# Farm Survey (Documentation)
## ClimateFarming

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# Farm Survey

*Documentation form*

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## Contact

| Name | |
|---|---|
| Address | |
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## 1. General farm information 🌱

| | |
|---|---|
| Total farm area [ha] | |
| Production branches | |
| | |
| Certifications (EU-organic, other organic, etc.) | ☐ yes ☐ no<br>if yes, please specify: |
| Marketing / sales channels | |
| Other on-farm establishments | |

| | |
|---|---|
| Farm location within region | |
| Main soil type & texture | |

| | |
|---|---|
| Wind (direction, peak velocities) | |
| Precipitation [mm] (mean, min, max, per season, peaks) | |

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| Temperature [°C]<br>(mean, min, max, per season) | |
|---|---|
| Average amount of days < 0°C per year | |
| Experienced/ historic extreme weather events | ☐ yes     ☐ no<br>if yes, please specify: |
| Personal estimation of future climatic tendencies | |
| Vulnerable sites within farm | |

## 1.1. Farm overview ⭐

| Farm areas | Own property [ha]/ leased [ha] | Total [ha] | Number of fields | Remarks |
|---|---|---|---|---|
| Arable land | | | | |
| Grassland | | | | |
| Vegetables | | | | |
| Orchards | | | | |
| Other perennials | | | | |
| Forestry | | | | |

### Cropping

| Culture(s)/ Rotation | Area [ha] | Yield [t/ha] | Marketing/ Use |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

### Animals

| Species | Amount | Husbandry system | Output | Marketing/ Use |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

| Source of animal feed: | |
|---|---|
| If applicable, grazing system: | |

## 1.2. Ownership structure & decision making 🌱

| Legal owners | |
|---|---|

| Lease agreements, generation changes or farm transfers | |
|---|---|
| Other involved parties for decision making | |

## 1.3. Workforce, facilities and machinery 🌱

| Staff per production branch | |
|---|---|
| Training and education of persons involved at the farm | |
| Special knowledge and skills | |
| Additional workforce | |
| Facilities | |
| Machinery | |
| Agricultural contractors | |

## 1.4. Economic background 🌱

| Economic situation | |
|---|---|
| Average farm investment sum (5-year period) | |
| Planned/ necessary expenditures | |
| Relative contribution of branches to income | |

## 1.5. Climate change ⭐

| Farm climate balance | ☐ available      ☐ planned      ☐ neither |
|---|---|
| Observed climatic changes | |
| Climate mitigation measures | |
| Climate adaptation measures | |

## 1.6.  Formulation of goals and priorities

| How important are… | Very Important | Important | Positive side effect | Not important |
|---|---|---|---|---|
| Economic performance | | | | |
| Providing a livelihood for yourself/ family/ employees | | | | |
| Diverse product range | | | | |
| Self-sufficiency | | | | |
| Higher yields | | | | |
| Local/ heritage varieties | | | | |
| Processing | | | | |
| Biodiversity | | | | |
| Biotope connectivity | | | | |
| Promoting beneficial insects/ animals | | | | |
| Wind protection | | | | |
| Improving soil health/ soil quality | | | | |
| Preventing soil compaction | | | | |
| Improving water balance (on landscape level) | | | | |
| Preventing nutrient leaching | | | | |
| Reducing greenhouse gas emissions / climate mitigation | | | | |
| Carbon storage | | | | |
| Climate adaptation | | | | |
| Shade for animals | | | | |
| Fodder quality | | | | |
| Scenery/ landscape design | | | | |
| Independence from external inputs | | | | |

| Other: | | | | |
|--------|--|--|--|--|

# 2. Site Assessment

## 2.1. General information 🌱

| Site name | |
|-----------|--|
| Lot number / Site ID | |
| Site location | |
| GPS coordinates | |
| Site area [ha] | |
| Land manager | |
| Current land use 📷 | |
| Vegetation/ crops 📷 | |

| Distance from main production facilities [km] | |
|-----------------------------------------------|--|
| Means of transport & time needed | |
| Relevance of site within farm | |
| Reasonable intervals for management/ observations | |
| Reasons for choosing this site | |
| Zonation short explanation:<br>(Please attach sketch with GPS coordinates of zones) | |

