Technical sheet 5

VinBiodiv

Transnational project to preserve
and develop biodiversity in Upper Rhine vineyards

Flowering strips

In addition to the classic greening (spontaneous, mulch mixture) in the tramlines, flowering strips can also be planted inside and outside the vine rows.
These are particularly valuable for the promotion of biodiversity and can take on various functions in the vineyard, such as species promotion or soil improvement. Three areas in the vineyard can be considered for this: the driveway (especially as a substitute for spontaneous planting), the edge of the plot or the headland. The composition of these mixtures varies between 20 and 30 regional species from several families: fast-growing annuals as placeholders for the slower-growing perennial wild species and grasses.

Advantages for the winegrowers

- Improve soil structure and thus nutrient availability.
- Facilitate infiltration during rainfall and thus reduce soil erosion.
- Habitat and development space for insects, helping to limit the impact of potential pests on vines.
- Improving the quality and diversity of the vineyard landscape.
- Increasing the natural stability of the soil surface.

Advantages for biodiversity

- Significant increase and stabilisation of regional biodiversity.
- Broadening and expansion of plant resources.
- Variety of flowers available throughout the growing season.
- Diversify the food supply.
- Restoring balanced, territorial ecosystems.
- Increase biodiversity through the establishment of local plant species, which over time significantly increases the diversity of pollinators, beneficial insects, birds and small mammals.


Knapweed


Hop clover


White Forest Carnation


Corn cockle


Cornflower


Goat's beard

Implementation

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The time of planting (spring or autumn) and the maintenance of the flower strips can be varied so that different animal and plant species are promoted. After sowing, it is possible to regulate the plant population (height, density) through measures such as driving, mulching or mowing. This promotes the establishment of different plant and animal species, especially as in unimproved areas. A very early cut (before flower head formation) and a very late cut are recommended for maintaining biodiversity. Flowering strips can bring many additional plant species into a vineyard. As a result, birds, insects and reptiles will colonise the areas and the number of animal and plant species will increase rapidly.

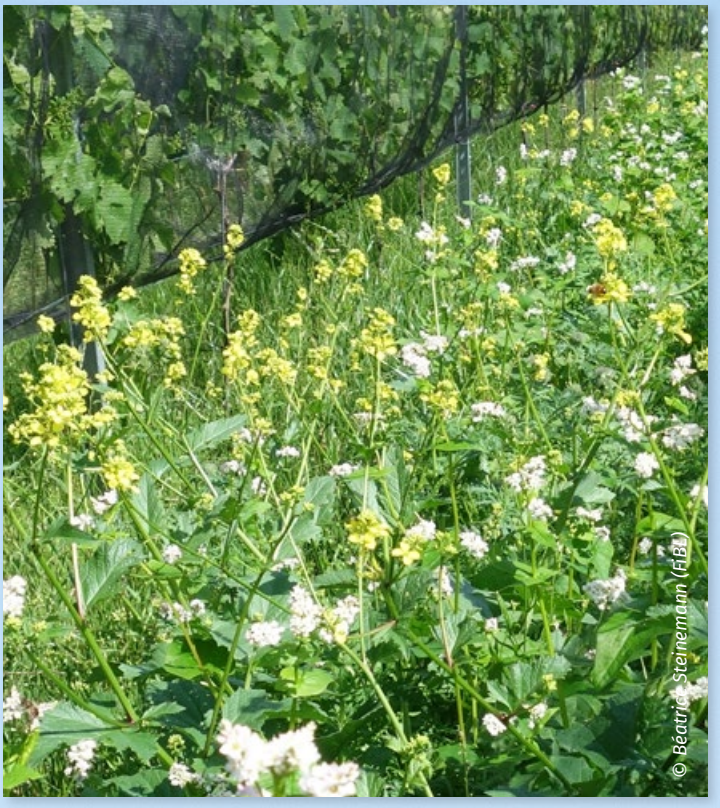
When?

The optimal sowing date is either in early autumn between mid-August and mid-September or in spring from early April to early May, depending on weather conditions. Spring sowing often competes with emerging spontaneous flora. Fast-growing annual species in the mixtures help to keep these in check.

Tips for the practice

- Sowing in autumn (until mid-September) or in spring (April), depending on the local climatic conditions, has proven to be successful for a safe emergence. In each case, this should be done with adapted mixtures, especially with regard to the fast-emerging species.
- Careful preparation of the seedbed with equipment adapted to the soil type and weed treatment (allow spontaneous flora to emerge between the 2-3 operations).
- Rolling with a full roller immediately after sowing is particularly important to ensure optimal soil contact of the seeds.
- Good knowledge of the soil type and climate helps in selecting and adapting the seed to local conditions.
- The measures for planting and maintenance should be adapted to the viticulture management system.
- The timing of mulching should be adapted to the life cycle of the plants to allow seeding and renewal of the stand (late cutting if only once).

