Lower Saxony
State Forestry

Information

Decision guidance for the cultivation
of Wild Cherries in North West Germany

2004

Lower Saxony

Content

1.	INTRODUCTION	2
2.	AIMS OF CHERRY CULTIVATION	3
2.1	Stands with leading Cherry	3
2.2	Stands with Wild Cherry as a temporary mixture	3
3.	ECOLOGICAL BASIC PRINCIPALS	5
3.1	Natural range	5
3.2	Site requirements	5
3.3	Growth characteristics in comparison with suitable mixed tree species	6
3.4	Biotic and abiotic risks	6
4.	ARTIFICIAL STAND FORMATION	8
4.1	Provenance recommendations/reproductive material	8
4.2	Assortments/planting methods	8
4.3	Quantity of plants in relation to the initial silvicultural situation	9
4.4	Forest protection	9
5.	TENDING AND USE	10
5.1	Young stands tending (2 to 6 m top height)	10
5.2	First thinning (6 to 12 m top height)	10
5.3	Thinning (as from a height of 12 m)	10
5.4	Target diameter harvesting regime	11
6.	QUALITY PRUNING	12
7.	ANNEX	12

- Forest development types (FDT)

1. INTRODUCTION

At present less than 1% of forest area in Germany is being occupied by Wild Cherry (prunus avium); this is partially caused by reasons of location and silvicultural history. Due to its ability for coppice shooting and sucker formation as well as its rapid juvenile growth in coppice forest and middle forest Wild Cherry possessed competitive advantages compared to other tree species as e.g. beech. These advantages do not apply in high forest with its lengthened production period adding its limited lifespan as a disadvantage. Nowadays its appearance is focussed in speciose mixed forests. Not only is it found there in troops or solitary admixed to beech stands but in common oak stands.

Its increasing silvicultural consideration is owed to its valuable timber. Compared to other native tree species the realised prices of the past years are located in the upper range of the price comparison list.

Numerous agricultural areas pending for reforestation provide good to excellent premises for the cultivation of Wild Cherry. High yields within average production periods are to be expected there. But even at better forest sites Wild Cherry is an interesting tree species.

In addition to the economic aspects Wild Cherry is supporting the achievement of protective and recreative silvicultural targets. The blossom is important for numerous species of insects its fruit provides nutrition for many animals, especially birds. They do also contribute to the dissemination of the species. Particularly at forest edge areas the prosperous bloom and colourful autumn foliage contribute to the enrichment of the landscape.

2. AIMS OF CHERRY CULTIVATION

The cultivation of cherries provides the option to interlink economic and ecological targets in an optimal way. Within 60-80 years valuable wood will be produced, the diversity of tree species will increment as well as the range of habitat and the landscape will be invigorated. Due to horticultural experience with diseases caused by virus, bacteria and fungi cherries should be cultivated preferably at mixed tree stands or at the most at minor pure stands up to the size of 1 ha.

Basically a distinction between stands with leading cherry and stands with cherry as a temporary mixture (see annex: forest development types with noteworthy percentage of cherries) has to be made.

2.1 Stands with leading Cherry (FDT 36)

The target is the development of multi-storeyed hardwood stands with leading cherry, as the case may be in groups up to in clumps intermingled sycamore percentage in the prevalent storey and auxiliary hornbeam, small-leaved lime, beech in second and intermediate growth partially intermingling, as well as changing percentages of successive associate tree species.
The Reproduction goal consists of up to 100% Wild Cherry, as the case may be with up to 30% sycamore and 10-20% hornbeam, small-leaved lime and/or beech in groups or small areas as a mixture, as well as accruing auxiliary tree species.
Production target is bird cherry veneer stem wood with a target diameter of at least 50 cm at breast height within a production period of 60 to 80 years.

The following demands regarding the classification of wood are made on the lower logs:

- Clear length 6 m
- Mid-diameter at least 40 cm under bark (BHD 50 cm +)
- Branches only at inner 10 cm
- Sound wood or rotten heart diameter max. 10 cm.

