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# *Chaenomeles japonica* (Maleae, Amygdaloideae, Rosaceae): validation of six Alberts Tīcs' cultivar names and two new synonyms for the species

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## Abstract

*Chaenomeles* is a rosaceous genus of Asian origin with eight species, including four artificially created hybrids. Several species of this genus are used in many countries for ornamental plants and fruit production. As a result of many years of breeding work in Latvia, Alberts Tīcs selected six *Chaenomeles japonica* (Japanese quince) cultivars. Unfortunately, when publishing the descriptions of his cultivars, he does not comply with the requirements of the International Code of Nomenclature for cultivated plants because the names of newly introduced cultivars are not validly published. In his publications on the cultivation of *Chaenomeles*, Tīcs has introduced new scientific names, which have been published without complying with the requirements of the International Code of Nomenclature for algae, fungi, and plants. The validation of Tīcs' cultivar names has been performed here, and the names—*Chaenomeles maulei* f. *pomifera-inermis* ***nom. nud.*** and *Chaenomeles* ×*pomoidea* ***nom. nud.***—have been recognized as new synonyms of *Chaenomeles japonica*. Descriptions have been provided for all Alberts Tīcs' cultivars.

**Keywords:** 'Abava', 'Ada', 'Agra', 'Alfa', 'Anta', 'Arta', *Chaenomeles maulei* f. *pomifera-inermis*, *Chaenomeles* ×*pomoidea*, Latvia, nomenclature

## Introduction

*Chaenomeles* Lindley (1821: 97) is a rosaceous genus of Asian origin with eight natural species and four artificially created hybrids. Both *Chaenomeles* species and names of species have been misinterpreted in the past, and over time problem of synonymy of names has evolved (Galenieks 1957, Weber 1963, 1964). These problems were eliminated by Weber (1963, 1964), who prepared a detailed overview of this genus and arranged the taxonomy of all species known to her—*Chaenomeles cathayensis* (Hemsley 1900: Pl. 27, t. 2657–2658) C. K. Schneider (1906: 730); *C.* ×*clarkiana* C. Weber (1963: 53); *C. japonica* (Thunberg 1780: 208) Lindl. ex Spach (1834: 159); *C. speciosa* (Sweet 1818: 113) Nakai (1929: 331); *C.* ×*superba* (Frahm 1898: 214) Rehder (1920: 58) and *C.* ×*vilmoriniana* C. Weber (1963: 64). Another *Chaenomeles* species, the *C. thibetica* T. T. Yü in Yü & Kuan (1963: 234), was reported in China at the same time when Weber (1963, 1964) published her revisions of this genus. Recent studies have shown that *Chaenomeles* ×*vilmoriniana* hybrids can also form naturally in China, where *C. cathayensis* × *C. speciosa* overlap, as DNA analyses have confirmed this hybridization in nature (Bartish *et al.* 2000a, 2000b; Rumpunen *et al.* 2003).

*Chaenomeles* are plants of a dual purpose, both ornamental and for fruit production, and a large number of known cultivars evidences the economic importance of these plants. Given that no updated lists on cultivars have been published since Weber (1963), the actual number of cultivars created after 1963 is currently unknown. However, especially due to the economic importance of these plants, today, we presume that the number of cultivars could exceed 500.

In 1951, the breeding of these plants for fruit production was started simultaneously by Alberts Tīcs (1992) and by researchers of the Latvian Academy of Agriculture (Burmistrov *et al.* 1956). As a result of many years of breeding work, Tīcs selected and described six *Chaenomeles japonica* cultivars (Tīcs 2000). He published four monographs

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describing the practical cultivation of these plants and providing botanical information in Latvian (Tīcs 1959, 1992, 2000) and Estonaian (Tiits 1989 [in Estonian, Tics changed the Latvian spelling name to 'Tiits']). He has confused *Chaenomeles* taxa names in all his publications and has ignored the correct use of names even after the taxonomic revision of this genus by Weber (1963, 1964). In addition, he introduced two new names '*Chaenomeles maulei* (Mast.) Lavallée f. *pomifera-inermis* A. Tīcs' and '*Chaenomeles* ×*pomoidea* Langenfelds ex A. Tīcs' (Tiits 1989, Tīcs 2000). In the last monograph (Tīcs 2000), when describing his cultivars, he uses two names in parallel for all the cultivars described, as well as mentioning them in the text (e. g. 'Abava' and 'Cido Abava', names of the same cultivar), which is contrary to rules of the International Code of Nomenclature for Cultivated Plants (ICNCP; Brickell *et al.* 2016, art. 11.1 and 27.8).

