

## Nature and Landscape Care Standards

- Planting of Fruit Trees in the Agricultural Landscape - SPPK C02 003:2016
- Fruit Trees Plantation Care - SPPK C02 005:2016

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Plantations of fruit trees have given our landscape its typical appearance, character and atmosphere. The return of traditional varieties is related to the need to search for more permanent values, because each tree is actually an embodiment of the work of the orchardist and the breeder, and every orchard and tree also has its own story. From this perspective, fruit trees can be considered to be landscape signs and symbols, which have an irreplaceable role in each of our lives. It is precisely according to these signs and symbols that we recognize places we have visited in the past and we can recall memories and return to periods when these trees were perhaps 20 years younger.

In our country, they mainly exist in the form of avenues, various types of alleys and extensive orchards. The issue of planting new avenues along roads is relatively current in modern hectic times. Primarily from a safety point of view, it follows that trees near high-speed roads and 1st class roads are hardly acceptable. On lower classes of roads, such plantations are justified and play a significant role in the formation of the landscape.

Besides the landscaping perspective, solitary trees and trees on boundaries have also had an ecological and mechanical function. The boundaries between land plots started with individual trees. These trees (varieties) with minimal maintenance requirements were vital and long-lived.

*(photo 1)*

To maintain fruit trees in our landscape and for the successful foundation of extensive fruit tree plantations, the Nature Conservation Agency of the Czech Republic and the Faculty of Horticulture of Mendel University in Brno, in co-operation with experts, have developed 2 standards - conditions summarised in the 2 standards related to fruit trees.

**The Standard PLANTING OF FRUIT TREES IN THE AGRICULTURAL LANDSCAPE** defines the agrotechnical tasks related to the preparation of land,

planting and subsequent care for fruit trees growing outside intensive production orchards away from plantations up to the 10th year of their lives.

The standard is intended for plantations of fruit trees with harmonic merging of traditional production functions with current requirements for the fulfilment of non-productive functions. In functional plantations, none of the functions significantly dominates over the others. For this reason, some parameters are determined by way of derogation from pomology values. The purpose of the standard is to enable the use of the wealth of varieties of fruit trees, which differ significantly in terms of abilities to use or tolerate different site conditions. The wealth of diverse varieties of fruit trees growing in the open countryside has been an integral part of the agricultural landscape of the Czech Republic for centuries. As required by the standard, the varieties used for functional planting are labelled as so-called fruit tree preservation assortments.

As part of standard, fruit trees are divided into fruit trees and fruit bushes. Below are the divisions according to economic and temperature requirements.

The following species are grown as fruit trees:

- ) Peach tree (*Persica vulgaris*) – hereinafter the peach tree,
- ) Common pear tree (*Pyrus communis*) – hereinafter the pear tree,
- ) Domestic apple tree (*Malus domestica*) – hereinafter the apple tree,
- ) Service tree - je áb domácí (synonym je áb oskeruše) (*Sorbus domestica*)\* – hereinafter the service tree,
- ) Rowan (*Sorbus aucuparia* var. *dulcis*)\* – hereinafter the Rowan tree,
- ) Sweet chestnut (*Castanea sativa*) – hereinafter the sweet chestnut tree,
- ) Quince (*Cydonia oblonga*) – hereinafter the quince tree,
- ) Common almond (*Amygdalus communis*) – hereinafter the almond tree,
- ) Common apricot (*Armeniaca vulgaris*) - hereinafter the apricot tree,
- ) Common medlar (*Mespilus germanica*)\* – hereinafter the medlar tree,
- ) Black mulberry (*Morus nigra*)\*, white mulberry (*Morus alba*) – hereinafter the mulberry tree,
- ) English walnut (*Juglans regia*) – hereinafter the walnut tree,
- ) slivo švestka (*Prunus domestica*), slivo obecná (*Prunus insititia*) – hereinafter the prunus tree,
- ) Wild cherry (*Cerasus avium*) – hereinafter the cherry tree,
- ) Sour cherry (*Prunus cerasus*) – hereinafter the sour cherry tree.