The protective and recreational value of this type of forest development results from the diversified structure of mixed deciduous forest, its beautiful aspect in springtime and the Wild Cherry's early blossom providing nourishment for various species of insects.

2.2 Stands with Wild Cherry as a temporary mixture

The forest development target is groups and clumps of Wild Cherries, in particular cases small areas (> 30 m plot diameter) as temporary mixture in single to multi-storeyed oak respectively beech base stand. Regarding the more intense tending (thinning cycle, quality pruning) wild cherries are to be preferably incorporated at the inner and outer stand border areas where they shall not be lost out of sight. Side covering proximate old stands provide a positive influence on the increment of height and quality.

Reproduction goal: On the one hand Wild Cherry may be planted in advance as selection forest sized at least 0.1 ha. This is realised frequently in combination with cases of absorption or induction of beech and/or valuable broad-leaved tree natural regeneration. On the other hand the cultivation at initial forestation areas, deforestation areas for stocking conversion or at larger gaps of disorder is to be considered preferentially. In areas with percentage of cherry that are still to be regenerated, generally no additional mixed tree species are incorporated but existing volunteer growth respectively accruing auxiliary admixture tree species integrated (even as filler or drift wood) as far as this does not endanger the reproduction goal.

The reproduction goal, protective and recreative silvicultural targets correspond with those regarding stands with leading cherry (see 2.1).

3. ECOLOGICAL BASIC PRINCIPALS

3.1 Natural range

Wild Cherry is a tree species of the planar to submontane altitudinal zone. Native it is to be found solitary or in smaller groups at several stages of the thermophile lime beech forest. There it is primarily to be found at droughty sites where the competitive potential of the beech is notably decreasing. Often it is associated to other light demanding valuable broad-leaved trees as the wild service tree. At base-rich and fresh habitats it is limited to early seral stages of fertile beech forest communities such as melic beech forests or woodruff beech forests. Its distribution in beech valuable broad-leaved tree multi species stands, in thinly-stocked oak beech as well as oak hornbeam forests is often owed to a former coppice-with-standards system.

3.2 Site requirements

As the management of Wild Cherry requires a relatively high effort, it should be cultivated but at sites that provide a good growth performance as well as the achievement of the exploitable diameters (BDH 50 cm +). Cherries with good performance can be found predominantly at warm, rather good to good nutrient supplied sites up to submontane level.
As warmth declines as result of increasing altitudinal zone, the cherry's performance decreases as well. At the same time its competitive ability declines compared to other tree species. Its cultivation should be restricted to relatively lower levels (up to 400 m a.s.l.).

Options for secure cultivation result in the Lower Saxon hill country and plains at eutrophic habitats (nutrient range 4+/5-). To eliminate the increasing danger represented by superficial soil acidification, a starter dressing (lime dressing) may be provided that facilitates the rooting and attainment of lover levels by higher base saturation.

At numerous areas generally highly eutrophic due to actual agricultural use, best premises are provided for the cultivation of cherries with anticipation of high performance. Caution is to be recommended on sandy top soils in the Lower Saxon plains where it may easily come to an overestimation of the actual quality of the habitat. A good juvenile growth is often followed there by a decrease in growth performance challenging the achievement of the target diameter. When lacking current site mapping system it is recommended to realise a site description prior to plantation establishment, thus allowing sustainable performance rating.

Regarding the water supply at least fresh soils are required for good growth.

The fact that cherry is sometimes to be found frequently at dry sites does not result from particularly favourable site conditions but from the diminished growth potential of competing tree species, particularly the beech.

In areas of lower rainfall and at the same time warmer temperatures a moderate subsoil stagnant moisture has a favourable effect. The cultivation on sites that are more strongly affected by ground water and stagnant moisture is disadvised.

According to the Lower Saxon estimate of moisture degree every sustainably fresh, fresh or saturated sites provide good growth conditions. On moderately fresh sites the growth performance of Wild Cherry is decreasing perceptibly, on moderately summer droughty sites the achievement of the target diameter is challenged. High cherry percentages in e.g. FDT 33 (valuable broad-leaved tree dry type), is therefore to be advised against.

