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NATURE AND LANDSCAPE MANAGEMENT STANDARDS

ARBORIST STANDARDS	**PLANTING AND PRUNING OF SHRUBS AND CLIMBING PLANTS**	**SPPK A02 003:2014**
SERIES A		

Planting and pruning of shrubs and climbing plants

Pflanzung und Schnitt der Sträuchern und Lianen

This standard is designed to define technical and work procedures for planting and pruning of shrubs and climbing plants growing in non-forest environments.

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Act no. 114/1992 Coll. on Nature and Landscape Protection, as amended
Act no. 258/2000 Coll. on Public Health Protection, as amended
Act no. 326/2004 Coll. on Medical Plant Care, as amended

Decree no. 189/2013 Coll. on Protection of woody plants and permission of their cutting
Decree no. 395/1992 Coll., implementing certain provisions of Act no. 114/1992 Coll. on Nature and Landscape Protection
Decree no. 215/2008 Coll. measures against the introduction of organisms harmful to plants and plant products and against their spread

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1. Standard purpose and contents

The standard "*Planting and pruning of shrubs and climbing plants*" defines the purpose and content of interventions implemented during installation and cultivation management of woody plants mostly in non-forest environments. It describes procedures for planting and pruning of shrubs and climbing plants, including necessary adjustments to site conditions and successive cultivation interventions aiming at retention or increase of their performance of aesthetic and ecological functions on the site. It does not deal with special cultivation procedures used on shrubs intended for harvesting flowers and fruits.

It describes the extent of possible interventions in shrubs and climbing plants in accordance with theoretical and practical findings that do not cause significant or permanent reduction to their ecological and aesthetic functions or their death.

For the purposes of this standard, the collective term "shrubs" refers to subshrubs, dwarf shrubs and shrubs of all growth forms (deciduous and evergreen). Only in cases where the approach to the different categories differs are they distinguished terminologically.

Interventions on woody plants are often irreversible; therefore, it is necessary that they be done by competent persons. Planting and pruning of shrubs and climbing plants, including inspection of said interventions, is a professional activity.

Legal framework

The legal framework for planting and pruning of shrubs and climbing plants corresponds to definitions made in the standards:

- A02 001 - Planting of trees,
- A02 002 - Pruning of trees.

Only issues exclusively specific for the cultivation categories in question are discussed below.

Pursuant to Decree no. 189/2013 Coll., cutting of canopied stands of woody plants (a set of woody plants in which the aboveground parts of the woody plant of the same floor touch, grow into or overlap each other, with the exception of woody plants comprising avenues, if the trunk circumference of each woody plant measured at 130 cm above ground does not exceed 80 cm) does not require a permit as long as the total area of the canopied woody plant stand to be cut does not exceed 40 m^2. Cutting of more extensive canopied areas requires a permit from a nature protection authority issued based on an application filed by the owner of the land plot (or tenant or other authorised user).

2 Classification of shrubs and climbing plants

2.1 Subshrubs

2.1.1 A **subshrub** is a plant that has a woody and perennial stem at the bottom, while remaining herbaceous and annually withering at the top (for example, *Salvia officinalis* – garden sage, *Ruta graveolens* – common rue, *Lavandula angustifolia* – true lavender). A woody climbing plant can also be a subshrub.

2.2 Shrubs and dwarf shrubs

2.2.1 A **dwarf shrub** is a woody plant usually only up to 0.5 m tall, typically richly branching (for example *Calluna vulgaris* – common heather, *Daphne cneorum* – rose daphne).

2.2.2 A **shrub** is a woody plant with a stem branching typically from the ground into several axes of identical importance. Its height is usually between 0.5 and 5 (7) metres.

2.2.3 The basic properties defining the pruning technique and technology used are the activity of the basal regeneration zone and the natural branching architecture. Another property influencing the choice of pruning season and technique is the time and place of flower (inflorescence) production.

2.2.4 Based on the activity of the basal regeneration zone and the layout of daughter stems on the regeneration shoots that form, the following shrub categories can be defined (see Annex 1):

2.2.5 **(1) with significant activity of basal regeneration zone** – regeneration shoots, usually delicate, form in large quantities throughout the life and are typically short-lived; they frequently form polycormons.

2.2.6 **(2) with less significant activity of basal regeneration zone** – regeneration shoots typically only form in the early developmental stages of the individual; they only form in limited quantities later in its life.

(a) shrubs with mesotonic branching, whose main stems bend as they age and daughter shoots grow primarily in the central section of the parent stem. They permanently form regeneration shoots at the base.

(b) shrubs with acrotonic branching, whose main stems do not bend as they age and daughter shoots grow primarily at the end of the parent stem. These shrubs have only a negligible tendency to form regeneration shoots at the base. This property grows even more distinct as they age.

2.2.7 In terms of **formation of flowers** on regeneration shoots, shrubs are classified into the following groups for the purposes of this standard (see Annex 2):

1. flowering at ends of annual shoots (including herbaceous portions),
2. flowering in leaf axils on annual shoots,
3. flowering along annual shoots,
4. flowering typically on older shoots.

2.3 Woody climbing plants

2.3.1 A **woody climbing plant** is a plant whose stem is not as strong (self-supporting) to allow it to grow vertically without support. Depending on their method of attachment to the support, climbing plants are divided into (see Annex 3):

2.3.2 **Leaning** – they stabilise themselves passively with side shoots (e.g., *Rosa canina* – dog rose), spines (e.g., *Rubus laciniatus* – evergreen blackberry), thorns (e.g., *Lycium halimifolium* – Chinese wolfberry);

2.3.3 **Twining** – they attach themselves actively by twining their stem around the support (e.g., *Lonicera caprifolium* – goat-leaf honeysuckle); if they twine clockwise viewed from above, they are referred to as dextrorse (*Wisteria floribunda* – Japanese wisteria); if counterclockwise, they are sinistrorse (e.g., *Wisteria sinensis* – Chinese wisteria).

2.3.4 **Tendrilous** – they attach themselves actively with tendrils, either:

2.3.5 (a) by twisting around the support (e.g., *Vitis vinifera* – common grapevine, *Parthenocissus inserta* – grape woodbine, *Clematis vitalba* – traveller's joy); or

2.3.6 (b) by means of adhesive discs at the ends of their branches (e.g., *Parthenocissus quinquefolia* – Virginia creeper, *Parthenocissus tricuspidata* – Japanese creeper).

2.3.7 **Radicant (rooting)** – they attach themselves actively with adhesive roots (e.g., *Hedera helix* – common ivy, *Hydrangea petiolaris* – climbing hydrangea, *Euonymus fortunei* – Fortune's spindle).

2.3.8 The method of attachment to the support fundamentally influences the utilisation of each climbing plant and the necessary properties of the support (for example, orientation and sizes of support structure elements).

3 Planting of shrubs and climbing plants

Planting of shrubs and climbing plants is governed by SPPK A02 001 – Planting of trees. This standard only discusses issues specified for the cultivation categories in question.

3.1 Planning (project planning) basics

3.1.1 The choice of shrubs and climbing plants for a site has to respect the ecological and cultivation requirements of each taxon.

3.1.2 Woody climbing plants typically require **adequate support** of adequate thickness, corresponding to the plant's attachment type and size (see Annex 3).

Leaning climbing plants can be tied to any type of support.

Twining climbing plants prefer vertical support with a thickness of guiding elements up to 30 mm with enough space for twining and thickness increments.

Tendrilous climbing plants prefer support with horizontal stabilising elements. Climbing plants with adhesive discs require a flat support, ideally a wall.

Radicant climbing plants require a flat support with sufficiently coarse surface. Sufficient humidity and corresponding substrate chemistry enabling the formation of roots are desirable.

3.1.3 Selected climbing plant species can also be used as groundcover and canopy plants.

3.1.4 The size of the **rootable area** for planting of shrubs and climbing plants is not as significant as for planting of trees. It should always correspond to the critical ecological properties of the taxon and its cultivation requirements.

3.1.5 Planting of shrubs and climbing plants in planters is possible.

3.1.6 The choice of taxa for **planting under specific conditions** around schools, kindergartens, playgrounds and similar areas with intensive presence of children shall be commented upon by a public health protection authority pursuant to Section 77 of Act no. 258/2000 Coll. A list of particularly poisonous and thorny shrubs is included in Annex 6.

3.1.7 Pursuant to Section 5, Para. 4 and 5 of Act no. 114/1992 Coll., as amended, planting of introduced plant species and crossbreeds in open country is only possible with the permission of a nature protection authority.

3.1.8 When planting shrubs and climbing plants in open country, invasive taxa must not be used (see Annex 7).

3.1.9 The principal issue to consider when planting shrubs and climbing plants in urban areas is the taxon's ability to survive on the site while optimally performing the required functions. The use of introduced species is frequent, but invasive taxa must not be used (see Annex 7).

3.1.10 With new taxa (unknown in the CR), the precautionary principle and continuous care have to be applied with respect to the possible invasive potential of newly introduced taxa of shrubs and climbing plants.

3.2 Nursery-cultivated plants

3.2.1 Unless specified otherwise, such plants shall conform to quality indicators of ČSN 46 4902.

3.2.2 Supply of shrubs and climbing plants in planters (containers, pots) is possible.

3.2.3 The planter and the root ball have to be sufficiently filled with roots. The root ball must not disintegrate spontaneously after removal from the pot or container.