**Per zone:**

| GPS coordinates/ Zone map: | |
|----------------------------|--|
| Characterize zone: 📷 | Zone ID: |
| Sample IDs: | |

## 2.2. Management history 🌱

| Previous farm manager(s) | |
|--------------------------|--|
| Crops /-rotations | |
| Amendments, incl. crop residues | |
| Tillage regime | |

| | |
|---|---|
| Machinery use | |
| Other practices | |

## 2.3.  Protection status 🌱

| | |
|---|---|
| Any/ which protection status? | |
| Influence on farming decisions | |

## 2.4.  Climate/weather 🌱

| | |
|---|---|
| Wind (direction, peak velocities) | |
| Precipitation [mm] (mean, min, max, per season, peaks) | |
| Temperature [°C] (mean, min, max, per season) | |
| Average hours of sunlight per year | |
| Average amount of days < 0°C | |
| Local climate projections | |
| Experienced/ historic extreme weather events | |
| Personal estimation of future climatic tendencies | |
| Vulnerable sites within farm | |

## 2.5.  Topography & terrain 🌱 (⭐)

| | |
|---|---|
| Altitude [m a.s.l.] | |
| Slope inclination, exposition | |
| Sunlight, shade, rain | |
| Surface runoff, erosion areas | |

## 2.6.  Landscape elements, compaction, drainage & surrounding vegetation 🌱 (⭐)

| | |
|---|---|
| Waterlogging / Infiltration | |
| Compacted areas | |
| Drainage structures | |
| Water table [m] | |

| | |
|---|---|
| Trees, shrubs, other perennials | |
| Wetland areas, ponds | |
| Depressions, hills | |

| Power lines, pipes, underground cables | |
|---|---|

| ⭐ Phenological indicators | |
|---|---|
| ⭐ Species composition | |
| ⭐ Plant communities | |
| ⭐ Growth rate, yield | |

## 2.7. Existing cultures 🌱 (⭐)

| Field journal | ☐ yes       ☐ no |
|---|---|
| Diseases, pests | |
| Root or harvest residues | |
| Height & uniformity of cultures | |
| Yield | |
| Deficiencies, excess | |
| ⭐ Phenological development stages | |
| ⭐ Grasses: tillering rates | |
| ⭐ Brix level of leafsap | |
| ⭐ Micro-, macronutrients of leafsap | |
| ⭐ Indicator plants:<br>- nitrogen<br>- water<br>- compaction<br>- salt | |

## 2.8. Issues & optimisation 🌱

| Microclimate (e.g. late frosts) | |
|---|---|
| Weeds or pests | |
| Erosion (water/ wind) | |
| Water balance/ management | |
| Biodiversity | |
| Wildlife | |
| Others | |

# 3.    Soil Assessment

| Date & Time: |
| --- |
| Authors: |
| Weather:  ☀ ☁ 🌧 🌫 💨  <br><br> Air temperature: _____ °C |

## 3.1.    Visual Soil Assessment and Extended Spade Test 🌱

### 3.1.1. Surface analysis

☐ wheel tracks  ☐ wind erosion  ☐ water erosion (rills/gullies)  ☐ surface ponding
☐ crusting                    ☐ cracks
📷

**Ground cover:** ☐ <30%  ☐ 30-70%  ☐ >70%

### 3.1.2. Organic matter, root and harvest residues

☐ none ☐ little ☐ moderate ☐ many

Describe: _____

### 3.1.3. Soil structure assessment

| Horizon | Score | Notes |
| --- | --- | --- |
| Surface (0-2) cm | | 📷 |
| Topsoil (0-15 cm) | | 📷 |
| Subsoil (15-30 cm) | | 📷 |

### 3.1.4. Root assessment:

| Horizon | Score | Notes |
| --- | --- | --- |
| Topsoil (0-15 cm) | | 📷 |
| Subsoil (15-30 cm) | | 📷 |