3.3 Growth characteristics in comparison with suitable mixed tree species

Wild Cherry has an impetuous juvenile growth. Height growth is culminating already at the age of 7 to 15 years, decreasing considerably as from middle heights of 20 to 23 m respectively 30 to 40 years of age. Only up to this time the crowns of Wild Cherry may be developed efficiently and the radial growth may be focussed on trees of excellent predisposition by targeted intervention in the prevalent storey.

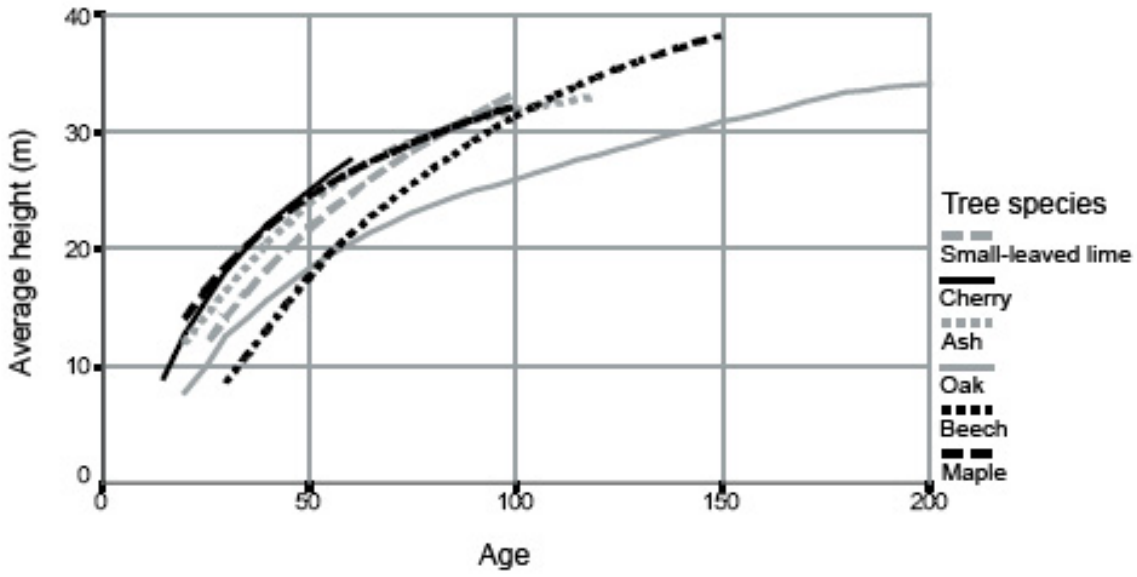

Figure 1: Height growth of Wild Cherry in comparison with other tree species according to yield table I. validity

Compared to other potential mixed tree species as ash, sycamore and mountain elm, it has a similar height growth development whereas small-leaved lime and beech fall behind up to medium age and not until later they pass and besiege the Wild Cherry considerably regarding height growth. Oak and hornbeam altogether show a minor height growth performance and a more linear growth curve (fig. 1). The mixture Wild Cherry/sycamore with auxiliary hornbeam is to be recommended particularly as a mixture of in groups or clumps, proven effective due to similar site requirements and matching growth rate. To achieve the target diameter (BHD) of 50 cm and more wild cherries require crown diameter of 9 to 11 m.

3.4 Biotic and abiotic risks

Mice can cause severe damage to young plantations. Besides the brown vole, bank vole and field vole particularly on former agricultural areas the water vole may as well cause severe damages. Even cherries up to forearm size may be caused to die back. Browsing and fraying damages as well as damages caused by gnawing animals like

rabbit and hare may increase the losses and have a negative influence on the stem form.

