root suckers on common horsechestnuts growing in Warsaw and Prague.

Stem suckers were recorded on seven stumps of common horsechestnuts in Cracow and Polanica Zdrój. Initiation of adventitious buds from which these suckers developed, had taken place, most likely, while the trees were still standing. The buds had probably remained dormant, until they were activated by the discontinuation of the apical dominance when the trees were cut down. The stem suckers developed from dormant buds

located in the root collar, where their concentration is usually the highest, and also *de novo* from the exposed cambium of the stump in Cracow.

The development of adventitious buds and the suckers on roots of common horsechestnut is an interesting, though little known, phenomenon. Similarly, rarely observed is the development of stem suckers from the stumps of common horsechestnut. More frequently, these suckers are found on living trees, especially those growing on slopes. The ability of common horsechestnut to produce suckers could potentially be exploited in propagating this tree from root cuttings and through air-layering. So far, in nursery practice common horsechestnut is propagated primarily from seed, while its cultivars are either grafted or budded. On the other hand, *A. parviflora*, which produces very few viable seeds, is sometimes propagated from root cuttings.

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ODROSTY KORZENIOWE I PNIOWE KASZTANOWCA POSPOLITEGO – *AESCLUSUS HIPPOCASTANUM* L.

S t r e s z c z e n i e

Opisano siedem odrostów korzeniowych i siedem powstałych na pniakach po ściętych drzewach kasztanowca pospolitego. Odrosty powstały w różnej odległości od pnia drzewa – minimalna odległość wynosiła 30 cm, a maksymalna 5 m. Rozwinęły się one z pąków przybyszowych wytworzonych na płytce umieszczonych lub częściowo odsłoniętych korzeniach. Odrosty pniowe wykształciły się *de novo* z kambium pniaka oraz z pąków przybyszowych zlokalizowanych na jego szyi korzeniowej. Odrosty korzeniowe i pniowe kasztanowca pospolitego zdarzają się rzadko i są mało znaną właściwością biologiczną tego gatunku drzewa.

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