

Cuscuta spp.

IDENTITY

There are about 270 species of *Cuscuta* spp. (*Convolvulaceae*) throughout the world. The most important for the EPPO region are the following.

- *Cuscuta campestris*

Name: *Cuscuta campestris* Yuncker.

Synonyms: *Grammica campestris* (Yuncker) Hadac, *C. pentagona* subsp. *calycina* Yuncker, *C. pentagona* var. *pentagona* Engelm, *C. basarabica* Buia., *C. gymnocarpa* subsp. *deflexa* Buia.

Remark: In some databases, *Cuscuta campestris* Yuncker is considered as synonym of *Cuscuta pentagona* var. *pentagona* Engelm.

Common name: yellow dodder, field dodder (English); cuscute des champs (French); повилика полевая (Russian).

- *Cuscuta chinensis*

Name: *Cuscuta chinensis* Lamarck

Synonyms: *Grammica chinensis* (Lam.) Hadac., *C. ciliaris* Hohem.

Common name:... (English); повилика китайская (Russian).

- *Cuscuta epithymum*

Name: *Cuscuta epithymum* Linnaeus

Synonyms: *Cuscuta trifolii* Babington

Common name: common dodder, clover dodder, lesser dodder (English); cuscute du thym (French); повилика клеверная, повилика тимьяновая (Russian).

- *Cuscuta epilinum*

Name: *Cuscuta epilinum* Weihe

Synonyms: *Cuscuta densiflora* Soyer-Willemet.

Common name: flax dodder (English); cuscute du lin (French); повилика льняная (Russian).

- *Cuscuta europaea*

Name: *Cuscuta europaea* Linnaeus

Synonyms: *Cuscuta viciae* Koch, Schnitzlein & Schönheit, *C. halophyta* Fries, *C. laxiflora* Aznavour, *C. major* De Candolle.

Common name: greater dodder, nettle dodder (English); cuscute d'Europe (French); повилика европейская (Russian).

- ***Cuscuta lehmanniana***

Name: *Cuscuta lehmanniana* Bunge.

Synonyms: *Monogynella lehmanniana* (Bunge) Hadac.

Common name: ... (English); повилика Лемана (Russian).

- ***Cuscuta monogyna***

Name: *Cuscuta monogyna* Vahl.

Synonyms: *Monogynella monogyna* (Vahl) Hada & Chrtek.

Common name: ... (English); cuscute à un style (French); повилика одностолбиковая (Russian).

- ***Cuscuta lupuliformis***

Name: *Cuscuta lupuliformis* Krock.

Synonyms: *Monogynella lupuliformis* (Krock.) Hadac.

Common name: hop dodder (English); повилика хмелевидная (Russian).

- ***Cuscuta approximata***

Name: *Cuscuta approximata* Babington.

Synonyms: *Cuscuta epithymum* subsp. *approximata* (Bab.) P. Fourn., *C. calliopes* Boissier, *C. cupulata* Engelm., *C. urceolata* G. Kunze.

Common name: ... (English); cuscute proche (French); повилика сближенная, повилика тонкостебельная (Russian).

- ***Cuscuta australis***

Name: *Cuscuta australis* R. Brown

Synonyms: *C. scandens* Brotero, *C. breviflora* Visiani

Common name: southern dodder (English); cuscute volubile (French); повилика южная, повилика перечная (Russian).

There are several other species in the Euromediterranean area: *C. suaveolens* (introduced from Chile), *C. gronovii* (introduced from North America), *C. palaestina*, *C. brevistyla*.

GEOGRAPHICAL DISTRIBUTION

Note. There are native *Cuscuta* spp. in all continents, and in addition *Cuscuta* spp. from different continents have been spread by trade around the world. The geographical records given below are a compilation from different sources. Their reliability is uncertain, partly because *Cuscuta* is notoriously difficult to identify to species, and partly because some may be detections in imported consignments. The records are certainly incomplete (for example, several introduced *Cuscuta* spp. occur in Brazil but are not named individually in a Manual of Brazilian Weeds).

- ***Cuscuta campestris***

Europe: Albania, Austria, Belarus, Belgium, Czechia, Denmark, France, Germany, Greece, Hungary, Italy, Lithuania, Moldova, Netherlands, Poland, Portugal, Romania, Russia (widespread), Slovakia, Switzerland, UK, Ukraine, Yugoslavia.