In plantations and young growth losses may be caused by various slightly parasitizing fungi. Dieback due to infections caused by bacteria (Pseudomonas syringae) including emission of tree resin may lead to dieback of branches, parts of the crown or even the whole tree.
Furthermore aphids occur frequently in plantations and may cause shoot distortion. Especially the bloom before leafing is endangered by late frost. When planting, mechanical lesions of the roots are to be avoided implicitly. Predominating cherries in mixed stands with slow growth are endangered by windbreakage; also in elder stands cherries with smaller crowns are often being broken by wind. Avoiding the cultivation at poorly drained habitats and stand tending in good time, limits this exposure.
Stem rot leads to considerable depreciation. Through the branches died back heartwood branch rot may invade all over the stem and devaluate quickly large sections below the entrance portal. Root rot normally occurs in elder cherries and mostly not reaching very high up the stem. Frequently there is only a small area near the heart centre, which is of small value due to the incorporated branches anyway.

4. ARTIFICIAL STAND FORMATION

The objective of cherry cultivation is to form stands with prospects of high yield; this target has frequently been missed in the past. It is only to be achieved by high demands on origin, quality and vigour and by coordinating transport, felling and planting in an optimal way.

4.1 Provenance recommendations/reproductive material

Wild Cherry is considered to be the archetype of the cultivated sweet cherry, both interbreedingregularly. Since the species has not been subject to Act on Forest Reproductive Material (FoVG Forstvermehrungsgutgesetz) until 2003 and transitional rules will still be effective for several years, it is hardly possible to control, how much of the seed stock might have originated in the past from jam factories or distilleries. The quality of the material used in the past is often at least questionable.
Because of the relative rarity of cherry up to now past there have hardly been established any provenance trials with wild cherries. Nevertheless all classes of Wild Cherry reproductive material are to be found:

- The test mark provenance already selected for a long time by DKV has obtained approval according to FoVG and is now available as *selected reproductive material*, possibly even available as DKVspecial provenance. But it only represents the minimum quality for the use of seed stock.
- Plantation seed stock is to be rated as superior (*seed orchards*: *qualified reproductive material.)* Only excellent single trees are being selected and pooled in seed orchards. Due to the not always convincing results of cultivation by seed stock from elder seed orchards nowadays only the younger seed orchards with superior numbers of clones are being harvested.
- The best reproductive material presently available is a mixture of clones that should be of preferential use in cultivation. According to the characteristics growth and shape the clones were being individually selected from progeny testing and being reproduced by tissue culture by Lower Saxon Forestry Research Institute (Dept. of Forest Genetic Resources). In field trials these vegetatively reproduced plants resulted convincing and they are soon to be approved as *tested reproductive material* (mentoring by NFV Div. C).

Nature-orientated silviculture is focussing on natural regeneration. Only if initial stands of sufficient size are available, naturally regenerated wild cherries in well-developing successive stands regarding to quality are to be anticipated. A lot of seed stock from orchards is carried into the wood by birds, which may by origin generate unwanted coarsely branched trees. In case of doubt planting should be realised.

4.2 Assortments/planting methods

In view of the risks for juvenile growth, the competitive ability of associate plants and silvicultural initial situations, standard assortments of two-year-old, transplanted plants 1+1, heights 120-150 cm are recommended. Furthermore vegetatively reproduced top clones M+1 heights 120-150 cm are suitable. Whereas at forest sites planting may be effected directly into the natural ground, in initial forestation areas, if necessary, a stripe or general cultivation makes sense.

Assortments and planting methods are to be coordinated. As root cutting is to be disadvised semicircular spade or hole planting is recommended in the forest. In initial forestation areas the use of a planting machine may be indicated, suitable for large plants e.g. FRISCHO or KOTTENFORST (Greenmaster).

4.3 Quantity of plants in relation to the initial silvicultural situation

In order to enable a continously leading top growth Wild Cherry requires a slight strain of the crown in stage of youth. Otherwise it tends to early development of a broad crown with strong branches. The quantity of stock plants and plant spacing depend decisively on the silvicultural initial situation, site conditions, assortments and the possible risks for young growth.