This work aims to validate the names of Alberts Tīcs' cultivars and clarify the status of the names of other plant taxa introduced by him. Following the ICNCP recommendations to make the information on cultivars more accessible to the international audience, we have also provided Alberts Tīcs' cultivar descriptions in English.

## Material and methods

Here, we analyze the plant taxa names introduced by Alberts Tīcs. Given that he introduced new plant taxa names in the genus *Chaenomeles*, it was necessary to clarify the validity of these taxon names according to the rules of the International Code of Nomenclature for algae, fungi, and plants (the Shenzhen Code) (Turland *et al.* 2018). At the same time, since the cultivar names variants published by Tīcs' (2000) cause misunderstandings, it was necessary to validate these names, as they would meet the requirements of ICNCP (articlea 11.1 and 27.8). Considering that Tīcs' (2000) gave two names for each of his cultivars at the same time, we designate one of the names as a accepted name, but the other as a synonym. Following the ICNCP recommendations to make the information on cultivars more accessible to the international audience, we have also provided Alberts Tīcs' cultivar descriptions in English. These descriptions have been translated using Tīcs' original descriptions of his cultivars.

## Results

In 1989, Tīcs published a monograph in Estonian (Tiits 1989), in which the name of a new form,'*Chaenomeles maulei* f. *pomifera-inermis*', was introduced. Unfortunately, this publication does not comply with the requirements of the Shenzhen Code (Turland *et al.* 2018), since the new taxon is not described in Latin, nor is a type assigned.

The same form name, with an indication as a new form *(f. nova)*, was published a year later by Dimza & Vēbers (1990). In this publication, the author is referred to as "Tīcs", with no reference to Alberts Tīcs' 1989 publication. Moreover, no description of the new form has been published in Latin, nor has a type been designated. At the bottom of page 39, there is a note "*Raimonds Cinovskis, a specialist in plant nomenclature, believes that it does not comply with the provisions of the International Botanical Code; thus it should be used conditionally*" (translated from Latvian).

In his third monograph, Tīcs (1992) has repeatedly made a new combination *(forma nova)* of his name '*Chaenomeles maulei* f. *pomifera-inermis'* and has not again made a proper description of the new form in Latin and has not designated a type for this new form.

In 2000, Tīcs (2000) introduced a new name '*Chaenomeles* ×*pomoidea*', and he refers to Voldemārs Langenfelds as the author of the name. We could not find a publication where Voldemārs Langenfelds would have published this new name. Most likely, the name has never been published but suggested by Voldemārs Langenfelds to Alberts Tīcs. Although the name is presented as a species of hybrid origin, Tīcs (2000) has not indicated possible parent plants of this 'hybrid species', nor has he provided a description of the new species in Latin, nor has he designated the type of this species. In the original 2000' publication (Tīcs 2000) the date of publication is not indicated. However, the year of publication of this book is registered in the National Library of Latvia as '2000'.

Considering the above mentioned and the available descriptions in Latvian (Dimza & Vēbers 1990; Tīcs 1992, 2000) and Estonian (Tiits 1989), the mentioned plant names are nothing more than *Chaenomeles japonica*. Besides, none of these names have been validly published and should be considered *nomen nudum*.

## Taxonomic comments

***Chaenomeles japonica*** (Thunb.) Lindl. ex Spach (1834: 159)

*Chaenomeles maulei* (Masters 1874: 756) Lavallée in Beissner *et al.* (1903: 182) f. *pomifera-inermis* A. Tīcs (1989: 18, as *"nova*"), ***nom. nud.***

*Chaenomeles maulei* (Masters 1874: 756) Lavallée in Beissner *et al.* (1903: 182) f. *pomifera-inermis* A. Tīcs ex Dimza & Vēbers (1990: 39, as *"f. nova*"), ***nom. nud.***

*Chaenomeles maulei* (Masters 1874: 756) Lavallée in Beissner *et al.* (1903: 182) f. *pomifera-inermis* A. Tīcs (1992: 14, as *"forma nova*"), repeated combination, ***nom. nud.***

*Chaenomeles* ×*pomoidea* Langenfelds ex A. Tīcs (2000: 27, 28), ***nom. nud.***

Since all names are considered invalid names (the Shenzhen Code, article 39.1), they cannot be used, and should be considered as excluded names. As mentioned above, according to the original descriptions made by Tīcs, all his names have been unambiguously attributed to *C. japonica*. All cultivar denominations also apply to this species