The following species are grown as fruit bushes:

- ) Cornelian cherry (*Cornus mas*)\* – hereinafter the Cornelian cherry bush,
- ) quince,
- ) Common hazel (*Corylus avellana*) – hereinafter the hazel bush,
- ) medlar\*,
- ) mulberry\*.

\* Not on the list of fruit species and genera according to Decree No. 378/2010 Coll.

## Planning and Projection of Planting

The planning phase runs in several steps, such as selection of a site, evaluation of the spatial conditions of the planting area, to the selection of the species and variety (priority, local, specialised, acceptable and research variety) and selection of the rootstock (strongly growing rootstock). When selecting a site, the main criterion is the altitude. For standard fruit species, the limit for altitude is 600 m above-sea-level, while for the thermophilic species, the limit is up to 250 m (in justified cases up to 350 m) above-sea-level. A fundamental factor for successful cultivation of fruit trees is the selection of the rootstock. The fruiting varieties of the fruit trees must be grafted **on strongly growing rootstocks**.

### Permitted rootstocks for fruit trees (Annex 1 to the Standard)

Species	generative rootstock	vegetative rootstock
Apple tree	Apple stock-tree, grass plot planted with apple trees, J-TE-1, J-TE-2, J-KL-1, J-KL-2, J-KL-3, J-KL-4	A2, M11, M16, J-TE-C.
Pear tree	Pear stock-tree, grass plot planted with pear trees, H-TE-1, H-TE-2, <i>Pyrus betulaefolia</i>	OHxF 282 (synonym Farold 282, Dayre)
Cherry and sour cherry tree	The třešeň ptáčnice taxonomy, for example, P-TU-1, P-TU-2;  The mahaleb taxonomy - for planting in more arid soil, for example, MH-KL-1	SL64, MHKOA
Prunus tree	The slivoň myrobalán ( <i>Prunus cerasifera</i> ) species – for planting in more arid soils: non-selected myrobalan, MY-BO-1, MY-VS-1;  The <i>Prunus domestica</i> species and <i>Prunus insititia</i> (prunus): – only in more moist soils: for example , Saint Julien 2, S-BO-1, Durancie, Wangenheimova, Zelená renklóda, Špendlík žlutý	Marunke (synonym <i>Prunus Ackermani</i> )
apricot tree	<i>Prunus cerasifera</i> species – see prunus;  The apricot stock-tree (not for planting in heavy soils), for example, M-VA-1, M-VA-2, M-VA-3, M-VA-4, M-LE-1, MLE2, M-HL-1, MHL2.	Marunke (syn. <i>Prunus Ackermani</i> )

Almond tree	The almond taxonomy: for example, MN-VA-1;  Peach-almond taxonomy: for example, MB.VA-1, BM-VA-2.	
Medlar tree	A grass plot planted with pear trees, pear stock-trees, and Rowan trees	-
Quince tree	Pear stock-tree, a grass plot planted with pear trees and quince stock-trees	-
Rowan tree	Rowan stock-tree	-
Service tree	Service tree stock-tree	-

### Planting Materials

Planting materials should meet the requirements of nursery plants. For the purposes of the standard, the following parameters are defined for nursery tree plants:

- ) **half-standard** (PK): trunk height 1.30 –1.69 m,
- ) **standard** (VK): trunk height 1.70 m and above
- ) **spike for half-standard**: minimum height 1.50 m
- ) **spike for standard**: minimum height 1.90 m

### Planting of Fruit Trees

Within the scope of planting fruit trees, the arrangement of the land, distribution of the individual plants at the site, parameters of the planting holes, planting time, planting procedure and anchoring, as well as protection of trees against damage from domestic and wild animals are dealt with.

For example, the minimum distance for linear planting of apple and pear trees should not be less than 8 metres, while for cherry and walnut trees, it should be at least 10 metres. For prunus trees, a minimum plant spacing of 6 metres will suffice.