3.2.4 Cultivates in light substrates have to receive regular (increased) water supply. It is advisable to inform the customer about that.

3.2.5 The vegetative organs of the cultivate should be sufficiently matured and hardened, resistant to normal weather effects (wilting, sun scorch, cold or frostbite).

3.3 Planting procedure

3.3.1 When planting **bare-rooted plants**, all damaged or dried roots have to be removed or shortened.

3.3.2 If roots of bare-rooted plants show signs of wilting, they have to be dipped in water for at least an hour before planting. The maximum dipping time is 24 hours.

3.3.3 When handling **plants from pots and containers**, the naturally formed roots have to be loosened and their damaged sections reduced. If the planter is filled with roots completely, the felting layer of roots along the planter edge has to be cut loose. Interventions in the root ball must not result in its disintegration and in damage to more than 1/3 of the root system.

3.3.4 **Planting season.** Bare-rooted plants shall be planted during vegetative rest. Planting during frost and in frozen soil is prohibited.

3.3.5 Plants with a root ball and in planters can also be planted in the growing season if they are prepared adequately.

3.3.6 It is not advisable to plant trees in full growth at high temperatures (generally if there is a risk of temperature rising above 25°C). Exemptions from this recommendation shall be consulted with the customer, including protective measures.

3.3.7 When planting, **locate the root collar** or plant branching point at ground level or slightly below it. The budding point of budded rose shrubs shall be located approximately 40 mm below ground level. Woody plants propagated with woody cuttings can be planted similarly.

3.3.8 Planting shall always include adequate **watering**. The watering dose has to be correspond to the requirement for soil moistening below the bottom of the planting pot. The site soil type shall be taken into account.

3.3.9 Water used for the watering must not be contaminated and has to conform to ČSN 75 7143.

3.3.10 Potential installation of **anchoring systems** for shrubs is governed by SPPK A02 001 – Planting of trees. Shrubs are anchored by main branches evenly distributed across the crown projection so as to ensure stability of the entire shrub.

3.3.11 Climbing plants, except 2.3.6 and 2.3.7 are typically guided to the support in a suitable fashion.

3.3.12 Soil amid the plants has to be levelled and loosened after the planting of shrub groups. Loosening is omitted when planting on slopes as erosion protection.

3.3.13 An area planted with shrubs can be mulched using organic mulch in a layer of 80–100 mm on application, or inorganic material in a layer of 50–80 mm or fabric. The above methods can be combined. The layer of mulch used for subshrubs and dwarf shrubs has to be adequate to the plant size and site type. Mulching is typically omitted when planting flower bed roses.

3.3.14 Shrubs producing runners and root suckers (see Annex 4) are better not mulched using mulching fabrics. Fabrics made of both natural and artificial fibres can be used for the remaining species.

3.3.15 Where transplants can be damaged by gnawing or browsing, repellents are applied, planted areas are fenced, or individual protectors are installed around each shrub and climbing plant.

3.3.16 When planting **shrubs with significant root regeneration and sucker formation** (see Annex 4), installation of a root barrier as a measure against undesirable growth has to be considered.

3.3.17 **Comparative pruning** is a common component mainly of planting bare-rooted shrubs. The comparative pruning technique conforms to 4.2.1.1.

3.4 Planting acceptance

3.4.1 The **warranty period** for the planting works is agreed as part of the contractual relationship between the planting contracting authority and the contractor, and shall ideally cover two growing seasons.

3.4.2 The optimum period for work acceptance is June to August.

3.4.3 The acceptance procedure includes inspection of:

- genuineness of the declared taxon,
- declared plant size,
- quality of cultivates and their conformity to requirements of ČSN 46 4902 and ČSN 46 4902-1, respectively, as well as their current health condition and vitality,
- treatment of the planting area, including functionality of support elements if any.

3.5 Finishing and development management after planting

3.5.1 **Juvenile pruning** of solitary shrubs and climbing plants is described in 4.2.1.2.

3.5.2 **Watering** is provided until the plants have evidently taken root on the site. That can be recognised, for example, by intensive and permanent production of new shoots and simultaneous firm rooting of the cultivate in its new environment. The quality of water used is governed by 3.3.9 above.

3.5.3 Watering has to be adjusted to:

- current climate conditions (particularly annual precipitation total and its distribution round the year),
- the site (e.g., effect of site exposure to wind or sunshine),
- size of shrub or climbing plant,
- natural soil moisture,
- planting date (e.g., evergreen species require abundant watering before winter),
- taxon-specific requirements.

3.5.4 A cycle of 8–12 waterings in the course of the first growing season after planting is mostly recommended.

3.5.5 The watering is reduced in the following periods; none is provided in justified cases.

3.5.6 Watering has to penetrate at least to the depth of the root area (depending on plant size) throughout the planting area.

3.5.7 Watering has to be done in a way to not promote soil erosion.

3.5.8 **Fertilisation and loosening** shall follow SPPK A02 001 – Planting of trees.

3.5.9 The **overall condition of the woody plants** has to be inspected during vegetation. If any pathogens is detected, the pathogenic organism has to be identified and adequate measures have to be taken depending on its type and degree of danger. If there is a risk of occurrence of quarantine pathogenic organism, the situation has to be consulted with the national plant medical authority.

3.5.10 **Protection from damage by frost and snow** mostly concerns thermophilic taxa.

3.5.11 The most important measure for evergreen taxa is provision of sufficient quantity of water in the soil before the onset of frost. In addition, the base of shrubs in particular can be protected by raising mounds of earth in beds or mulching with airy and permeable organic material with thermal insulation effects (such as leaves, coniferous branches, straw).

3.5.12 The aboveground portions of species sensitive to branch drooping (due to weight of snow) have to be protected suitably, for example by tying them together.

3.5.13 The crown of sensitive species of trunked shrubs should ideally be protected adequately from damage in winter (for example, by covering or wrapping them or bending them towards the ground and raising of mounds).

3.5.14 Species sensitive to damage by winter or early spring sun should ideally be protected by shading.

3.5.15 Protection of sensitive woody plant species has to be removed in spring in accordance with the current weather patterns and vegetation onset.

3.6. Maintenance management

3.6.1 Maintenance management follows development management.

3.6.2 It comprises a set of interventions necessary to maintain full functional efficiency of shrub and climbing plant groups. These important functional interventions include primarily maintenance and special pruning techniques (see 4.2 below).

4 Pruning of shrubs and climbing plants

For the purposes of this standard, pruning of shrubs and climbing plants includes other cultivation measures of similar effect that are not pruning in the strict sense.

4.1 Pruning technique

Pruning technique is governed by SPPK A02 002 – Pruning of trees. This standard only discusses issues specified for the cultivation categories in question.

4.1.1 The most frequent technique in pruning of shrubs and climbing plants is **"blind" pruning**.

4.1.2 In addition, other techniques described in A02 002 – Pruning of trees are commonly used:

- pruning to bud,
- leader shoot removal,
- pruning to branch collar.

4.1.3 **Pruning to pin** – leaves a pin 100–300 mm long with undamaged buds capable of producing flowering annual shoots. It is used for taxa flowering along the entire annual shoots (see Annex 2, and Annex 8, Fig. 7).

4.1.4 **Pincering** – reduction of annual shoots of deciduous broadleaved and evergreen woody plant in the growing season in order to regulate their growth, branching, maturing and possibly flowering. Annual shoots of deciduous and evergreen shrubs are reduced typically past the 2nd or 3rd leaf (maximum 5th) (see Annex 8, Fig. 8).

4.1.5 **Nipping** is used in order to regulate the growth of coniferous woody plants. Nipping is done annually at the start of the growing season, before needles develop on annual shoots to the "candle stage". Young annual shoots are reduced by up to 2/3 as needed.

4.1.6 **Inflorescence breaking** is done primarily to prevent the plant from exhaustion due to fruiting. Inflorescences broken off annually shortly after finishing flowering. The breaking must not damage buds established under the flowers or inflorescences (see Annex 6, Fig. 6).

4.2 Pruning process categories

For ease of assignment and inspection, the different pruning types are classified by purpose into the following process categories. They are shown including the recommended codes, which are used in work designs and in development of management plans.

Establishment pruning	
K-RK	Comparative pruning
K-RV	Juvenile pruning
Maintenance pruning	
K-RP	Thinning
K-RZ	Revitalisation (removal pruning)
K-RT	Shaping pruning
Special pruning techniques	
K-R	Growth regulation
K-Z	Reverse pruning

4.2.1 Establishment pruning styles

Carried out on juvenile shrubs and climbing plants from the time of planting until full functionality on the site. The objective of establishment pruning is to promote taking root and development into the required shape and function.

4.2.1.1 Comparative pruning (K-RK)

4.2.1.1.1 The objective of K-RK is adjustment of the proportion between the aboveground and underground portions of the woody plant in order to promote its taking root on the site.

4.2.1.1.2 Damaged and withering parts are removed or reduced.

4.2.1.1.3 Shoots of **bare-rooted deciduous broadleaved shrubs** are reduced more radically. They are reduced by at least 1/2 to 2/3 of their original length; thin shoots are removed completely.

4.2.1.1.4 In the case of **insufficient branching of deciduous broadleaved shrubs**, it is advisable to prune the plants immediately after planting by irregularly reducing the branches – the pruning follows not a single viewing angle but takes place at different distances from the ground.