Using the standard assortment 1+1, 120-150 cm, plant quantity 2,000 to 3,000 plants per hectare in row planting are recommended for open field sites and gaps without filling and drift wood to be expected or existing. In case of filler and drift wood to be expected or existing plant quantity may be reduced to1,000 to 1,500 plants per hectare.
Using larger *elite clones* M+1, 120-150 cm, plant quantity may be reduced to 800 to 1,000 plants per hectare. In order to keep down cultivation costs plant quantity may be reduced to 500 plants per hectare provided that filling and drift wood from natural regeneration or planting are available.
The plant quantity refers to hectare net working surface. Indicating the area where the planting actually is to be realised, considering sufficient distance from forest edges, roadsides, reclamation lines, waterbodies or other biotopes. They are to be reduced according to the surface ratio of tree species as specified in the reproduction goals (see chapter 2).

Like Wild Cherry standard assortment sycamore (FDT 36) is to be incorporated in initial forestation areas with same plant quantities per hectare respectively as planting arrangement in groups up to clumps of 20 to 40 m diameter. Auxiliary hornbeam or beech as single tree mixture is to be planted in rows. Only in case of widespread loss of more than 20% of the initial plant quantity or not sufficiently accruing filler and driftwood replanting is to be effected.

4.4 Forest protection

As a general rule wild cherries are to be protected against browsing and fraying damages. Young plants are vulnerable to late frost. This risk may be limited by the recommended larger assortments (see chapter 4.2) and scalping the layer of grass at initial forestation sites. The last being a suitable procedure to prevent damages caused by mice, which represent a great danger to Wild Cherry as well as to the hornbeam to be admixed.

5. TENDING AND USE

As a rule young growth tending should be dispensed. If the plants show slow growth at the beginning of the second year after planting due to exuberant development of associate plants, measures are to be taken that contribute to a lasting relief. Depending on the kind of plant competition and site conditions, mechanical or chemical means (attention to PEFC standards) are to be considered.

5.1 Young stands tending (2 to 6 m top height)

Within the scope of young stands tending qualitatively dissatisfying or bad cherries leading in growth respectively admixture tree species (weed trees) are to be removed. Occasionally even highly competitive, strongly besieging broad-leaved trees are to be removed, whereas lower competitive broad-leaved trees are desirable serving as filler and driftwood. In this phase canopy closure is to be preserved in order to encourage quality development and height growth of the cherries by sufficient lateral pressure. For qualitative upgrading of defective cherries in individual cases future crop tree candidates may be pruned to remediate bifurcation and steep branches. Monilia infested cherries with dry shoots and gummosis are to be cut down and removed from the area.

5.2 First thinning (6 to 12 m top height)

First thinnings for selection are to be realised reaching top heights of 6 m. As a first measure 100-150 future crop trees (average spacing 8-10 m) per hectare are to be selected, marked and preparatively limbed at the height of 3 m (see chapter 6 quality pruning). Cherries with good characteristics and worth for pruning are characterised by straightness of bole, well developed coned crowns and superior length of shoots. Future crop tree candidates are to be fostered consistently by exclusively thinning from below one or two besiegers.
Furthermore cherries infested by monilia are to be cut down and removed from the area.
A second high thinning like release cutting and pruning should be realised at the top height of 9 m. Future crop tree candidates are to be critically inspected and the trees furthermore worth for pruning are to be limbed at the height of 4,5 m.

5.3 Thinning (as from a height of 12 m)

Central idea of the thinning is a consistent tending of the crown of the Wild Cherry in the first half of the stand life.
In combination with the third pruning at a height of at least 6.5 m, an intense high thinning is to be realised in order to stimulate the reconfirmed future crop trees, to structure the crown and to obtain sufficiently large green crowns. Increasing with maturity, the crown length enhances the vitality of the solitary trees and ensures a constant diameter growth. Due to the growth dynamics of Wild Cherry, for a consistent crown tending intense high thinning primarily every 3-5 years is required. Starting at the top height of 22 m thinning intervals extend to 5 to 6 years.
Selected future crop trees in sycamore subareas are to be fostered with equal consistency

5.4 Target diameter harvesting regime

As a result of consistent tending target diameter harvesting regime single stem up to in groups starts at breast-height diameter of at least 50 cm. When reaching the production target at an early stage (age approx. 50 years), it is recommended to raise the production target up to target diameters of 60 cm. In addition to diameter development of future crop trees the diameter cutting progression also depends on the individual stem rot risk of the stand. Root stem rot up to a diameter of 10 cm is no reason to butt off the stems as it is limited to the branchy inner area which is subordinate for the production of sliced veneer.