*(Drawings 2, 3 and 4)*

### Post-Planting Care

Post-planting care consists in pruning fruit trees; in the case of plantations and fruit trees up to 10 years of age, it concerns cutting the crown, training and maintenance – thinning and restoration. It further concerns care for the herb layer (mowing and grazing), care for supporting trees, checks and removal of anchoring and protective elements, irrigation, nutrition and fertilising fruit trees, protection of fruit trees against diseases, pests and weather conditions, and treatment of the trunks of fruit trees.

Integral parts of the standard are, among others things, the following annexes:

- Unsuitable sites for fruit varieties according to the BPEJ
- Suitable rootstocks for fruit trees
- Minimum and maximum distances of trees planted in group

fruit plantations in metres

- Preservation assortment of fruit trees (see paper by Ing. Martin Lípa)

## **Standard FRUIT TREES PLANTATION CARE**

### **Purpose and content of the standard**

The standard defines agrotechnical tasks related to care for fruit trees growing in extensive plantations from the 10<sup>th</sup> year of their lives at a permanent site in which old, regional and local varieties are present. A further component of the standard is the complex problem of pruning fruit trees from their planting time. The standard also mentions care for the herb layer of fruit plantations and care for supporting non-fruit trees, which supplement fruit trees when performing non-productive functions.

The standard does not address care for intensive fruit plantations of trees and bushes, where productive functions dominate over non-productive functions. For this reason, some parameters are determined by way of derogation from purely pomological procedures.

The purpose of the standard is, among other things, to preserve the broad genetic diversity of old, regional and local varieties of fruit trees, which are a long-term component of the landscape of the Czech Republic in the form of orchards, linear plantations and solitary trees. The purpose of the standard is also to ensure a normative framework for the preservation of fruit trees grown in a manner where the production of useful parts is in full harmony with the fulfilment of the non-productive ecological, biological, landscape, historical, social and cultural functions.

### **Planning**

Within the scope of planning, research is conducted in the locality, especially to localise and evaluate trees, to prepare a proposal of measures and to evaluate the herbal layer.

### **Pruning of Fruit Trees**

This chapter contains pruning techniques and periods, and the size and treatment of pruning cuts. The most important aspect is the division of pruning methods into technological groups according to the purpose.

**Pruning at planting** – its purpose is to establish and train the crowns of young fruit tree saplings and bushes. Pruning at planting includes pruning the fruit tree crown (ORK) and training the fruit trees (O-RV)

**Maintenance pruning** aims to maintain the required growing shape and ensure the long-term good health condition of fruit trees. It is divided into thinning to improve light penetration into the plant - thinning of fruit trees (O-RP), health pruning of fruit trees (O-RZ) and removal of the rootstock suckers (O-OV)

**Rejuvenation pruning** is the reduction of the above-ground system with objective of strengthening the growth stage. It is done mainly on older individuals and is divided into mild rejuvenation pruning of fruit trees (O-RZM), medium rejuvenation pruning of fruit trees (O-RZS) and deep rejuvenation pruning of fruit trees (O-RZH). This should only be used in exceptional cases where a tree does not respond to maintenance, mild or medium rejuvenation pruning.

**Special pruning** (repair) - (O-RO) repairs deficiencies in the development of a tree if the training pruning has not been done properly or the tree has been damaged.

### **Care for Fruit Trees**

Care consists in protection against damage from animals and wild game, in fertilising and nutrition (preference of a suitable rootstock, use of legumes in the herb layer, and organic fertilisers) and in protection against diseases and pests, focussing on preventive, mechanical and biological procedures.

### **Care for the Herb Layer**

Care for the herb layer must be performed so that the target trees are not damaged. This mostly concerns maintenance mowing once to twice a year. This may be replaced by grazing of livestock.

### **Care for Supporting Trees**

Trees other than fruit trees that are non-invasive and do not endanger the orchard by transmitting pathogens, and non-competing fruit trees may be present in the plantations. Care is governed by tree planting and pruning standard.