4.2.1.1.5 The provision of 4.2.1.1.4 is difficult to apply to subshrubs, dwarf shrubs and shrubs with significant activity of the basal regeneration zone (see Annex 3), which are better subjected to total revitalisation (see Annex 8, Fig. 1). The pruning intensity also depends on the plant cultivation shape.

4.2.1.1.6 **Coniferous, evergreen and solitary shrubs and climbing plants** grown in planters or with a root ball are only pruned when planting in especially justified cases. The pruning is limited to removal of broken, partially broken, infested or mechanically damaged branches. In exceptional cases, shoots that significantly disrupt the shrub symmetry can be reduced.

4.2.1.1.7 K-RK is done as part of planting of shrubs and climbing plats regardless of the season of the year. The pruning is more radical when planting in spring and in full vegetation; it may be gentler during autumn planting.

4.2.1.2 Juvenile pruning (K-RV)

4.2.1.2.1 The objective of K-RV is to promote development of a long-term functional, vital woody plant with a species-characteristic or required aboveground shape. It is done in the early years after planting of the shrub or climbing plant on its permanent site or after revitalisation pruning (see 4.2.2.2 below).

4.2.1.2.2 The performance of K-RV has to be considered in particular in the case of solitary plants.

4.2.1.2.3 Damaged and frostbitten parts shall be removed continuously.

4.2.1.2.4 **Subshrubs, dwarf shrubs and shrubs with significant activity of the basal regeneration zone** typically do not require juvenile pruning.

4.2.1.2.5 **Woody climbing plants** should ideally be guided onto supports as needed, including temporary fastening and directing of growth by removing shoots growing in inappropriate directions. A specific approach to juvenile pruning is required notably by the genera *Wisteria, Campsis* and *Vitis* (see Annex 8, Fig. 9).

4.2.1.2.6 **Shrubs with less significant activity of basal regeneration zone and mesotonic branching.** If juvenile pruning is necessary, then original shoots are removed and shoots growing out of the base on the site are preferred (Annex 8, Fig. 5).

4.2.1.2.7 **Shrubs with less significant activity of basal regeneration zone and acrotonic branching.** K-RV is carried out in the first four or five years after planting. Branching thickening the shrub are removed. Flowering shoots and stable (full-bodied) architecture are promoted (see Annex 8, Fig. 4).

4.2.1.2.8 Early spring is usually the optimal season for K-RV.

4.2.1.2.9 **Shrubs producing runners and root suckers** (see Annex 4) have to be guided in their growth in accordance with the cultivation objective by cutting of roots (spading) or special measures when planting (see 3.3.16 above).

4.2.2 Maintenance pruning styles

Carried out on grown-up shrubs and climbing plants after the intensive growth period. The objective of maintenance pruning is long-term vitality of woody plants and performance of their expected functions. Main attention is focused on promotion of natural or required (in regularly shaped woody plants) architecture and rich and regular flowering or fruiting as the case may be.

4.2.2.1 Thinning (K-RP)

4.2.2.1.1 The objective of K-RP is to thin the shrubs and climbing plants and promote their natural regeneration with next-generation basal shoots. Formation of new flowering shoots is also promoted.

4.2.2.1.2 K-RP consists in removal of parts that are:

- overaged,
- dying or dead,
- suffering from disease or pests,
- broken or partially broken,
- intersecting each other,
- branches thickening the shrub or climbing plant,
- posing a danger to operating safety.

4.2.2.1.3 K-RP is suitable for all shrub forms (divided by flower production) except:

- species flowering at ends of annual shoots,
- flowering in leaf axils on annual shoots.

In addition, it can be done on species with significant activity of the basal regeneration zone.

4.2.2.1.4 Thinning should not lead to long-term change in the shape of the shrub or climbing plant or adverse impact on its other aesthetic functions, particularly flowering.

4.2.2.1.5 In **shrubs flowering on older shoots**, a pruning frequency of more than once every 5 years may adversely affect flowering and other aesthetic functions.

4.2.2.1.6 K-RP includes periodic removal of undergrowing rootstock and reverse mutations. Undergrowing rootstock has to be removed as soon as possible, ideally while still herbaceous.

4.2.2.1.7 Thinning should not remove more than 30% of living shoots in juvenile shrubs and climbing plants, and more than 50% of living shoots in old shrubs, depending on their individual vitality and regenerative ability.

4.2.2.1.8 K-RP is typically not done on **subshrubs and dwarf shrubs**.

4.2.2.1.9 In **woody climbing plants**, in addition to measures specified in 4.2.2.1.2, K-RP often also includes reduction to the top parts exceeding the required support height to prevent shading of the lower parts of the woody plant (see Annex 8, Fig. 10).

4.2.2.1.10 In shrubs with **less significant and weak activity of the basal regeneration zone and with acrotonic branching**, K-RP usually only involves removal of shoots that are dry, dead or suffering from disease or pests, employing pruning to branch collar, to bud or to pin.

4.2.2.1.11 In shrubs with **less significant and weak activity of the basal regeneration zone and with mesotonic branching**, branches are removed by “blind” pruning immediately over ground. Based on the natural regeneration mechanisms of each shrub, branches can also be reduced by pruning to bud. It is advisable to combine the methods.

4.2.2.1.12 Early spring is the most suitable season for K-RP. The flowering season should be

reflected as well. Pruning of woody plants flowering in early spring or before foliage onset is recommended after flowering only.

4.2.2.2 Revitalisation (removal pruning) (K-RZ)

4.2.2.2.1 The objective of K-RZ is to restore shrub functionality by completely removing the aboveground parts of an older individual.

4.2.2.2.2 K-RZ is not suitable for shrubs with **less significant activity of basal regeneration zone and acrotonic branching**. Shrubs in the genera Corylus, Potentilla and Rosa are possible exceptions (see Annex 8, Fig. 2).

4.2.2.2.3 K-RZ is carried out on branches with **significant activity of the basal regeneration zone** by completely cutting of the shrub's shoots at the ground by "blind" pruning, leaving no pins. In shrubs with **less significant and weak activity of the basal regeneration zone and with mesotonic branching**, live pins no longer than 50–100 mm can be left (see Annex 8, Fig. 1).

4.2.2.2.4 After K-RZ, it is advisable to loosen the earth in the immediate surroundings of the shrub or amid shrubs in group plantings. Fertiliser addition is advisable. Areas amid plants can be mulched. Mulching is governed by 3.3.13 above.

4.2.2.2.5 Revitalisation of **shrubs** (including woody climbing plants) **flowering at ends of annual shoots** is typically done annually by removing shoots using pruning to pin. The number of buds left corresponds to the number of buds flowering richly the year before with a 50% reserve, the shoot thickness and shrub vitality (typically 3–5 (8) buds).

4.2.2.2.6 In **subshrubs** (including woody climbing plants), K-RZ is done annually by total removal. It can also be done periodically every 2–3 (5) years, depending on the taxon-specific cultivation properties.

4.2.2.2.7 K-RZ is done in early spring. In some **shrubs flowering in early spring or before foliage onset**, it has to be done after finishing flowering only (e.g., *Forsythia*spp. – Easter tree).

4.2.2.2.8 Revitalisation pruning has to be followed by juvenile pruning procedures (see 4.2.1.2).

4.2.2.3 Shaping pruning (K-RT)

4.2.2.3.1 The objective of K-RT is to produce a shrub shape corresponding to the cultivation intention, not typical of the taxon. K-RT can only be done in taxa suitable for shaping (see Annex 5) with a good regeneration ability that are also small-leaved species.

4.2.2.3.2 In road median strips and on similar sites, shaping can be performed additionally on other taxa with a good regeneration ability.

4.2.2.3.3 For the purposes of this standard, shaping refers to **pruning of hedges and shrub walls**. The technique is based on a cutting of the entire shaped profile while ensuring constant and even lighting for the shrub base. Therefore, the shaping profile should ideally narrow down towards the top in hedges and shrub walls taller than 1 m.

4.2.2.3.4 K-RT is carried out annually, typically once or twice (3 times if necessary). June is the most convenient season for first pruning (after maximum annual shoot increment is finished), August for the second, and September/October or early

spring for the possible third pruning.

4.2.2.3.5 Shaping pruning employs the “blind” technique.

4.2.2.3.6 The maximum permissible deviation in **flatness** of hedges and shrub walls after pruning is generally 3–5% of its height (mounting). Exceptions from this rule or reduction in the generally permissible deviation have to be discussed with the contracting authority in advance.

4.2.2.3.7 It is advisable to fertilise shrubs after the first round of K-RT.

4.2.3 Special pruning styles

Carried out in cases where the required function cannot be achieved by any of the juvenile and maintenance pruning types.

4.2.3.2 Growth regulation (K-R)

4.2.3.2.1 The objective of this style in general is to promote branching and restrict longitudinal increment in woody plants.

4.2.3.2.2 The technique used is typically nipping or pincering.

4.2.3.2.3 Taxa suitable for K-R are notably taxa with a good regeneration ability. Even species with a worse regeneration ability can be shaped in specific annual shoot development phases (candles), e.g., *Pinus* spp. – pine genus.

4.2.3.2.4 K-R is carried out annually in the intensive annual shoot increment period or preferably after it has finished. However, the annual shoots still have to be herbaceous or no more than semi-woody.