Asia: Afghanistan, Armenia, Azerbaijan, China, Georgia, India, Indonesia, Iran, Israel, Kazakhstan,

Korea, Kyrgyzstan, Pakistan, Russia (widespread), Saudi Arabia, Tajikistan, Turkmenistan, Uzbekistan.

Africa: Botswana, Egypt, Morocco, South Africa, Uganda, Zimbabwe

North America: Canada, Mexico, USA.

South America: Argentine, Chile, Uruguay.

Oceania: Australia (noxious weed in some states).

Note. This species, native to North America, was introduced into Europe around 1900.

- *Cuscuta chinensis*

Asia: China, India, Japan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan.

Africa: Mauritius

Note. This species is native in the Far East.

- *Cuscuta epithymum*

Europe: native - all countries (except some oceanic islands).

Asia: Afghanistan, Iran, Israel, Jordan, Japan, Turkey

Africa: Egypt, Morocco, South Africa

North America: Canada, USA.

South America: Argentina, Chile, Venezuela

Oceania: Australia (noxious weed in some states), New Zealand

- *Cuscuta epilinum*

Europe: Austria, Belgium, Bulgaria, Czechia, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Romania, Russia, Spain, Sweden, Switzerland, Ukraine, Yugoslavia. Now generally rare.

Asia: Israel, Turkey.

Africa: Morocco, South Africa.

North America: Canada, USA.

Note. This species is probably native to Southwest Asia, and is not native to Europe.

- *Cuscuta europaea*

Europe: native - all countries (except some islands).

Asia: Afghanistan, India, Iran, Jordan, Mongolia, Pakistan, Russia (widespread in Siberia and the Far East), Turkey.

North America: USA

- *Cuscuta lehmanniana*

Asia: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan.

Note. This species is native in Central Asia.

- *Cuscuta monogyna*

Europe: native - Bulgaria, France, Greece, Italy, Portugal, Romania, Russia (widespread in the centre and south), Spain, Ukraine, Yugoslavia.

Asia: Afghanistan, Iran, Iraq, Israel, Jordan, Kazakhstan, Kyrgyzstan, Pakistan, Russia (widespread), Syria, Tajikistan, Turkey, Turkmenistan, Uzbekistan.

Africa: Egypt, Morocco.

- ***Cuscuta lupuliformis***

Europe: native – Austria, Bulgaria, Czechia, Germany, Hungary, Netherlands, Poland, Romania, Russia, Ukraine, Yugoslavia

Asia: India, Turkey

South America: Brazil

- ***Cuscuta approximata***

Europe: native – Albania, France, Greece, Italy, Portugal, Romania, Russia, Spain, Sweden, Switzerland, Ukraine, Yugoslavia. Introduced into Bulgaria, Germany, Hungary and UK

Asia: Afghanistan, Armenia, Azerbaijan, Georgia, Iran, Iraq, Israel, Jordan, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkey, Turkmenistan, Uzbekistan.

Africa: Morocco

North America: USA

- ***Cuscuta australis***

Europe: native – Albania, Bulgaria, France, Germany, Greece, Italy, Portugal, Romania, Russia, Spain, Turkey, Ukraine, Yugoslavia. Introduced into Austria, Czechia, Hungary, Netherlands, Poland, Switzerland)

Asia: Bangladesh, China, Indonesia, Japan, Korea, Malaysia, Pakistan

Africa: Morocco, Nigeria

North America: USA

Oceania: Australia (noxious weed in some states), Fiji, Melanesia

Note. This species has a very wide native distribution in the Old World.

ON WHICH CROPS

- ***Cuscuta campestris***

Cuscuta campestris is mainly found on *Medicago* and *Trifolium*, but can infest many other herbaceous plants, both agricultural and wild. The most damaged crops are forage legumes (vetch, lucerne), linseed, beet, carrot, onions, potatoes, tobacco, kenaf.

- ***Cuscuta chinensis***

The pest infest mainly jute, kenaf, lucerne and many vegetables.

- ***Cuscuta epithymum***

The pest infests various wild shrubs (*Calluna*, *Ulex*), and also clover, lucerne and flax.

- ***Cuscuta epilinum***

The pest infests mainly flax (including linseed).

- ***Cuscuta europaea***

The primary host of *C. europaea* is the very widespread stinging nettle (*Urtica dioica*). It is incidentally found on a wide variety of other plants (150 species of plants belonging to 39 families). The most damaged crops are forage legumes, hemp, beans, vegetables, potato, hop, tobacco, lilac, currants, gooseberries, some bushes and trees.