### *Validation of Alberts Tīcs' cultivar names*

All cultivar names and descriptions are published in 2000 (Tīcs 2000). As in original publication year is not indicated, but this information is available from the registers of National Library of Latvia, in provisions of ICNCP (Article 26 'Date of publication'), the year of publication of the book shall be deemed to be the year 2000, when the book was issued and its obligatory copies were deposited in the National Library of Latvia. When Tīcs described six cultivars of his selection, throughout the monograph, he used the name 'CIDO' (originally all times in capital letters), which lead to confusion of different names. He spelled the name of the cultivars in capital letters too, e. g. ABAVA (Tīcs 2000: 6, 32) and CIDO ABAVA (Tīcs 2000: 38). Before describing the cultivars, on page 6 and 32, he mentioned the following cultivar denominations: 'Alfa', 'Agra', 'Abava', 'Arta', 'Ada' and 'Anta'. In his descriptions of cultivars, he has used names: 'Cido Alfa', 'Cido Agra', 'Cido Abava', 'Cido Arta', 'Cido Ada' and 'Cido Anta'. Almohammad *et al.* (2020) mention also name 'Agrita'. Looks like there's a mistake here or a typographical error, because Tīcs did not provide description of cultivar with a such denomination. Or this cultivar name is used for plant material where the cultivar is not described in accordance with ICNCP conditions.

Such simultaneous use of two cultivar denominations for the same cultivar creates misunderstandings in name correct use (Art. 11.1 and 27.8). For example, Almohammad *et al.* (2020) point that "CIDO" is a mix of cultivars that includes 'Agra', 'Agrita', 'Alfa' and 'Arta'. We cannot agree with this statement because Alberts Tīcs has published clear descriptions of six of his cultivars, according to which the cultivars can be distinguished. The problem is most likely with the designation CIDO he introduced. In 1989, Tīcs (Tiits 1989) indicated that '*cido*' is the Latvian name for his form '*Chaenomeles maulei* f. *pomifera-inermis*'. The same is stated in two other publications (Dimza & Vēbers 1990; Tīcs 1992). In the last monograph, Tīcs (2000) refers to this name as '*Chaenomeles* ×*pomoidea*', writing that it is a 'form of fruit growing industry'. In accordance of ICNCP (articles 3.1, 3.2 and 3.3), taking into account the context of Tīcs publications, the name 'CIDO' actually refers to a group of cultivars to which all six Alberts Tīcs' cultivars belong, and, in his view, that group of cultivars belong to the taxon '*Chaenomeles maulei*'.

ICNCP Article 11.1 states 'The accepted name is the earliest established one that must be used for a cultivar, Group, grex, or graft-chimaeric genus..'. Whereas Article 27.8. provides that only one denomination may be used per cultivar, if where two denominations are mentioned for the same cultivar in the same publication. In addition, this article states 'In the absence of a clear indication as to which should be the accepted name, none is established'. There is no doubt that the latter condition is not valid in the present case, since it is perfectly clear to whom each name refers.

For example, Tīcs writes on page 6 of his book '*..jaunas šķirnes; ALFA, AGRA, ABAVA, ADA u. c.*' [*..new cultivars: ALFA, AGRA, ABAVA, ADA etc.*], but on page 32 he writes '*..izdevās atlasīt ar pozitīvām īpašībām augstražīgas jaunās šķirnes; ALFA, AGRA, ABAVA, ARTA, ADA, ANTA u. c.*' [..managed to select high-yielding new cultivars with positive characteristics*: ALFA, AGRA, ABAVA, ARTA, ADA, ANTA etc.*]. There is no doubt that he was very passionate about his 'market' or 'brand' sign *CIDO*, and therefore he added that acronym to cultivar name before the descriptions of each cultivar as follows: *CIDO ABAVA, CIDO ALFA, CIDO ADA, CIDO AGRA, CIDO ANTA* and *CIDO ARTA*. Given that only one accepted name could be used for each cultivar (ICNCP Article 27.8), it was necessary to find out which name had priority (ICNCP Article 11.1). According to Article 11.1, the accepted denomination is the one that is first

established, which means that the cultivar denomination must be accompained by a description (Articles 27.1 and 27.2).

There is no doubt that both names of each cultivar are linked to a description of the particular cultivar published in the same publication. In addition, according to the order in which the names are used, the priority of their use can be found in the text. Therefore, we have designated as accepted names the denominations that are listed earlier in the relevant book in terms of order, thus validating the cultivar names to comply with proivisions provided in ICNCP Article 27.8.