6. QUALITY PRUNING

Cherries hold on to deadwood branches. In order to produce high grade wood pruning of the lower logs is imperative. The number of cherries to be pruned at first brushing through is equivalent to the number of future crop tree candidates selected before and results in 100 to 150 trees per hectare. The pruning of future crop trees generally starts at the height of 6 m and at the first stage is lead to a pruning height of 3 m.

In order to avoid heartwood formation and thus providing an entrance portal for monilia, the latest moment for the start of pruning will be predetermined by achieving branch diameters of 2.5 cm maximum.

Generally a pruning height of at least 6.5 m in three steps is to be aimed at. Due to biological, technical and reasons of work organization, the pruning should be realised at intervals of 3-5 years, in order not to cut too many branches at one time. The number of future crop trees is to be crucially inspected with every removal, so that while advancing in stand age, no longer will every future crop tree candidate benefit from preferential tending and continuance of pruning. The average distance between future crop trees corresponds to 8-10 m at first pruning. Due to the expectation of high quality in single cases a pruning of shorter, prune-worthy bottom logs as from a length of 4 m may be effective.

Due to reasons of forest protection pruning is advisable to be realised in summer (July/August, cherry ripeness) and as the case may be in late winter. In order to minimize wounds, branches have to be cut off vertically at hypocotyls near the stem. The stumping of branches proved a failure. All current pruning methods as described in leaflet “quality pruning” are effective. If effected carefully subsequent graft sealing e.g. using grafting-wax or other means easy to spread and to stick even at humid branch scars, may minimize the risk of fungal infection; the treatment is not imperative the more so as contradictory findings do exist.

7. ANNEX

- Forest development types (FDT) with noteworthy percentage of cherry

FDT 13
Common Oak – Valuable broad-leaved tree

1. General principle

In clumps or small areas, single to multi-storeyed common oak forest with hornbeam, rarely beech, intermediate and under storey, femels in groups to small areas, intermingled by ash trees, sycamore and other valuable broad-leaved trees, at forest edges also wild fruit trees.

Seral stage/orientation by nature

In large alleviated forests in accordance with natural forest community of hardwood floodplain forest; in planar, colline and submontane areas of the forest community of common oak forest with hornbeam rich in valuable broad-leaved trees at ground-water and perched water soils.

2. Forest development objectives/targets/aims/goals

Timber/wood production

- Oak high-grade timber target diameter BHD 70 cm + in 160-200 years
- Oak stem wood target diameter BHD 60 cm + in 140-180 years
- Valuable broad-leaved high-grade timber target diameter BHD 60 cm + in 70-100 years

Protection and recreation

- especially speciose and rare natural forest community (hardwood alluvial forest) with especially rich species spectrum, trees with cavities, mature and dead wood.
- especially diversified, tessellated vertically and horizontally structured forests.

Percentage of tree species

- Stand target:

Common oak	30-70%
Valuable broad-leaved trees	30-70%
Hornbeam	10-20%
Associate tree species with hornbeam/small-leaved lime as intermediate and under storey	10-20%

- Regeneration target:

Common oak	40-70%
Valuable broad-leaved trees	30-60%
Associate tree species	up to 20%

- Form of mixture: Groups to small areas of valuable broad-leaved trees as well as associate tree species from chronologically elongated exploitation of selection forest, hornbeam as the case may be from 40 to 60 years subsequent planting under cover single stem to in subareas; associate tree species also as filler or drift-wood .