- ***Cuscuta lehmanniana***

The pest infests woody species: *Cornus*, *Cydonia*, *Elaeagnus*, *Ficus*, *Juglans*, *Malus*, *Morus*, *Pistacia*, *Prunus*, *Punica*, *Pyrus*, *Ribes*, *Rubus*, *Vitis*, and many species of forest and ornamental bushes and trees.

- ***Cuscuta monogyna***

The pest infests mainly woody species (grapevine, olive), but also sunflower, several species of *Artemisia* and other herbaceous plants.

- ***Cuscuta lupuliformis***

Mainly on *Salix*, but also on other woody plants.

- ***Cuscuta approximata***

Mainly on woody plants, but also lucerne.

- ***Cuscuta australis***

The main hosts are species of *Polygonum*, but the pest is also found on some herbaceous crops.

BIOLOGY

Cuscuta spp. are annual parasitic plants. They have no roots or leaves and live entirely at the expense of their host plants. Stems of *Cuscuta* spp. encircle the stems of the host and penetrate it with haustoria. *Cuscuta* spp. reproduce by seeds. The embryo is not differentiated into root and stem, taking the form only of a spiral filament. At the beginning of its development, the wider end of this filament fixes in the soil with the help of root hairs. The other end begins to grow, searching for a host plant. When the host is found, the parasite loses its contact with the soil.

DETECTION AND IDENTIFICATION

Plants of *Cuscuta* spp. are composed of white or pinkish filamentous stems bearing clusters or heads of flowers. The flowers are tubular or campanulate, with fused petals and sepals. The stamens are usually fused to the corolla (alternating with the petals), and a species-characteristic scale is present under each stamen. The ovary is superior, free, with one or two styles. There are from 1 to 4 seeds in one fruit. Seeds are irregular, round and flattened.

MEANS OF MOVEMENT AND DISPERSAL

Fruits, seeds and parts of plants of *Cuscuta* spp. are dispersed by birds and animals, agricultural implements, vehicles, melting snow, waterways and strong winds. Seeds of *Cuscuta* spp. are dispersed through trade of contaminated seed lots, forage and fodder.

PATHWAYS

Mainly contaminated seed lots, but also forage and fodder, soil and growing media, soil attached to plants.

DAMAGE

Cuscuta spp. are annual parasitic plants, which can greatly damage crop plants and reduce their yield. In the countries of Central Asia, they cause losses of up to 50 % in lucerne. In Belarus, infestation by *Cuscuta* sometimes leads to 100% losses of clover production. *Cuscuta* spp. also damage beet, carrot and other vegetables, flax and tobacco, and reduce the quality of the plant products. They damage the fibres of flax, kenaf and jute, reduce the sugar content of sugarbeet and the quality of hay. They can stress and kill fruit bushes and trees. *Cuscuta*-stressed are more often attacked by insects and diseases.

PHYTOSANITARY RISK

Cuscuta spp. are serious pests of many crop plants, and are often present in consignments of seeds and plant products. However, most of the species concerned are already well established in natural vegetation in the areas of the EPPO region where they occur, have a wide host range on both cultivated and wild species, and can be considered to have reached the limits of their natural distribution. Although all the species are not present throughout the EPPO region, there is no great risk of further geographical spread. Introduced species are no more significant than native ones. Though trade in seeds provides a pathway for the spread of *Cuscuta* spp., this is of no importance for woody host plants (or other crops which are not grown from seeds). There remains the possibility that certain individual *Cuscuta* spp. could be categorized as regulated non-quarantine pests in consignments of seeds of their host species.

PHYTOSANITARY MEASURES

To be considered.

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Fig. 1. *Cuscuta* spp.: 1) *C. campestris* part of a stem with flowers; 2) unrolled corolla with stamens and scales; 3) flower; 4) embryo; 5 & 6) seeds; 7) infested host plant), 8) *C. australis* part of stem; 9) flower; 10) embryo; 11 & 12) seeds; 13) unrolled corolla with stamens and scales); 14) *C. chinensis* flower; 15) ovary; 16) unrolled corolla with stamens and scales; 17) embryo; 18 & 19) seeds.



Fig. 2. *Cuscuta* spp.: 1) *C. epithymum* flower; 2) unrolled corolla with stamens and scales; 3) ovary; 4 & 5) seeds; 6) inflorescence; 7) *C. approximata* clover with inflorescence; 8) infested lucerne; 9) flower; 10) unrolled corolla with stamens and scales; 11 & 12) seeds; 13) embryo.