***Chaenomeles japonica* 'Abava'**

'Abava'—Tīcs 2000: 6, 32 (mentions)
'Cido Abava'—Tīcs 2000: 38 (description), **new synonym**
'Abava'—Ikase 2015: 185 (mentions)
'Abava'—Skrīvele 2020: 351 (mentions)

**Description:**

The plant forms a shrub, which is 1.3 m wide and 0.7 m tall. The primary branches are few, and they are 50 cm long. There are also few secondary branches, and they branch at a narrow-angle. The bush is not thickened, which makes it easier to harvest the fruit. Harvesting is also facilitated by the fact that the fruit is relatively large, above the average of all other cultivars (cultivars described here) size. The leaf blade is egg-shaped, narrow at base. The tip of the leaf is not pronounced—and is rounded. Leaf's edge is shallowly serrated. The leaf base is rounded, wedge-shaped. Leaf edging notched. Stipules large kidney-shaped. Fruit is medium-sized and weighs 50–70 g. Fruits are barrel-shaped. The surface of the fruit is relatively smooth. Fruit dimensions: 56 × 46 mm. The skin of the ripe fruit is orange-yellow.

***Chaenomeles japonica* 'Alfa'**

'Alfa'—Tīcs 2000: 6, 32 (mentions)
'Cido Alfa'—Tīcs 2000: 32 (description), **new synonym**
'Alfa'—Ikase 2015: 185 (mentions)
'Alfa'—Almohammad *et al.* 2020: 14 (mentions)
'Alfa'—Skrīvele 2020: 351 (mentions)

**Description:**

The plant forms a 1.5 m wide and 0.5 m tall shrub. The primary branches are on average many, which ensures the normal regeneration of the bush. The primary branches are usually 50–70 cm long, semi-weight down. The secondary branches are few, and they branch at a narrow-angle. The affected branches bend under the weight of the fruit, and the next first and succeeding stage branches produce fruit above them. This ensures production in industrial plantations without pruning old branches. The ideal conditions for harvesting are in rows of large-scale plantations. The leaf-blade is oblong, pointed at the tip, serrated to the stalk. Leaf stalk is short, about 5–8 mm, leaf base is pointed, wedge-shaped. The patches are large, kidney-shaped, serrated or jagged. On the biennial branches, leaves are in bouquets, without bracts with a generative bud in the centre. Fruit surface (quince-shaped) uneven, cylindrical or barrel-shaped, often narrowed towards the stalk. Cup closed, it is common for the cup leaves to fall off. The stalk of the fruit is short (steeped in the fruit). The fruit on branch occur one by one or several together. Fruit weight 65–100 g, 53 × 55 mm, basic colour of the ripe fruit is light yellow. A pronounced new fruit fall occurs in the summer, providing fruits in size above the average and large during the harvest. As the fruit ripens, a layer of cork is formed at the point of attachment of the fruit stalk, which ensures the separation of the ripe fruit from the branch. About 25 % of the fruit is already fallen when ready for harvest. The core of the fruit is five-cotyledon, but often also, the core of 6–8 cuttings is also crammed with many seeds.

***Chaenomeles japonica* 'Ada'**

'Ada'—Tīcs 2000: 6, 32 (mentions)

‘Cido Ada’—Tīcs 2000: 37 (description), **new synonym**
‘Ada’—Skrīvele 2020: 351 (mentions)

**Description:**

The plant forms a prostrate shrub, which reaches 1.5 m in wide and up to 40 cm in heigh. The first and next stage branches are spread over the ground, so they are damaged when tilling the soil. The new first and next stage branches lie flat on the old worn branches. The plant is generally healthy–vital [in Latvian climatic conditions]. Excessive branch cover prevents mechanized maintenance of the plantation. The leaf blade is roundly elongated, the tip of the leaf slightly pronounced until a round tip. The edge of the leaf is not sharply serrated to the stalk. Leaf stalk is short, about 5–8 mm. The leaf base is rounded and wedge-shaped. Stipules are large, kidney-shaped, edging is notched. On biennial shoots leaves are in bouquets, without stipules. Fruit—oblong and cylindrical, surface quince-shaped, stalk in the flesh, fruit—sessile. The leaves are dried and pressed into the flesh. Fruit’s weight is 70–100 g, size 60 × 50 mm. Fruit ripens two weeks later than ‘Alfa’.