4.2.3.3 Reverse pruning (K-Z)

4.2.3.3.1 The objective of the category of interventions under K-Z is to promote flowering by removing parts of shrubs or climbing plants during the growing season.

4.2.3.3.2 Finished inflorescences with a part of the annual shoot are removed in order to promote flowering, most commonly remontancy. The pruning is done by shearing off the adequate part (depending on shrub growth form) of the shoot below the inflorescence.

4.2.3.3.3 The pruning must not affect old wood.

4.2.3.3.4 Cutting of shoots after flowering should ideally be done annually after the end of flowering.

4.2.3.3.5 The pruning technique employed is “blind” or to bud, or alternatively breaking off of inflorescences.

Annex 1 Division of shrubs and climbing plants into groups by activity of the basal regeneration zone

Shrubs with significant activity of the basal regeneration zone

Amygdalus nana	dwarf Russian almond
Caragana frutex	Russian peashrub
Caryopteris × clandonensis	Clandon bluebeard
Cytisus spp.	broom genus
Hypericum calycinum	rose of Sharon
Jasminum nudiflorum	winter jasmine
Kerria japonica	Japanese kerria
Lycium halimifolium	Chinese wolfberry
Perovskia abrotanoides	Russian sage
Ribes spp.	currant genus
Rosa canina	dog rose
Rosa gallica	Gallic rose
Rosa nitida	shining rose
Rosa pimpinellifolia	burnet rose
Rosa rugosa	beach rose
Rubus spp.	blackberry genus
Spiraea × billiardii	Billiard’s meadowsweet
Spiraea douglasii	Douglas’ meadowsweet
Spiraea japonica	Japanese meadowsweet
Spiraea salicifolia	willowleaf meadowsweet
Stephanandra incisa	lace shrub
Symphoricarpos spp.	snowberry

Shrubs with less significant activity of basal regeneration zone

with mesotonic branching: daughter stems produced predominantly in the central part of the longitudinal axis of the parent stem

Amorpha fruticosa	false indigo-bush
Berberis spp.	barberry genus
Buddleja spp.	butterfly bush genus
Cotoneaster spp.	cotoneaster genus
Deutzia spp.	deutzia genus
Exochorda racemosa	common pearlbush
Forsythia spp.	Easter tree genus
Hippophaë rhamnoides	common sea buckthorn
Ilex spp.	holly genus
Kolkwitzia amabilis	beauty bush
Ligustrum spp.	privet genus
Lonicera spp.	honeysuckle genus
Mahonia aquifolium	Oregon grape
Philadelphus spp.	mock-orange genus
Physocarpus opulifolius	common ninebark
Prunus spinosa	common blackthorn
Pyracantha coccinea	scarlet firethorn
Rhamnus cathartica	common buckthorn
Rosa hugonis	Father Hugo rose
Rosa multiflora	many-flowered rose
Salix spp.	willow genus
Spiraea × *arguta*	garland spiraea
Spiraea × *cinerea*	ash bridewort
Spiraea nipponica	Japanese meadowsweet
Spiraea × *vanhouttei*	Van Houtte's spiraea
Swida spp.	dogwood genus
Syringa spp.	lilac genus
Tamarix spp.	tamarisk genus
Viburnum spp.	viburnum genus
Weigela × *hybrida*	hybdrid weigela

with acrotonic branching: daughter stems produced predominantly at the apex of the longitudinal axis of the parent stem

Aesculus parviflora	bottlebrush buckeye
Amelanchier lamarckii	common juneberry
Calycanthus floridus	eastern sweetshrub
Caragana arborescens	Siberian peashrub
Chaenomeles spp.	flowering quince genus
Chionanthus virginicus	white fringetree
Cornus spp.	dogwood genus
Corylopsis spp.	winter hazel genus
Corylus spp.	hazel genus
Cotinus coggygria	European smoketree
Daphne spp.	daphne genus
Dasiphora (Potentilla) fruticosa	shrubby cinquefoil
Euonymus spp.	spindle genus
Hamamelis spp.	winterbloom genus
Hibiscus syriacus	rose of Sharon
Kalmia spp.	lambkill genus
Laburnum spp.	laburnum genus
Magnolia spp.	magnolia genus
Paeonia suffruticosa	tree peony
Parrotia persica	Persian ironwood
Photinia spp.	photinia genus
Pieris spp.	fetterbush genus
Rhododendron spp.	rhododendron genus
Rhus spp.	sumach genus
Rosa spp.	flowerbed roses
Sambucus spp.	elder genus

Developed based on:

Hieke, K. (1978): Praktická dendrologie I. a II., SZN, Praha.
Kavka, B. (1974): Zhodnocení hlavních druhů křovin z hlediska jejich využití v zahradní a krajinářské architektuře. Acta Průhoniciana 29, VÚOZ Průhonice.
Koblížek, J. (2006): Jehličnaté a listnaté dřeviny našich zahrad a parků. Sursum, Tišnov.
Pejchal, M. (2008): Arboristika I. – Obecná dendrologie. Vyšší odborná škola zahradnická a Střední zahradnická škola, Mělník.

Annex 2 Division of shrubs and climbing plants into groups by flower production on shoots

Flowering at ends of annual shoots (including herbaceous portions of subshrubs):

Buddleja davidii	summer lilac
Calluna spp.	heather genus
Campsis spp.	trumpet vine genus
Caryopteris × clandonensis	Clandon bluebeard
Ceanothus spp.	California lilac genus
Clematis × jackmanii	Jackman's clematis
Clematis orientalis	Chinese clematis
Clematis × hybrida	hybrid clematis
Fallopia spp.	bindweed genus
Fuchsia magellanica	hummingbird fuchsia
Hydrangea arborescens	smooth hydrangea
Hypericum androsaemum	sweet amber
Hypericum calycinum	rose of Sharon
Hypericum patulum	Chinese St John's wort
Holodiscus discolor	ocean spray
Indigofera spp.	true indigo genus
Kerria spp.	kerria genus
Lavandula officinalis	true lavender
Perovskia spp.	Russian sage genus
Rosa spp.	flowerbed roses
Rubus spp.	blackberry genus
Santolina chamaecyparissus	cotton lavender
Sorbaria sorbifolia	false spiraea
Spiraea japonica	Japanese meadowsweet
Spiraea douglasii	Douglas' meadowsweet
Spiraea salicifolia	willowleaf meadowsweet
Spiraea × billiardii	Billiard's meadowsweet
Vitex negundo	five-leaved chaste tree

Flowering in leaf axils on annual shoots:

Colutea arborescens	bladder senna
Hibiscus syriacus	rose of Sharon
Lespedeza thunbergii	Thunberg’s bushclover
Rhodotypos scandens	jet bead
Spartium spp.	Spanish broom genus
Symphoricarpos spp.	snowberry
Vitis spp.	grapevine genus
Wisteria sinensis	Chinese wisteria

Shrubs flowering along annual shoots:

Buddleja alternifolia	alternate-leaved butterfly-bush
Clematis montana	mountain clematis
Clematis alpina	Alpine clematis
Cytisus spp.	broom genus
Daphne mezereum	February daphne
Deutzia spp.	deutzia genus
Forsythia spp.	Easter tree genus
Hydrangea macrophylla	bigleaf hydrangea
Hydrangea aspera	rough hydrangea
Jasminum nudiflorum	winter jasmine
Kolkwitzia amabilis	beauty bush
Lonicera korolkowii	blueleaf honeysuckle
Lonicera tatarica	Tartarian honeysuckle
Lonicera xylosteum	fly honeysuckle
Paeonia suffruticosa	tree peony
Philadelphus spp.	mock-orange genus
Prunus tenella	dwarf Russian almond
Prunus triloba	flowering almond
Ribes spp.	currant genus
Rosa spp.	botanical roses
Salix spp.	willow genus
Spiraea × arguta	garland spiraea
Spiraea × cinerea	ash bridewort
Spiraea × vanhouttei	Van Houtte's spiraea
Tamarix parviflora	smallflower tamarisk
Weigela spp.	weigela genus
Wisteria floribunda	Japanese wisteria

Shrubs flowering typically on older shoots:

Berberis spp.	barberry genus
Calycanthus spp.	sweetshrub genus
Caragana spp.	peashrub genus
Cotoneaster spp.	cotoneaster genus
Cornus mas	European cornel
Crataegus spp.	hawthorn genus
Euonymus spp.	spindle genus
Exochorda spp.	pearlbush genus
Chaenomeles spp.	flowering quince genus
Laburnum spp.	laburnum genus
Lonicera spp.	honeysuckle genus (climbing)
Mahonia spp.	Oregon grape genus
Prunus spinosa	common blackthorn
Pyracantha spp.	firethorn genus
Rhamnus spp.	buckthorn genus
Syringa spp.	lilac genus
Viburnum spp.	viburnum genus

Annex 3 Division of climbing plants by attachment to support

Twining:

Actinidia arguta	hardy kiwi
Actinidia chinensis	Chinese kiwi
Actinidia kolomikta	variegated-leaf hardy kiwi
Aristolochia durior (macrophylla)	Dutchman's pipe
Celastrus orbiculata	Oriental bittersweet
Celastrus scandens	American bittersweet
Fallopia aubertii	Chinese fleeceflower
Fallopia baldshuanica	Bukhara fleeceflower
Lonicera × brownii	Brown's honeysuckle
Lonicera caprifolium	goat-leaf honeysuckle
Lonicera × heckrotii	Heckrott's honeysuckle
Lonicera henryi	Henry's honeysuckle
Lonicera japonica	Japanese honeysuckle
Lonicera peryclimenum	European honeysuckle
Lonicera × tellmanniana	Tellmann's honeysuckle
Menispermum dauricum	Dahur moonseed
Schisandra chinensis	Chinese magnolia-vine
Wisteria floribunda	Japanese wisteria
Wisteria sinensis	Chinese wisteria

Tendrilous:

Ampelopsis bodinieri	Bodinier peppervine
Ampelopsis brevipeduncula	Amur peppervine
Ampelopsis megalophylla	spikenard peppervine
Clematis alpina	Alpine clematis
Clematis × hybrid	hybrid clematis
Clematis macropetala	downy clematis
Clematis montana	mountain clematis
Clematis orientalis	Chinese clematis
Clematis tangutica	golden clematis
Clematis terniflora	leatherleaf clematis
Clematis texensis	scarlet leatherflower
Clematis vitalba	traveller's joy
Clematis viticella	purple clematis
Parthenocissus inserta	grape woodbine
Vitis spp.	grapevine genus

Tendrilous with adhesive discs:

Parthenocissus quinquefolia	Virginia creeper
Parthenocissus tricuspidata	Japanese creeper

Leaning:

Jasminum nudiflorum	winter jasmine
Lycium halimifolium	Chinese wolfberry
Lycium chinense	Chinese boxthorn
Rosa arvensis	field rose
Rosa multiflora	many-flowered rose
Rosa spp.	climbing roses
Rubus laciniatus (fruticosus)	evergreen blackberry (shrub)

Radicant:

Campsis radicans	trumpet vine
Campsis × *tagliabuana*	Tagliabue's trumpet vine
Euonymus fortunei	Fortune's spindle
Hedera colchica	Persian ivy
Hedera helix	common ivy
Hydrangea petiolaris	climbing hydrangea
Schizophragma hydrangeoides	hydrangea vine

Developed based on:

Koblížek, J. (2006): Jehličnaté a listnaté dřeviny našich zahrad a parků. Sursum, Tišnov.
Vlasák, M. (2012): Okrasné dřeviny, Vyšší odborná škola zahradnická a Střední zahradnická škola, Mělník, ISBN 978-80-904782-9-9

Annex 4 Shrubs and climbing plants producing runners and root suckers

Acanthopanax sieboldianus	Siberian ginseng
Aesculus parviflora	bottlebrush buckeye
Akebia quinata	five-leaf chocolate vine
Amelanchier alnifolia	Pacific serviceberry
Amelanchier ovalis	snowy mespilus
Amelanchier spicata	dwarf serviceberry
Amygdalus nana	dwarf Russian almond
Aralia elata	Chinese angelica-tree
Arctostaphylos uva-ursi	pinemat manzanita
Aronia melanocarpa	black chokeberry
Berberis vulgaris	common barberry
Campsis radicans	trumpet vine
Caragana frutex	Russian peashrub
Celastrus orbiculatus	Oriental bittersweet
Cerasus fruticosa	dwarf cherry
Cerasus tomentosa	Nanking cherry
Chaenomeles spp.	flowering quince genus
Decaisnea fargesii	blue bean plant
Duschekia (Alnus) viridis	green alder
Elaeagnus commutata	silverberry
Ephedra distachya	jointfir
Euonymus europaeus	European spindle
Euonymus fortunei	Fortune’s spindle
Frangula alnus (Rhamnus frangula)	alder buckthorn
Gaultheria procumbens	eastern teaberry
Gaultheria shallon	shallon teaberry
Halimodendron halodendron	Russian salt tree
Hamamelis vernalis	Ozark witchhazel
Hippophäe rhamnoides	common sea buckthorn
Hydrangea arborescens	smooth hydrangea
Hydrangea quercifolia	oakleaf hydrangea
Hypericum androsaemum	sweet amber
Hypericum calycinum	rose of Sharon
Jasminum nudiflorum	winter jasmine
Kerria japonica	Japanese kerria
Lonicera caprifolium	goat-leaf honeysuckle
Lonicera japonica	Japanese honeysuckle
Lonicera periclymenum	European honeysuckle

Lycium halimifolium	Chinese wolfberry
Mahonia aquifolium	Oregon grape
Padus virginiana	Virginia bird cherry
Pachysandra terminalis	Japanese spurge
Paxistima canbyi	Canby's mountain-lover
Prunus spinosa	common blackthorn
Rhodococcum spp.	lingonberry genus
Rhus glabra	smooth sumac
Rhus typhina	staghorn sumac
Ribes aureum	golden currant
Robinia hispida	bristly locust
Rosa canina	dog rose
Rosa gallica	Gallic rose
Rosa glauca	redleaf rose
Rosa nitida	shining rose
Rosa pendulina	Alpine rose
Rosa pimpinellifolia	burnet rose
Rosa rugosa	beach rose
Rubus spp.	blackberry genus
Sorbaria aitchisonii	Aitchison's sorbaria
Sorbaria sorbifolia	false spiraea
Spiraea alba	white meadowsweet
Spiraea × billiardii	Billiard's meadowsweet
Spiraea decumbens	decumbent meadowsweet
Spiraea douglasii	Douglas' meadowsweet
Spiraea menziesii	Menzies' meadowsweet
Spiraea salicifolia	willowleaf meadowsweet
Stephanandra incisa	lace shrub
Swida sanguinea	common dogwood
Swida sericea	red osier dogwood
Symphoricarpos albus	common snowberry
Symphoricarpos orbiculatus	coralberry
Symphoricarpos × chenaultii	Chenault coralberry
Syringa vulgaris	common lilac
Vaccinium spp.	blueberry genus
Vinca minor	lesser periwinkle
Vitis riparia	riverbank grape

Developed based on:

Hieke, K. (1994): Lexikon okrasných dřevin. Helma, Praha.

Kavka, B. (1974): Zhodnocení hlavních druhů křovin z hlediska jejich využití v zahradní a krajinářské architektuře. Acta Průhoniciana 29, VÚOZ Průhonice.

Koblížek, J. (2006): Jehličnaté a listnaté dřeviny našich zahrad a parků. Sursum, Tišnov.

Pejchal, M. (2008): Arboristika I. – Obecná dendrologie. Vyšší odborná škola zahradnická a Střední zahradnická škola, Mělník.

Annex 5 Species of shrubs and shrub-formed trees suitable for shaping

Deciduous shrubs:

Berberis spp.	barberry genus
Cornus mas	European cornel
Crataegus spp.	hawthorn genus
Cytisus spp.	broom genus
Dasiphora (Potentilla) fruticosa	shrubby cinquefoil
Genista spp.	greenweed genus
Ligustrum spp.	privet genus
Lonicera spp.	honeysuckle genus
Philadelphus 'Albatre'	mock-orange
Philadelphus 'Erectus'	mock-orange
Prunus spinosa	common blackthorn
Rhamnus cathartica	common buckthorn
Ribes alpinum	Alpine currant
Salix purpurea	purple willow
Salix repens	creeping willow
Spiraea spp.	meadowsweet genus
Swida sanguinea	common dogwood
Syringa × chinensis	Chinese lilac
Viburnum lantana	wayfaring tree
Viburnum opulus	European cranberrybush
Weigela spp.	weigela genus

Evergreen shrubs:

Berberis spp.	barberry genus
Buxus sempervirens	European box
Cotoneaster spp.	cotoneaster genus
Euonymus fortunei	Fortune's spindle
Ilex aquifolium	common holly
Ilex × meserveae	blue holly
Lavandula angustifolia	garden lavender
Laurocerasus officinalis	common laurel
Lonicera nitida	box honeysuckle
Lonicera pileata	privet honeysuckle
Mahonia aquifolium	Oregon grape
Pyracantha spp.	firethorn genus – hybrids

Coniferous shrubs:

Chamaecyparis lawsoniana	Lawson cypress
Larix spp.	larch genus
Picea abies	Norway spruce
Pinus mugo	creeping pine
Taxus spp.	yew genus
Thuja spp.	arborvitae genus

Developed based on:

Koblížek, J. (2006): Jehličnaté a listnaté dřeviny našich zahrad a parků. Sursum, Tišnov.