### 3.1.5. Aggregate stability test / Slaking test

| Horizon | # stable aggregates | # completely slaked aggregates | % stable aggregates | Notes |
|---|---|---|---|---|
| Topsoil (0-15 cm) | | | | 📷 |
| Subsoil (15-30 cm) | | | | 📷 |

### 3.1.6. Assessment Score

$$Soil\ structure\ index\ = \left(\frac{soil\ score_{topsoil} \times aggregate\ stability_{topsoil}}{2}\right) + \left(\frac{soil\ score_{subsoil} \times aggregate\ stability_{subsoil}}{2}\right)$$

| Zone ID | Horizon | Root score | Soil structure score | % stable aggregates | Overall soil structure index |
|---|---|---|---|---|---|
| | Surface (0-1 cm) | | | | |
| | Topsoil (0-15 cm) | | | | |
| | Subsoil (15-30 cm) | | | | |
| | Total (=Topsoil + Subsoil) | | | | |

### 3.2. Root indicators

- **White root tips:** ☐ none ☐ few ☐ moderate ☐ many ☐ all           📷

- **Soil attached to roots:** ☐ none ☐ little ☐ moderate ☐ a lot

- **Smell:** ☐ pleasant/earthy ☐ foul/putrid/rotten eggs☐ fungal/ fresh forest soil ☐ like the plantation (e.g. carrots) ☐ no smell (also not earthy) ☐ other, describe: _____

- **Root nodules on legumes (per plant):** ☐ none ☐ few ☐ moderate ☐ many ☐ on every root

   → **nodule colour on the inside:** ☐ reddish/pink ☐ greyish green or brown ☐ other, describe: _____

- **Root orientation/ root barriers (mechanical/ chemical):**
_____

- **Root depth:** most roots: _____ cm, deepest root: _____ cm

- **Visible Mycorrhizae:** ☐ none ☐ few ☐ moderate ☐ many

**Space for additional notes:**

📝 **Remember to:**
- draw a map of zones within every field
- take pictures of the soil pits with a measuring tape
- take soil samples and note sample IDs

⏰ **Time needed to assess this zone:** _____

🌱 **If you are doing the base case scenario, you are done with the Soil Assessment. Well done!**

⭐ **For best-case scenario, continue:**

## 3.3. Soil texture (Soil Ribbon Test) ⭐

Coarse: ☐ sand ☐ loamy sand ☐ clayey sand

Medium: ☐ sandy loam* ☐ silt or silt loam ☐ loam

Fine: ☐ sandy clay loam ☐ silty clay loam ☐ clay loam

☐ sandy clay ☐ silty clay ☐ clay

*moderately coarse

## 3.4. Other Soil indicators ⭐

- **Carbonate testing:** ☐ no bubbling ☐ only audible ☐ slight bubbling ☐ strong bubbling

- **Moisture:** ☐ dry ☐ slightly moist ☐ moist ☐ very moist ☐ wet

- **Smell:** ☐ pleasant/earthy ☐ foul/putrid/rotten eggs ☐ fungal/ fresh forest soil ☐ like the

plantation (e.g. carrots) □ no smell (also not earthy) □ other, describe: _____

- **Colour:** □ dark brown □ light brown □ grey/blue/greenish □ white □ reddish/orange
□ other, describe: _____

- **Mottles:** □ none □ gray/blue/greenish □ orange/red; **if present, how many?** _____ %

- **Soil pit:** describe and sketch:

_____
_____
_____
_____
_____
_____
_____

depth of A-horizon:_____ cm

- **Compaction:** □ yes □ no; if yes, at which depth: _____ cm/ _____ cm/ _____ cm

- **Soil depth:** _____ cm, **Bedrock depth:** _____ cm,
**Groundwater depth:** _____ cm

- **Volumetric stone content:** _____ %

**Space for additional notes:**

## 3.5. Earthworms ⭐

**Earthworm number in 20cm x 20cm x 20cm of soil:**

## 3.6. Infiltration test ⭐

| Infiltration time #1: | Infiltration time #2: | Infiltration time #3: |
| --- | --- | --- |

Infiltration rate:

**⏰ Time needed to assess this zone (base+best-case scenario):** _____ + _____ min.