FDT 22
Beech – Sycamore/Wild Cherry

1. General principle

Selection forest consisting of leading beech, also as intermediate and under storey with high percentage of sycamore plus percentages of Wild Cherry, plane maple, small-leaved lime, (wild fruit trees) as admixture in groups to small areas and small percentages of other succesive associate tree species (e.g. oak, service tree, sallow amongst others).

Seral stage/orientation by nature

In lowland areas in accordance with natural forest communities of superiorly nutrient supplied millet-grass-beech forest in transition to woodruff-beech forest, at colline to montane highland levels with superiorly nutrient supplied woodruff-beech forest and at the superior montane level of Harz with sycamore-beech forest.

2. Forest development objectives

Timber/wood production

- Beech stem wood target diameter BHD 65 cm + in 100-140 years
- Sycamore high-grade timber target diameter BHD 65 cm + in 80-120 years
- Wild Cherry high-grade timber target diameter BHD 50 cm + in 60-80 years

Protection and recreation

- natural forest communities including their beech forest-seral stages with especially rich species spectrum, trees with cavities, mature and dead wood.
- beautiful forests especially in spring and autumn.

Percentage of tree species

- Stand target:

Beech	50-70%
Valuable broad-leaved trees	20-40%
Associate tree species with beech as partial intermediate and under storey	10-20%

- Regeneration target:

Beech	40-60%
Valuable broad-leaved trees	30-50%
Associate tree species	10-30%

- Form of mixture: Base stock of beeches respectively with groups to small areas of valuable broad-leaved trees, Wild Cherry as well in groups, often incidental at inner and outer stand borders.

FDT 23
Beech – Valuable broad-leaved trees

1. General principle

Selection forest consisting of leading beech, also as intermediate and under storey with variable percentage of ash, sycamore, plane maple, mountain elm, broad-leaved and small-leaved lime, service tree, Wild Cherry, wild fruit trees, yew-tree as well as other natural associate tree species. Valuable broad-leaved trees in groups to small areas sporadically and according to age and height imbedded in femel like structure of the beech.

Seral stage/orientation by nature
In accordance with colline to montane forest communities of lime beech forest and partially thermophile lime beech forest.

2. Forest development objectives

Timber/wood production

- Beech stem wood target diameter BHD 65 cm + in 100-140 years
- Valuable broad-leaved high-grade timber target diameter BHD 65 cm + in 70-100 years

Protection and recreation

- natural forest communities including their seral stages with especially rich species spectrum, trees with cavities, mature and dead wood.
- All-season variegated appearance.

Percentage of tree species

- Stand target:

Beech	40-70%
Valuable broad-leaved trees	30-50%
Associate tree species with beech as partial intermediate and under storey	up to 10%

- Regeneration target:

Beech	30-60%
Valuable broad-leaved trees	40-60%
Associate tree species	up to 10%

- Form of mixture: Valuable broad-leaved trees of every species respectively in groups to small areas admixed to the femel like base stock of beeches.

FDT 31
Valuable broad-leaved trees – fresh type

1. General principle

Mixed forest inhomogeneously structured in groups to small areas, consisting of fastidious valuable broad-leaved trees: ash, mountain elm, small-leaved lime, Wild Cherry with variable percentage of beech and hornbeam also as intermediate and under storey as well as other associate tree species in permanent gap, hole and femel regeneration.

Seral stage/orientation by nature
At all rich sites (lime, basalt, diabase, gabbro amongst others), provided a better water supply typical pioneer for seral stages of beech forest communities (lime beech forests), for the rest azonal maple ash forests (partly ravine forests).

2. Forest development objectives

Timber/wood production

- Ash/maple high-grade timber target diameter BHD 65 cm + in 70-100 years
- Other valuable broad-leaved timber target diameter BHD 50 cm + in 70-100 years
- Beech stem wood target diameter BHD 65 cm + in 100-140 years

Protection and recreation

- natural forest communities including their seral stages of rich and fresh beech forest communities with especially rich species spectrum, trees with cavities, mature and dead wood.
- variegated forests as to structure, diversity of species and seasonal appearance.