***Chaenomeles japonica* ‘Agra’**

‘Agra’—Tīcs 2000: 6, 32 (mentions)
‘Cido Agra’—Tīcs 2000: 38 (description), **new synonym**
‘Agra’—Almohammad *et al.* 2020: 14 (mentions)
‘Agra’—Skrīvele 2020: 351 (mentions)

**Description:**

The plant forms a 1.3 m wide and 0.7 m tall shrub. Primary branches in normal numbers, firm, straight up to 70 cm long, are not semi-bent as ‘Alfa’. A few secondary branches that branch off at a narrow-angle. The rising parts of the annual shoots freeze in unfavourable winters. The plant regenerates parts of the frozen branches well, and they do not affect the productivity of the plant. Leaf-blade rounded, leaf tips rounded. The edge of the leaf is distinctly serrated to the stalk of the leaf. The base of the leaf is rounded. The patches are large, their edges notched. Leaves on biennials are in bouquets, oblong, leaf base is slender, long and wedge-shaped. Fruit is round, weighs 45–60 g, the surface is relatively smooth, ripens earlier than all and two weeks earlier than ‘Alfa’. In some years, the fruit begins to ripen at the end of August. Fruit dimensions 40 × 44 mm. The cultivar draws attention to the early ripening of the fruit in all years.

***Chaenomeles japonica* ‘Anta’**

‘Anta’—Tīcs 2000: 32 (mentions)
‘Cido Anta’—Tīcs 2000: 37 (description), **new synonym**

**Description:**

The plant is a small shrub, 1.2 m wide and up to 50 cm tall. Vegetatively propagated plants form a small little vital shrub. First-degree branches are firm, and they go at a 45-degree angle. There is more than average amount of secondary branches. Leaf blade is similar to ‘Ada’—with rounded leaf base, elongated and with broadly pointed at the tip. The edge of the leaf is bluntly serrated, at the top it is also double-serrated. Leaf base is rounded and wedge-shaped. Stipules are large, round, and kidney-shaped, bordered from notched to serrated. On biennial branches, leaves are in bouquets without stipules, the border of the leaf is similar to the leaves on the annual shoot. Fruit is round, ripens 1–2 weeks later than ‘Alfa’, medium-sized 50–70 g. Fruit dimensions: 47 × 47 mm.

***Chaenomeles japonica* ‘Arta’**

‘Arta’—Tīcs 2000: 32 (mentions)
‘Cido Arta’—Tīcs 2000: 39 (description), **new synonym**
‘Arta’—Almohammad *et al.* 2020: 14 (mentions)

**Description:**

The plant forms a shrub, which is 1.4 m wide and about 0.6 m tall. Primary branches are usually 60–70 cm long, covered by 3–4 secondary branches (preferably 1–2). The branches branch at this angle. Many secondary branches thicken the shrub's foliage too much. Leaf-blade is rounded base and without a pronounced tip. The top of the leaf is rounded. Leaf border shallowly serrated. Leaf base is rounded and wedge-shaped. Stipules are large kidney-shaped, with notched edging. The fruit is round, barrel-shaped, ripens three weeks after 'Alfa'. The fruit cup is almost completely overgrown. Fruits are medium-sized and weigh 50–70 g. Fruit dimensions: 47 × 46 mm.

## Discussion

In all his publications, Tīcs (Tīcs 1959, 1992, 2000; Tiits 1989) have clearly emphasized that all his selection material corresponds to the species '*Chaenomeles maulei*', and unequivocally states that he has obtained from this species all the starting materials for *Chaenomeles* breeding. According to Weber (1963), '*C. maulei*' should be recognized as a cultivar, respectively *C. japonica* 'Maulei', as these plants are of the same origin and later propagated and distributed throughout Europe. *Chaenomeles japonica* 'Maulei' are dwarf plants (Weber 1963) and, in all the characteristics published by Tīcs (Tīcs 1959, 1992, 2000; Tiits 1989) and Dimza & Vēbers (1990), the plants used in his selection are identical to those known for this cultivar, as these plants are up to 0.7 m tall shrubs. It is not clear why in the last publication Tīcs (2000) attributed his cultivars to hybrid '*Chaenomeles ×pomoidea*', if in parallel he clearly indicates the origin of the selected material from *C. japonica* 'Maulei'.

Tīcs (Tīcs 1959, 1992, 2000) emphasizes that his selected cultivars are free of thorns, which distinguishes them from wild plants, which is very important in fruit production and thus could be of interest to farmers and breeders in other countries. Therefore, following the ICNCP recommendation (Brickell *et al.* 2016), the cultivar descriptions published here in English will help to identify them more widely worldwide.

Considering the context of Alberts Tīcs' publications (Tiits 1989; Tīcs 1992, 2000), in fact, the name 'CIDO' is meant as a trademark for *Chaenomeles* cultivars free of thorns. In view of the above, the name "CIDO" introduced by Alberts Tīcs should not be used in connection with the plants of *Chaenomeles* cultivars, as this epithet has no taxonomic significance and its use is only confusing.

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