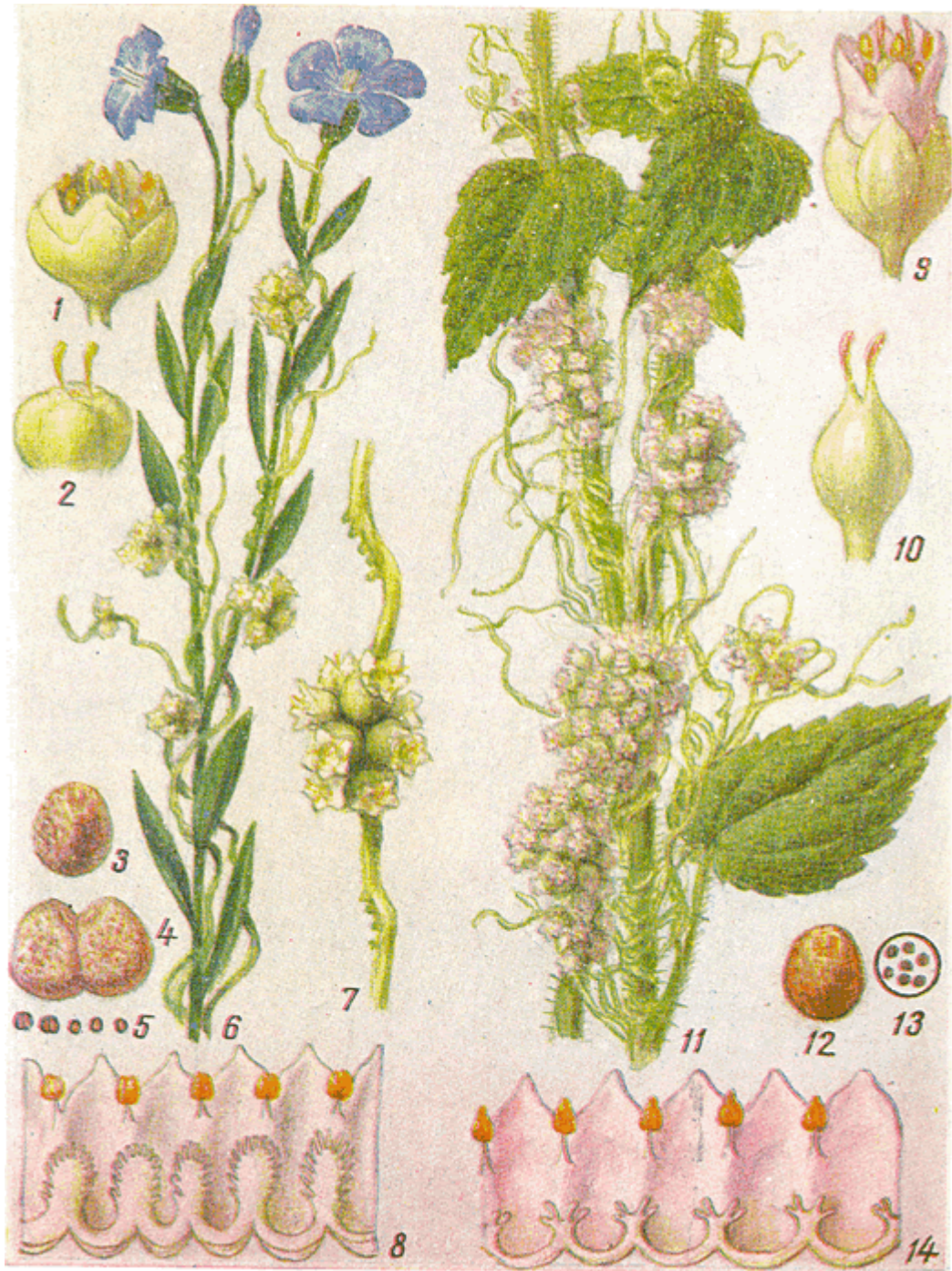


Fig. 3. *Cuscuta* spp.: 1) *C. epilinum* flower; 2) ovary; 3, 4 & 5) seeds; 6) infested plant of flax; 7) inflorescence; 8) unrolled corolla with stamens and scales; 9) *C. europaea* flower; 10) ovary; 11) infested nettle; 12 & 13) seeds; 14) unrolled corolla with stamens and scales.