Percentage of tree species

- Stand target:

Beech	50-70%
Valuable broad-leaved trees	20-30%
Beech (hornbeam) with beech and hornbeam as partial intermediate and under storey	up to 10%

- Regeneration target:

Ash, sycamore	50-70%
Tree species	20-30%
Beech (hornbeam)	10-20%
Associate tree species	10-20%

- Form of mixture: Light-demanding tree species accordingly separated stand structure in groups, clumps and small areas with beech/hornbeam and entire area predominantly also as intermediate and under storey.

FDT 33
Valuable broad-leaved trees – dry type

1. General principle

Mixed forest storeyedly structured in clumps to solitary, consisting of more drought tolerant Light-demanding tree species: ash, broad-leaved lime, service tree, sessile and common oak, Wild Cherry, with variable percentage of beech, sycamore, plane and common maple; beech and primarily hornbeam as intermediate and under storey as well as alternating percentages of associate tree species (yew tree, mountain ash, birch).

Seral stage/orientation by nature

In accordance with seral stages of thermophile lime beech forest. Due to recurrent loss in beech (drought injury, brown rot, stem rot) the development does not always lead to the mature plant community of lime beech forest.

2. Forest development objectives

Timber/wood production

- Ash, broad-leaved lime, sessile oak, beech and maple stem wood target diameter BHD 50 cm + in 120-160 years
- Service tree and wild fruit high-grade timber target diameter BHD 40 cm + in 120-160 years

Protection and recreation

- different seral stages of dry beech forest communities with increased risk of disorder due to drought, with especially rich species spectrum, trees with cavities, mature and dead wood.
- variegated forests as to structure, diversity of species and seasonal appearance.

Percentage of tree species

- Stand target:
  Ash, broad-leaved lime, service tree 40-60%
  Other tree species 30-40%
  Beech (hornbeam) with beech and hornbeam 10-20%
  Associate tree species approx. 10%
  with partial hornbeam (beech) as intermediate and under storey

- Regeneration target:
  Ash, broad-leaved lime, service tree 40-60%
  Other tree species 30-50%
  Beech (hornbeam) 20-30%
  Associate tree species 10-20%

- Form of mixture: Light-demanding tree species accordingly separated stand structure in groups, clumps and small areas with beech/hornbeam and entire area predominantly also as intermediate and under storey.

FDT 36
Wild Cherry – (sycamore)

1. General principle

Multi-storeyed hardwood stands with leading cherry, as the case may be in groups to in clumps intermingled sycamore percentage in the prevalent storey/and auxiliary hornbeam, small-leaved lime, beech in second and intermediate growth partially intermingling, as well as changing percentages of successive associate tree species.

Seral stage/orientation by nature
Pioneer stages to early seral stages of rich beech forest communities as millet-grass beech forest or woodruff-beech forest.

2. Forest development objectives

Timber/wood production

- Wild Cherry high-grade timber target diameter BHD 50 cm + in 60-80 years
- Sycamore high-grade timber target diameter BHD 60 cm + in 60-80 years

Protection and recreation

- early seral stages of rich beech forest with typical species spectrum, preservation of rare tree species, trees with cavities, mature and dead wood.
- variegated mixed deciduous forests with beautiful spring appearance.

Percentage of tree species

- Stand target:
  Wild Cherry up to 100%
  as the case may be sycamore up to 30%
  Associate tree species up to 10%
  with partial hornbeam (as the case may bee also small-leaved lime and beech) as intermediate and under storey

- Regeneration target:
  Wild Cherry up to 100%
  as the case may be sycamore up to 30%
  hornbeam, small-leaved lime, beech and associate tree species 10-20%

- Form of mixture: Wild Cherry as the case may be in groups to in clumps intermingled sycamore, additional cultivation of auxiliary hornbeam, small-leaved lime, beech as the case may be individually intermingling.

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Cover picture

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