Vlasák, M. (2012): Okrasné dřeviny, Vyšší odborná škola zahradnická a Střední zahradnická škola, Mělník, ISBN 978-80-904782-9-9

Annex 6 Species of thorny and particularly poisonous shrubs and shrub-formed trees

Thorny and spiny (on trunk, branches or leaves):

Acanthopanax sieboldianus	Siberian ginseng
Aralia elata	Chinese angelica-tree
Berberis spp.	barberry genus
Chaenomeles spp.	flowering quince genus
Elaeagnus pungens	thorny olive
Genista lydia	Lydian broom
Hippophaë rhamnoides	common sea buckthorn
Ilex aquifolium	common holly
Ilex × *meserveae*	blue holly
Juniperus communis	common juniper
Juniperus squamata	flaky juniper
Lycium halimifolium	Chinese wolfberry
Lycium chinense	Chinese boxthorn
Mahonia spp.	Oregon grape genus
Mespilus germanica	common medlar
Pernettya mucronata	prickly heath
Prunus spinosa	common blackthorn
Pyracantha spp.	firethorn genus
Rhamnus cathartica	common buckthorn
Ribes divaricatum	spreading gooseberry
Rosa spp.	rose genus
Rubus spp.	blackberry genus

Division of shrubs by toxicity:

Name	Poisonous part	Degree of toxicity	Remark
Broadleaved woody plants			
Andromeda polifolia	leaves and flowers	+++	mistakable for rosemary
Buxus spp.	leaves and fruits	+++	larger quantities of shoots and leaves can be dangerous for domestic animals
Daphne spp.	whole plant	++++	10–12 fruits can be dangerous to children
Euonymus spp.	whole plant	+++	36 fruits can be dangerous to adults
Genista spp.	whole plant	++ to +++	
Ilex spp.	leaves and fruits	+++	20–30 fruits can be dangerous to adults
Laburnum spp.	whole plant	++++	3–4 pods can be dangerous to children
Rhododendron spp.	whole plant	++ to +++	*R. ferrugineum* has highly toxic leaves
Rhus vernix and *Toxicodendron radicans* (*Rhus toxicodendron)*	bark, latex	+++ to ++++	*R. typhina* and *R. glabra* are not toxic
Conifers:			
Juniperus horizontalis	whole plant	++++	
Juniperus × *pfitzeriana*	whole plant	++++	
Juniperus sabina	whole plant	++++	shoot tips are highly toxic; 5–20 g can be dangerous
Junuperus virginiana	whole plant	++++	
Taxus spp.	whole plant except succulent aril of the fruit	++++	needles particularly toxic, also for horses and cattle
Thuja spp.	whole plant	++++	toxic for animals, particularly horses

Developed based on:

Koblížek, J. (2006): Jehličnaté a listnaté dřeviny našich zahrad a parků. Sursum, Tišnov.

Vlasák, M. (2012): Okrasné dřeviny, Vyšší odborná škola zahradnická a Střední zahradnická škola, Mělník, ISBN 978-80-904782-9-9

Annex 7 List of invasive shrubs and climbing plants

In the Czech Republic, the following in particular are invasive shrubs and climbing plants:

Parthenocissus inerta	grape woodbine
Lycium barbarum	Chinese wolfberry
Symphoricarpos albus	common snowberry
Prunus serotina	rum cherry

Developed based on:

Pyšek P. et al., 2012: Catalogue of alien plants of the Czech Republic (2nd edition): checklist update, taxonomic diversity and invasion patterns. – Preslia 84: 155-255.

Annex 8 Illustrations

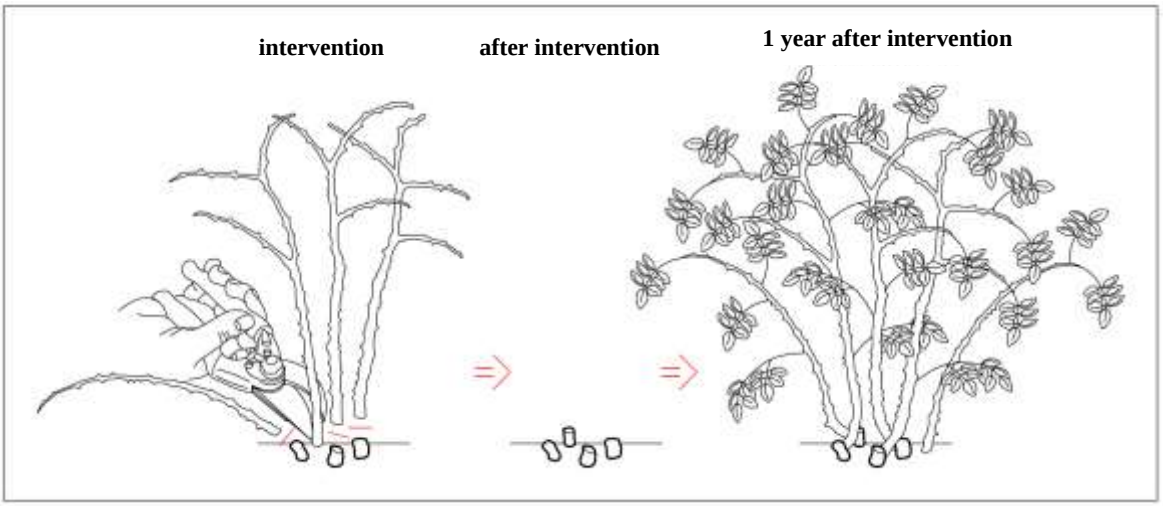

Fig. 1: Example of revitalisation of shrubs with **significant basal regeneration zone** (removal pruning; 4.2.2.2.3).

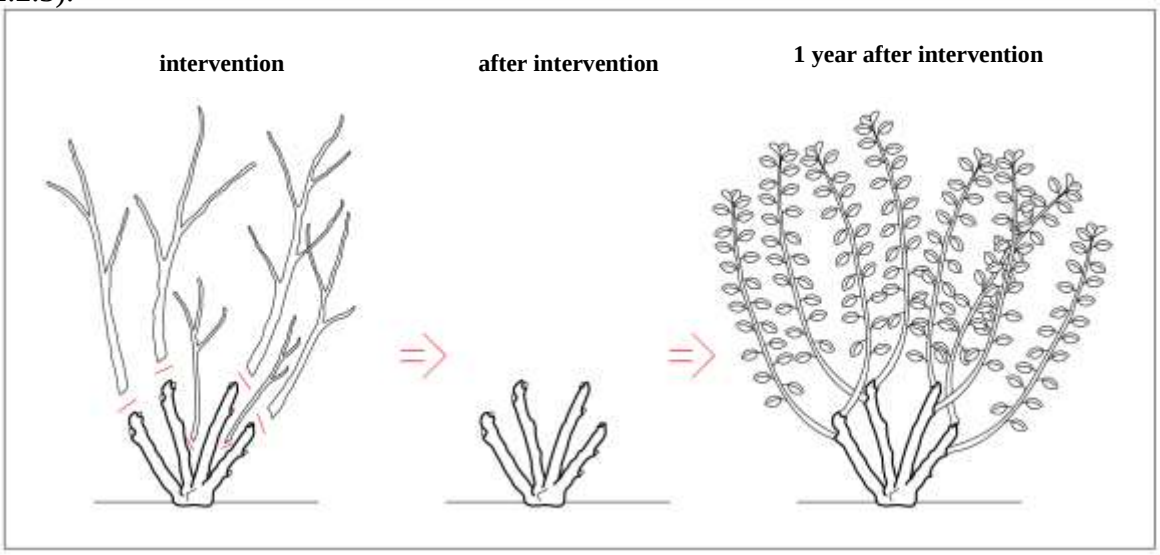

Fig. 2: Example of revitalisation of shrubs with **less significant basal regeneration zone** (removal pruning; 4.2.2.2.3).

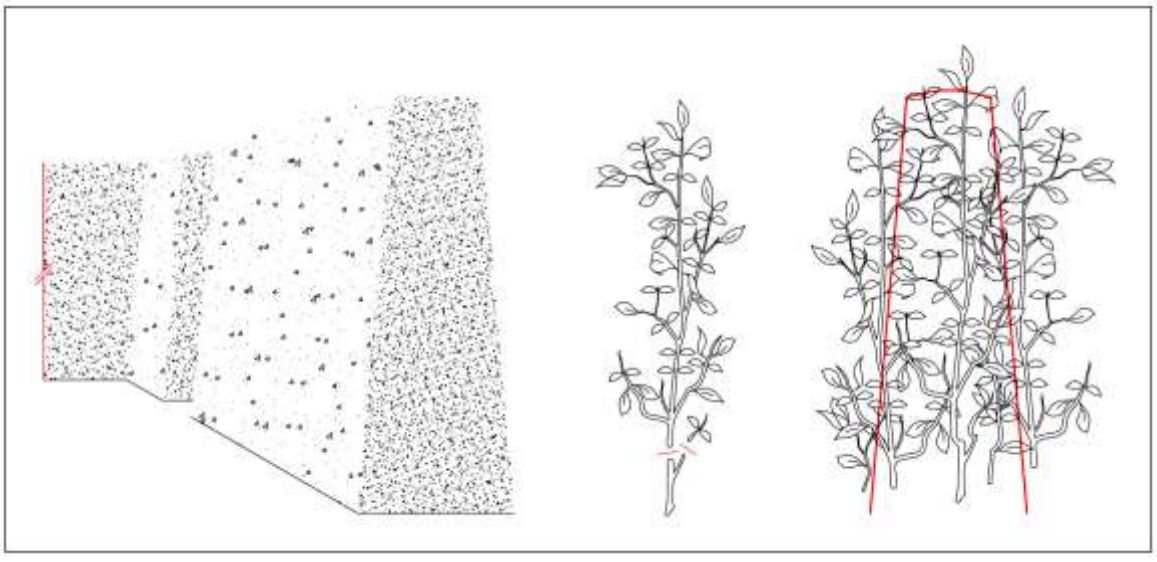

Fig. 3: Shaping pruning (4.2.2.3).