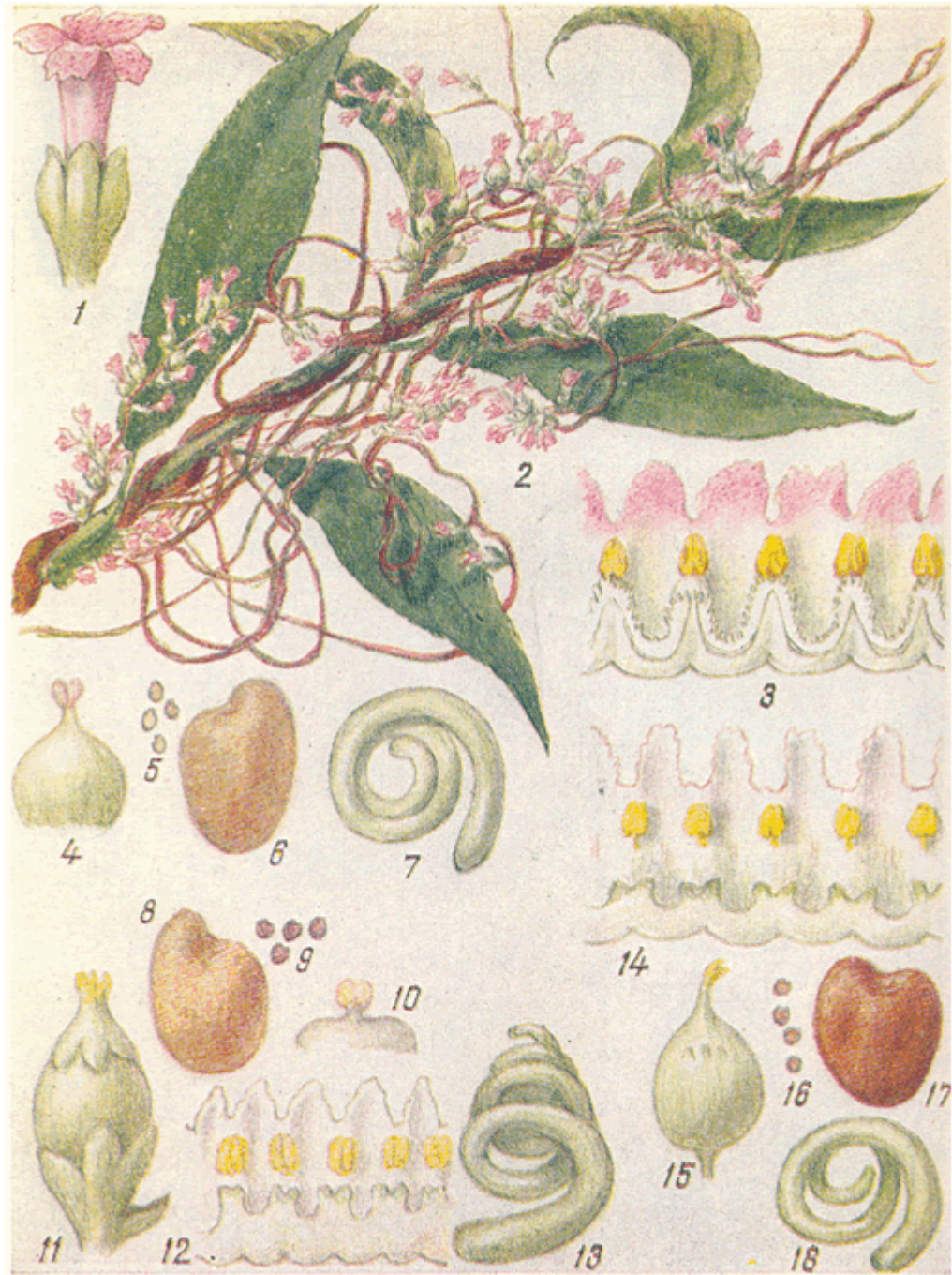


Fig. 4. *Cuscuta* spp.: 1) *C. lehmanniana* flower; 2) infested plant of peach; 3) unrolled corolla with stamens and scales; 4) ovary; 5 & 6) seeds; 7) embryo; 8 & 9) *C. monogyna* seeds; 10) ovary; 11) flower; 12) unrolled corolla with stamens and scales; 13) embryo; 14) *C. lupuliformis* unrolled corolla with stamens and scales; 15) ovary; 16 & 17) seeds; 18) embryo.