



# Guidelines for conducting genetic monitoring in the field: Wild cherry (*Prunus avium* L.)



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*Prunus avium* illustrations made by Teja Milavec

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## INTRODUCTION

Wild cherry (*Prunus avium* L.), is a medium sized, fast growing and rather short-lived deciduous tree, with wide natural distribution range. The species is a pioneer one that grows in a wide range of habitats; however, the species is extremely scattered throughout its distribution as it is highly light demanding and a weak competitor. The species natural populations are characterized by their small size and occur in small groups or are comprised of single trees growing at the edges and in the gaps of forest stands. Wild cherry is a species of mixed reproduction system involving asexual reproduction via root suckers and sexual reproduction. The species is monoecious, hermaphrodite tree and flowers are insect pollinated. It is one of the first trees to flower in the spring and produces masses of white blossom. The seeds are spread by birds, and by small mammals. The species sexual reproduction is characterized by a gametophytic self-incompatibility system (which is regulated by "S" allele) which favors outcrossing and prevents self-fertilization. It can hybridize with other cherry species. Wild cherry is an important forest tree species from an ecological and economic point of view.

The guidelines shortly describe the Wild cherry, its reproduction, niche requirements and threats. They provide guidance on establishing and maintain a genetic monitoring plot and on recording all field level verifiers at the basic, standard, and advanced monitoring levels.



## PLOT SELECTION AND ESTABLISHMENT

### FGM plot selection

- **FGM plot selection:** because of the *Prunus avium* hybridisation with cultivated cherry varieties, it is recommended that FGM plots are selected and established at a secure distance (8-10 km) from cultivations of domesticated cherry.
- **Consultation with local foresters**
- **Orto-photograph** – Wild cherry can be clearly visible and distinguished from other species in an orto-photograph of the area in spring time, when the trees are flowering (flowering trees can be distinguished from other trees by white coloured blossoms).
- **Initial field survey** – in spring, when the trees are flowering to ensure, that selected trees are reproducing

### FGM plot establishment and maintenance

- **FGM plot design** – FGM area with 50 reproducing trees of different genotypes with a minimum distance of 30 meters between them. In addition, natural regeneration (as cohorts or single saplings) has to be present.
- **Adult tree marking** – All 50 selected trees (DBH ≥ 15cm) must be labelled with continuous numbers
- **Natural Regeneration (NR) cohorts/single sapling selection and marking** – Inside an established FGM plot a greater number of NR plots, if possible 20, or single saplings (50 saplings) should be selected and established/marked.

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List of verifiers and background information with short description and observation frequency to be recorded during field work at the wild cherry genetic monitoring plots

	Name	Basic level	Standard level	Advanced level
Verifiers	Mortality / survival	Counting of remaining marked trees every year or after every extreme weather event/disturbance	Same as basic level	Same as basic level
	Flowering	Individual tree level estimate, expert opinion, every year / Stand-level estimate, every year	Individual tree level observation, during two major flowering events per decade, ideally equally spaced	Individual tree level observation, during two major flowering events per decade, ideally equally spaced
	Fructification	Individual tree level estimate, expert opinion, every year / Stand-level estimate, every year	Individual tree level observation, the same year as the assessment of the flowering at the standard level (regardless of the fructification intensity)	Counting of fruit, during the same years as the assessment of flowering at the advanced level, regardless of the fructification intensity. Seeds are collected for laboratory analyses every assessed fructification event at the advanced level
	Natural regeneration abundance	Stand-level expert opinion, every year	Counting of seedlings according to protocol 3rd, 5th, 10th, 15th year after mast year; for next round a mast year 5 years after the 1st one is to be considered.	Counting of seedlings according to protocol 3rd, 5th, 10th, 15th year after mast year; for next round a mast year 5 years after the 1st one is to be considered.
Background information	DBH class distribution	/	Measurement every 10 years	Same as standard level
	Height class distribution	/	Measurement every 10 years	Same as standard level
	Bud break	/	Individual tree level observation according to protocol, every 5 years	Individual tree level observation according to protocol, every year
	Senescence	/	Individual tree level observation according to protocol, every 5 years	Individual tree level observation according to protocol, every year
	Flowering synchronization	/	/	Individual tree level observation, during each assessed major flowering event

### REFERENCES

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