Implementation



How?

If optimally established and maintained, wild species can persist in the tramlines for years. The flower strips can be regenerated if necessary by opening the soil superficially and sowing some local species.

Measures to increase biodiversity

- For older flower strips: Leave vegetation standing for a longer period of time to create overwintering habitat for insects, etc.
- Mowing instead of mulching: Create diversity by removing nutrients so that less competitive plant species can also establish themselves.
- Wild herb mix (annual and perennial species): Effective way to sustainably promote flower and insect diversity.
- Thresh sowing: Sowing of regional seeds harvested from ecologically valuable meadows to promote regional biodiversity. (Prerequisite: precise soil analyses to match the soil and the nutrient requirements of the plant species).

Planting and maintenance of flowering mixtures

Prerequisites for successful establishment in the sowing year

- Time and human resources for seedbed preparation and maintenance.
- Access to equipment and machinery.
- Alternate sowing and (early) season driving on the other tramlines.
- Careful seedbed preparation: first tillage approx. 15 cm, subsequent tillage approx.
- 8 cm deep, allow spontaneous planting to emerge between the 2 - 3 tillage operations. The time of the first tillage and the number of passes depends on the soil type and the presence of competitive herbs and grasses.
- Sow immediately after the last tillage (mechanically or manually), cover the seeds lightly (0.5 cm) and then make soil contact with a rough roller.
- Keep the vegetation in the understorey area low or remove it.
- At least one clean-up cut > 15 cm when plants are dense (brings light to the soil for late germinators) and before plant stems become woody (leave the lowest leaves to protect seedlings).
- When mulching, set cutting heights > 15 cm (on high plant stubble the airy mulch can dry well, the seedlings are protected).
- 1. mulch cut from summer to autumn.
- 2nd mulch cut in late autumn if necessary.
- No rolling and no grazing in the sowing year.

Care from the 2nd year

- If possible, do not place the cut wood in the sown tramlines (max. wood from one row, pruning at the end of winter).
- Number of cuts: 1 - 2 (at least one cut is necessary to bring light to the soil for the seedlings). In dense stands, lay down mulch in the understock area.
- In wet years 3 cutting times are possible, then again max. 2, so that the seeds can mature. The middle time can be replaced by rolling. Make sure that the mulch is loose so that light and air still reach the soil.
- For mulching, ideally choose cutting heights > 15 cm.
- Early first cut March to early April (before the flower heads of the sown herbs form). If this is not possible, as soon as most flowering plants (e.g. daisies) have faded (early June).
- 2. mulch cut from late summer until autumn.
- 3. mulch cut in late autumn if necessary.
- Watch out for mouse pressure (then mulch especially before winter).
- Grazing possible over a short period from the 3rd year of standing.

Planting and maintenance of flowering mixtures

Plant group	Ecological role in the vineyard
Annual species such as field mustard (Sinapis arvensis), buckwheat (Fagopyrum esculentum) or cornflower (Centaurea cyanus)	Rapid soil cover in the year of sowing, placeholder and protection for perennial seedlings, soil improvement through deep soil rooting, food source for beneficial insects.
Grasses such as bog-grass (Anthoxanthum odoratum) or roof grass (Bromus tectorum)	Stabilisation of the soil surface and thus trafficability, erosion protection, stability of the perennial plant community, less competition for vines such as some spontaneous species (e.g. creeping couch grass), food source for predatory mites.
Various perennial herbs such as composites and umbellifers, e.g. wild carrot (Daucus carota) or meadow knapweed (Centaurea jacea)	Food and habitat for beneficial insects such as ichneumon flies, lacewings, ladybirds, predatory bugs and other insects.
Legumes such as horn clover (Lotus corniculatus) or hop clover (Medicaco lupulina)	Nitrogen fixation, soil improvement, reduction of nematodes, food for beneficial insects and other insects.

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Example

The mixtures should be adapted to local conditions and have a high utility value for pollinators and beneficial insects as well as for the entire microfauna (food, habitat). The pollination value is measured for each plant by its visual attractiveness, its accessibility to the flower and the available yield (quantity and quality of nectar and pollen).

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1 Winery Pfister, Bözen

The flower strips form an important food base and habitat for wild bees and other insects.
Planted in the vineyard, the promotion of beneficial insects and the production of food can be ideally combined.
In addition, the blooming flowers between the vines are wonderful to look at.

Yvonne & Reto Pfister, Bözen

2 Winery Kientzler, Ribeauvillé

By planting flowering ground covers with low water consumption, one can offer flowers throughout spring and summer to provide food for pollinators during these two important seasons. Especially at the end of the flowering season, the nectar supply for bees is very reduced.

Thierry Kientzler, Ribeauvillé

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