Integral parts of the standard are, among others, the following annexes:

- Examples of desirable and undesirable supporting trees and herbs in the orchard or its vicinity
- Legume species permitted and not permitted for growing in plantations with special care for the herb layer
- Division of fruit species according to growth rate

The approved standards SPPK C02 003 Planting of Fruit Trees in the Agricultural Landscape and SPPK C02 005 Fruit Trees Plantation Care are published on the website <http://standardy.nature.cz/schvalene-zneni-standardu/>. They are available for download free-of-charge from the specified website (after entering an e-mail address - for sending information in case of future updates of the standard).

The standards comprehensively and clearly address planting and care for fruit trees that grow outside production orchards. The purpose of the standards is especially to preserve the broad genetic diversity of old, regional and local varieties of fruit trees. They should ensure a normative framework for preservation of fruit trees grown in a manner where production is in full harmony with other functions - ecological, biological, landscape, historical, social and cultural. A great benefit is the selection of useful varieties in the form of so-called fruit tree preservation assortments, which are further broken down according to importance into priority, specialised, acceptable, research and local assortments.

### **Bibliography:**

SPPK C02 003:2016 Funk ní výsadby ovocných dřevin v zemědělské krajině

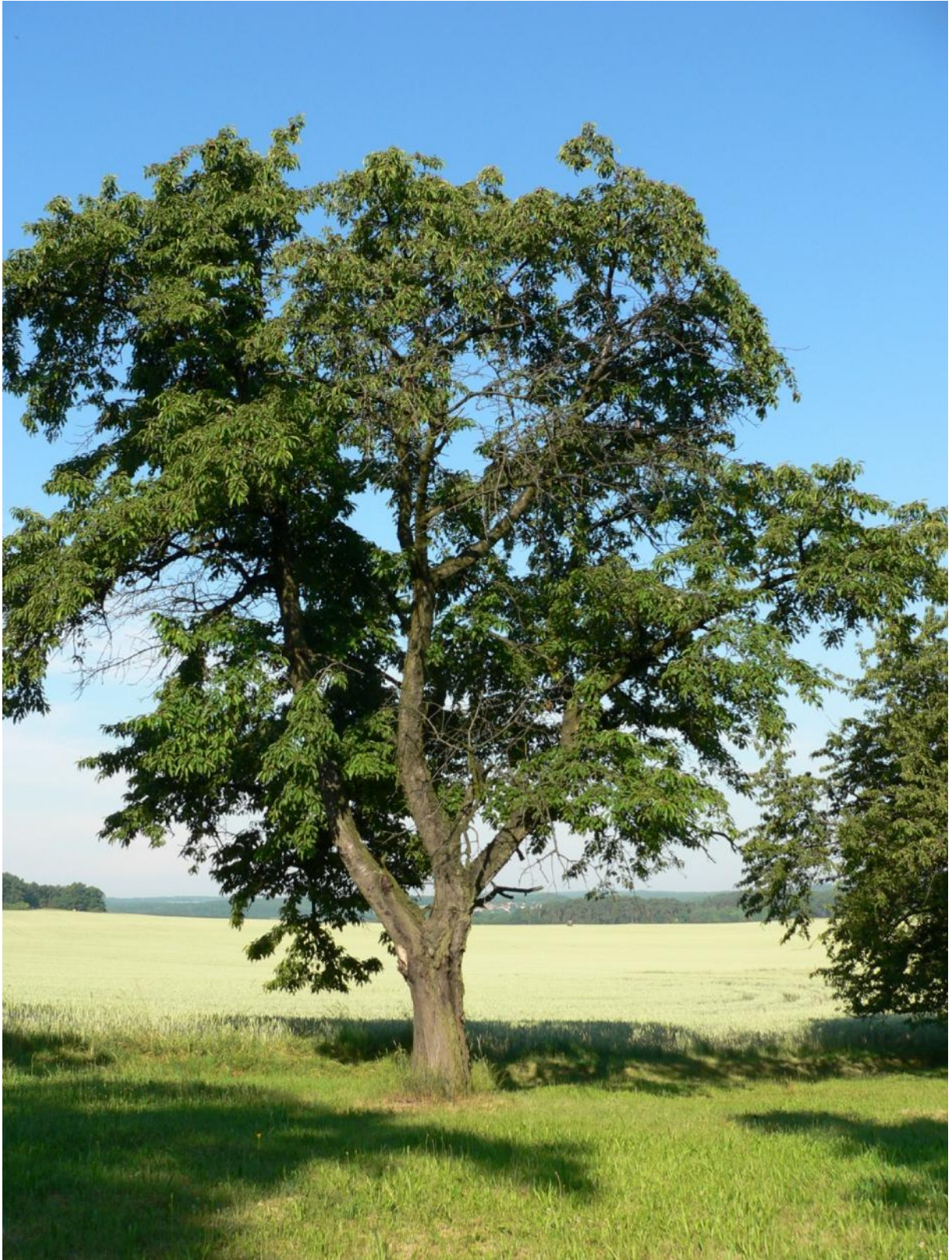
SPPK C02 005:2016 Péče o funk ní výsadby ovocných dřevin

