HOLISTIC RESOURCE MANAGEMENT FOR
CLIMATE RESILIENCE OF FARMING

Farm Survey (Documentation)

ClimateFarming

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Farm Survey

Documentation form

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Contact

Name	
Address	
E-Mail	
Telephone	

1. General farm information

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

Farm location within region	
Main soil types & textures	

Wind (direction, peak velocities)	
Precipitation [mm]	

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(mean, min, max, per season, peaks)	
Temperature [°C] (mean, min, max, per season)	
Average amount of days < 0°C per year	
Experienced/ historic extreme weather events	☐ yes ☐ no 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: (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, excesses	
⭐ Phenological development stages	
⭐ Grasses: tillering rates	
⭐ Brix level of leafsap	
⭐ Micro-, macronutrients of leafsap	
⭐ Indicator plants: - nitrogen - water - compaction - 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: ☀ ☁ 🌧 🌫 💨 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

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

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.