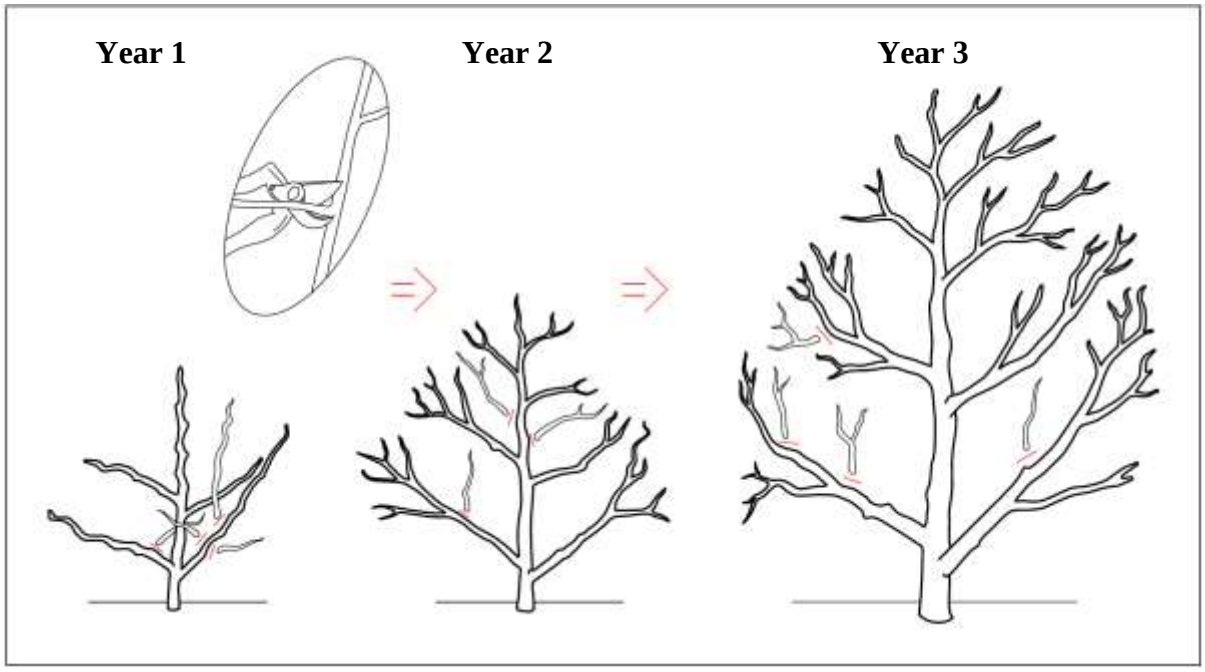

Fig. 4: Example of juvenile pruning of shrubs with acrotonic branching (4.2.1.2.7).

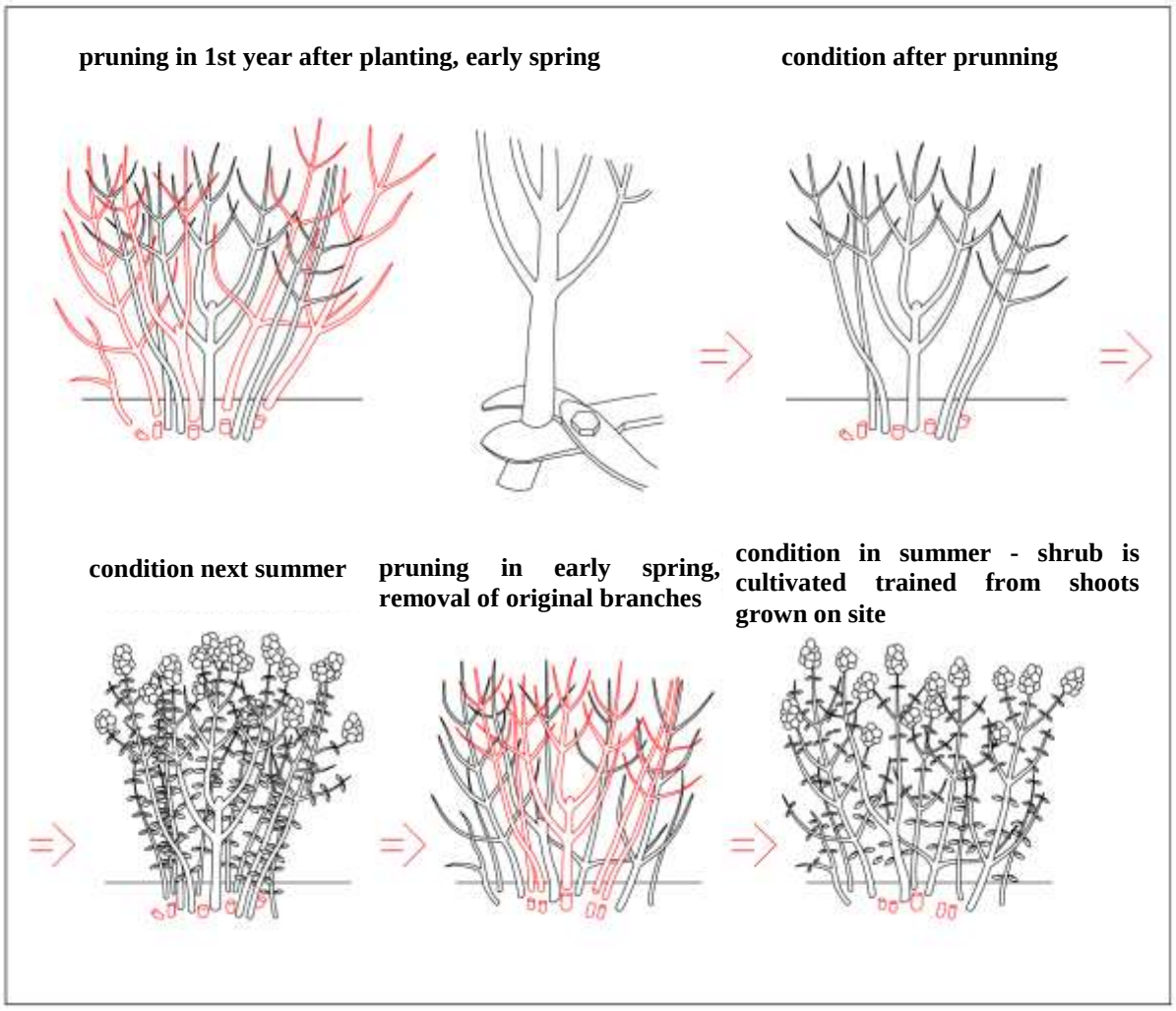

Fig. 5: Example of juvenile pruning of shrubs with mesotonic branching (4.2.1.2.6).

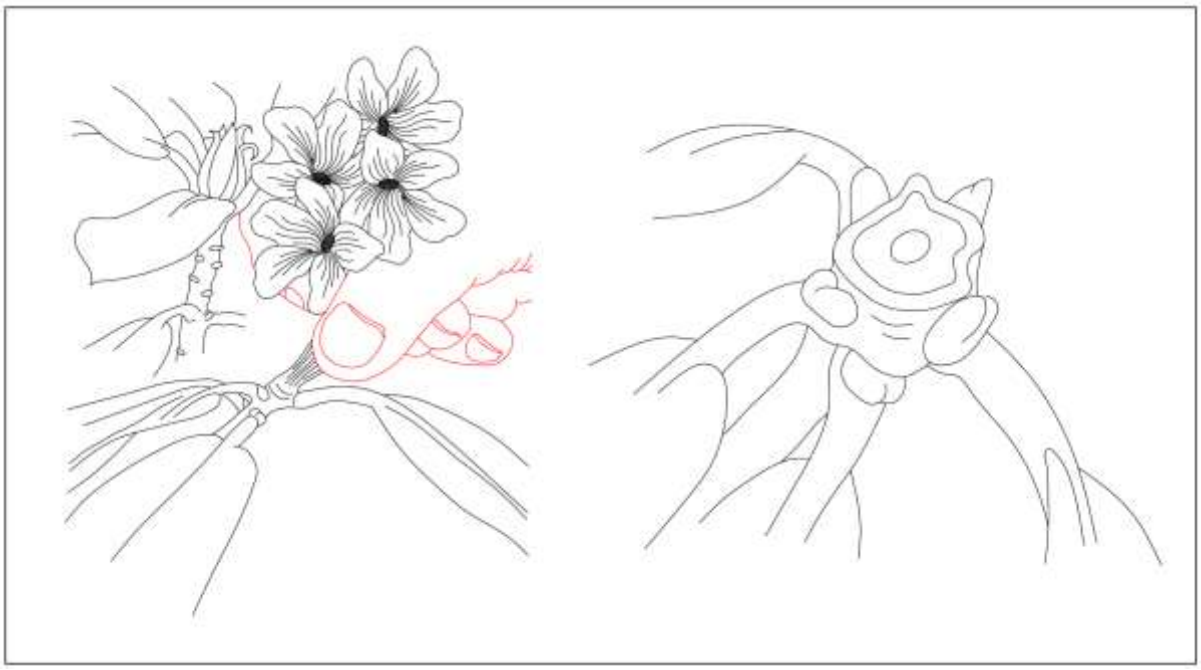

Fig. 6: Breaking of inflorescences (4.1.6).