Autor kreseb: Bc. David Ladra

### **Summary of Content:**

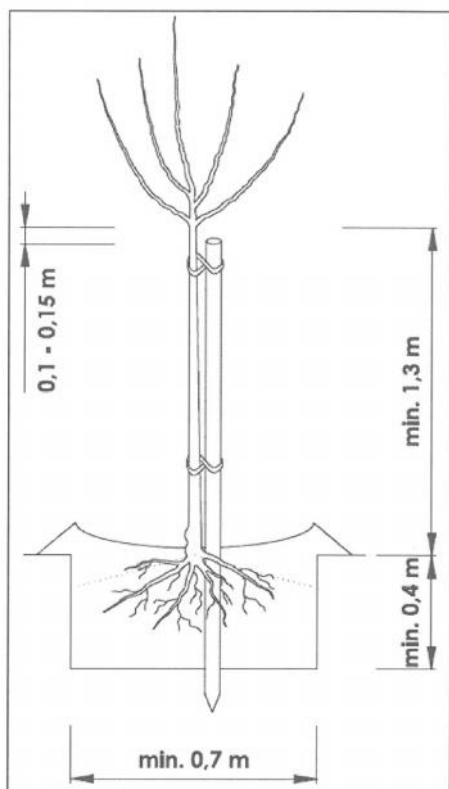
**To maintain fruit trees in our landscape and for the successful foundation of extensive fruit tree plantations, the Nature Conservation Agency of the Czech Republic and the Faculty of Horticulture of Mendel University in Brno, in co-operation with experts, have developed 2 standards - conditions summarised in the 2 standards related to fruit trees. The standards Planting of Fruit Trees in the Agricultural Landscape and Fruit Trees Plantation Care. The first standard contains species of fruit trees suitable for planting, recommended rootstocks, and a method of planting and caring for newly planted trees. The second standard - Care for functional Fruit Trees Plantation Care - stipulates how trees should be taken care of after planting, how they should be pruned in course of time and how to maintain the herb layer at the planting site. It includes types of plants suitable as undergrowth in such a plantation, and suitable and unsuitable supporting trees.**



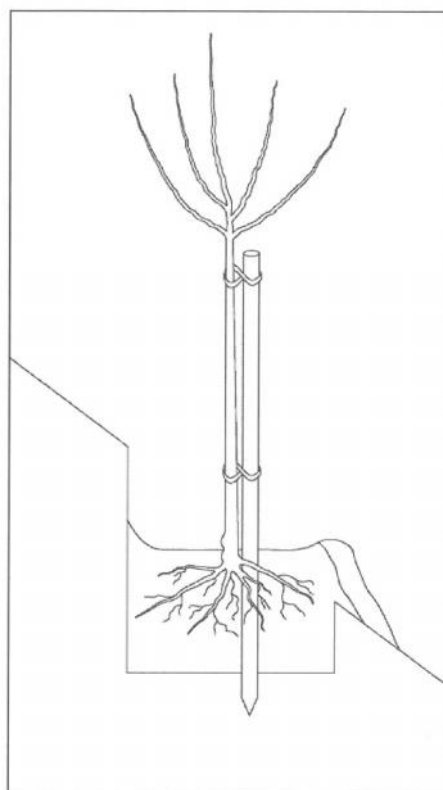


Solitary tree – a suitable species and long-life, vital variety that does not require greater care





Obr. 1 Výsadba ovocného stromu na rovině (5.5.4).

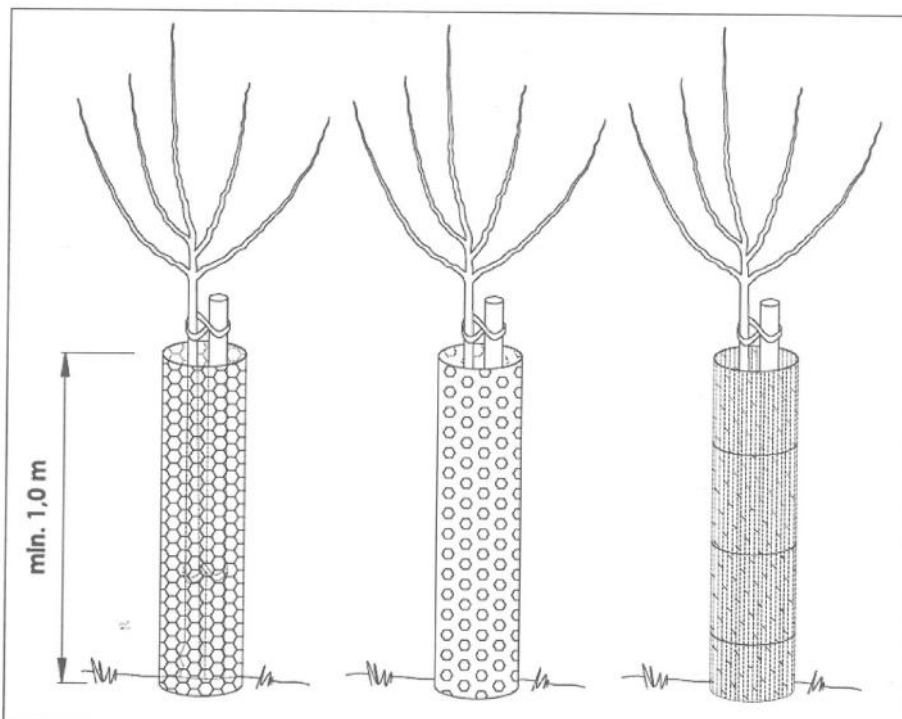


Obr. 2 Výsadba ovocného stromu na svahu (5.5.4).

**Legend:**

Fig 1 Planting a fruit tree on level ground (5.5.4).