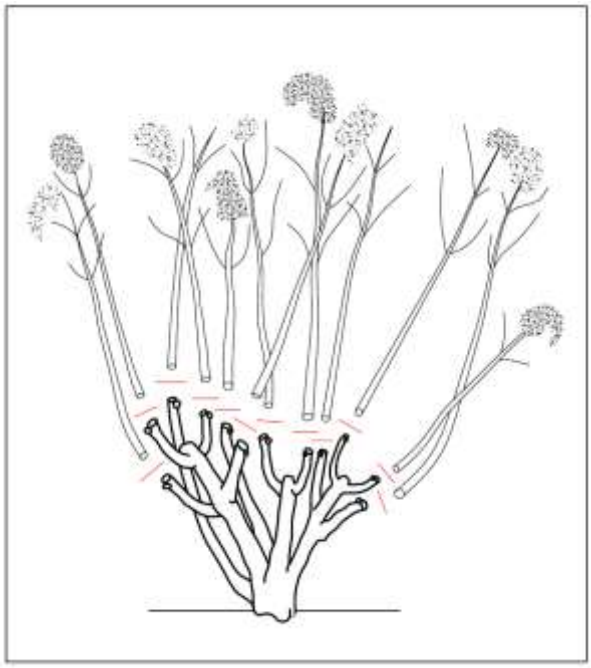

Fig. 7: Pruning to pin (4.1.3).

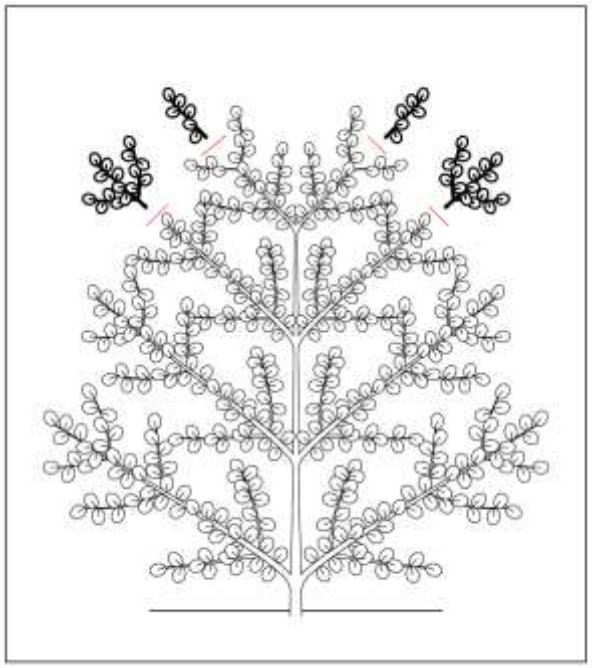

Fig. 8: Pincering (4.1.4).

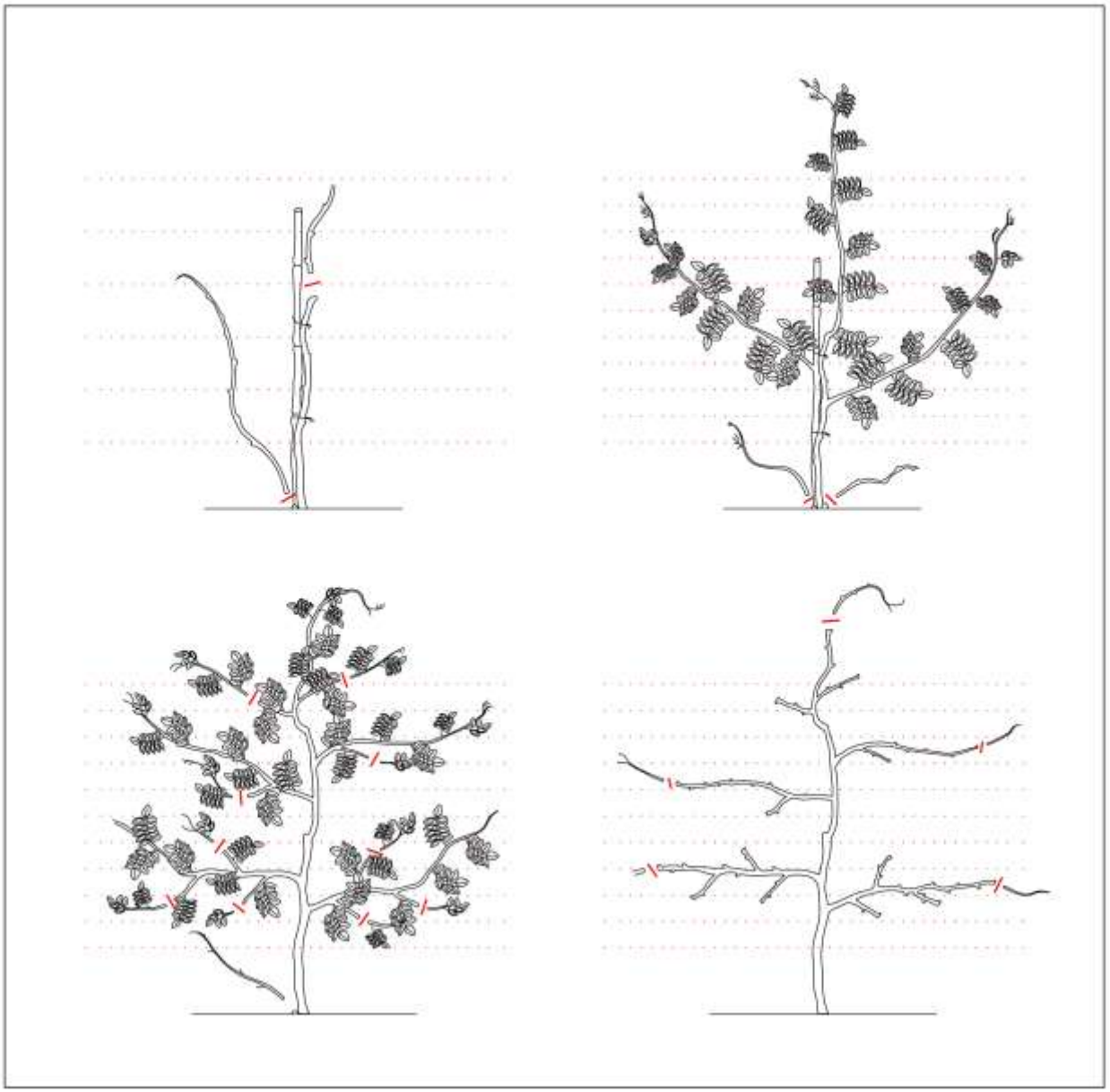

Fig. 9: Juvenile pruning (cultivation) of wisterias (*Wisteria* spp.) (4.2.1.2.5)

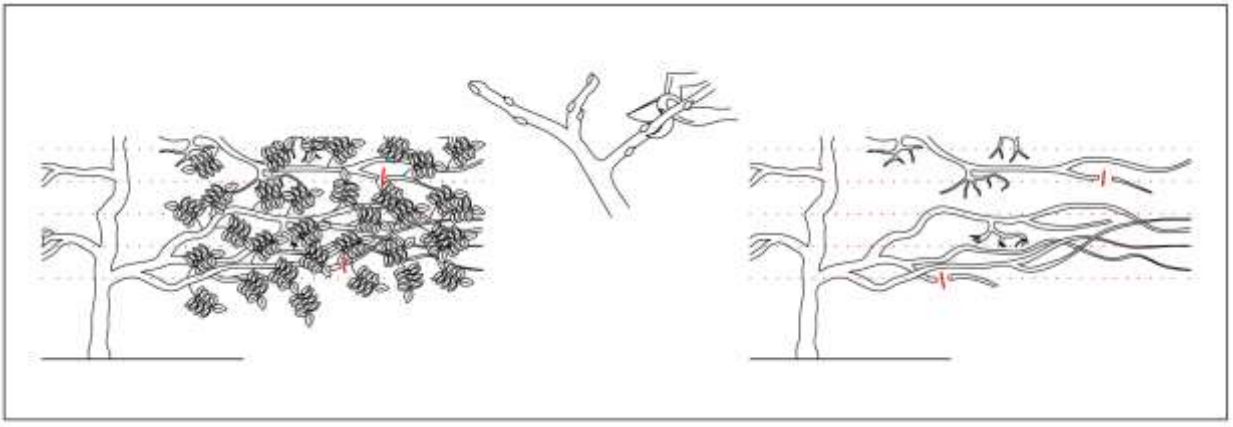

Fig. 10: Thinning of wisterias (*Wisteria* spp.) (4.2.2.1.9)

Annex 9 List of Nature and Landscape Management Standards (Arborist Standards) developed

00 General

00 001 Terminology

01 Inspection, assessment, planning

01 001 Assessment of tree condition
01 002 Protection of woody plants during development activities
01 003 Conflict between vegetation and structures

02 Work procedures

02 001 Planting of trees
02 002 Pruning of trees
02 003 Planting and pruning of shrubs and climbing plants
02 004 Safety bonds and supports
02 005 Cutting of trees
02 006 Protection of trees against lightning strike
02 007 Modification of site conditions for trees and shrubs
02 008 Juvenile stand pruning
02 009 Special treatment of trees
02 010 Management of woody plants along public transport infrastructures
02 011 Management of woody plants along public technical infrastructures

03 Occupational health and safety

03 001 Area lockout during arborist operations
03 002 Protective equipment for tree climbing
03 003 Work procedures for tree climbing
03 004 Work with one-person chainsaws
03 005 Work with hydraulic platforms
03 006 Work with cranes

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