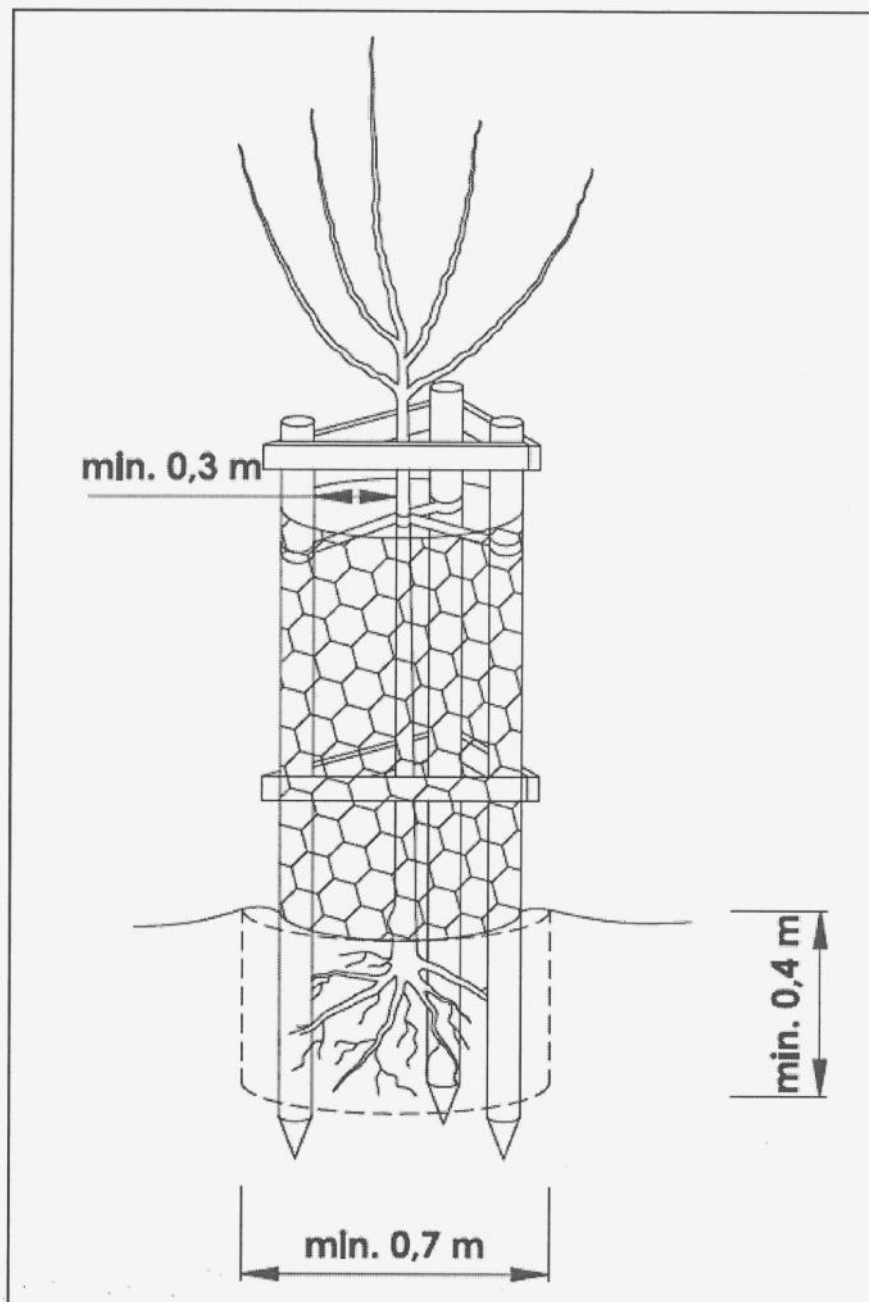
Fig 2 Planting a fruit tree on a slope (5.5.4).



Obr. 3 Ochrana kmene při jednobodovém kotvení - příklady řešení (drátěné pletivo, plast, rákos apod.) (5.7.4).

*Legend:*

Fig 3 Protection of the trunk with single-point anchoring – examples of solutions (wire mesh, plastic, reed, etc.) (5.7.4).



Obr. 4 Ochrana kmene při vícebodovém kotvení - příklady řešení (drátěné pletivo, dřevo) (5.7.5).

*Legend:*

Figure 4 Protection of the trunk with multi-point anchors – examples of solutions (wire mesh, wood) (5.7.5)

About the author:

Ing. Zdena Koberová, [zdena.koberova@nature.cz](mailto:zdena.koberova@nature.cz). She works for the administration of the Železné hory Protected Landscape Area, is a member of the Czech Gardening Association and an external associate of the Czech Union for Nature Conservation. She has long been involved in the preservation of large fruit trees in the landscape of East Bohemia. She is involved in the active search for old fruit varieties with the aid of local experts and witnesses, study of archive materials and mapping directly in the field. She is an administrator of gene pool sites, actively searches for parties interested in growing local traditional varieties and promotes fruit-growing heritage through exhibition of fruits.

