
Appendix Section 5: Planning for Agroforestry Workbook

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Personal Assessment

Step 1: Initial Objectives and Priorities

Rank (X) the following management objectives according to your land-use priorities (low, medium, high). Remember these objectives are a starting point, and you can (and probably will) modify them later. If possible, numerically rank the top five objectives for your agroforestry project (1=highest to 5=lowest priority).

Objective	Low	Medium	High	Top 5
A new source of income from unproductive land				
Reduce costs of current farm or forest operations				
Develop new source of long-term income (i.e., timber)				
Increase short-term income while awaiting long-term timber income				
Tax advantages				
Increase grazing opportunities				
Increase wildlife opportunities				
Undertake environmental improvements				
Access to governmental programs and cost-share				
Other				

Personal Assessment

Step 2: Evaluate Personal Resources

What resources – in addition to your land base – do you have that could be put into your agroforestry development? The section below allows you to list and evaluate the resources of all the family members who will be involved and that you think will have an impact on your ability to develop this agroforestry area.

Resource	Landowner use and potential of resource
1. Management time – When will the new activity not be in conflict with existing activities?	
2. Labor – Times of year when labor is most available.	
3. Equipment and facilities – For animals, storage, value-added processing, time of year available.	
4. Specialized farm equipment – Identify special farm equipment, such as tractors, ATVs, spray equipment, etc.	
5. Irrigation – Water source available.	
6. Plant material – Your own sources of seed, seedlings, cuttings and larger trees, or will you need to purchase them?	
7. Livestock – Cattle, sheep or other animals. What are their needs, and when are those greatest (i.e. calving)?	
8. Materials – Sawdust or shavings, manure and straw, or pine straw, for mulch, etc.	
9. Other	

Exercise: Can I meet my labor and management needs?

	Total hours for year	Distribution of hours (for one year or for production period)			
		Jan-Mar	Apr-June	July-Sept	Oct-Dec
Suggested hours, full-time worker (~ 40 hours/week)	2,000	500	500	500	500
My estimate, cost of wages, full-time worker (\$7.25/hr. min. wage – in 2013)					
Labor and management hours available					
Principal Manager					
Team Member 1					
Team Member 2					
Team Member 3					
Hired Labor					
Total Hours Available					
Direct labor and management hours needed by enterprise					
Enterprise 1					
Enterprise 2					
Enterprise 3					
Total labor hours needed					
Total labor hours available (from above)					
Additional labor hours required (total hours needed minus total hours available)					
Excess labor hours available (total hours available minus total hours needed)					

Biophysical Site Assessment

Step 3: Identify Current Land Uses

List present uses of each part of your land and the products you harvest. Possibilities include: residential, recreation, farming (which crop), grazing (type of livestock), timber production, non-timber production, wildlife areas and green belts.

Land Use	Product/Resources Available
1. Residential	
2. Recreation	
3. Farming (list crops)	
4. Grazing Livestock (type)	
5. Timber Production	
6. Non-Timber Production	
7. Wildlife Areas	
8. Green Belts	
9. Other	

Exercise: Inventory your land and natural resources

Agricultural land resources: Cropland and pasture

Who can help? Your local extension agent or NRCS (Natural Resource Conservation Service) office can look at your property, indicate whether your present farm-management plan is sound, and recommend other options that could enhance your operation. Cost share programs or the sale of your agricultural development rights are other options that may be of value to you.

Number of acres of tillable land _____

Number of acres of pasture _____

Number of acres left idle _____

Number of acres you farm _____

Number of acres rented _____

Current crop(s)

Number of head of livestock _____

Total annual rental income from land rented to others who grow crops _____

Total annual rental income from land rented to others who raise livestock _____

Fertility of land, agricultural crops: Excellent Good Poor

Fertility of land, forests: Excellent Good Poor

Total annual income from pasture and livestock _____

How much of the annual pasture and livestock income is from land rented to others? _____

Rented from others? _____

Total annual income from cropland _____

How much of the annual cropland income is from land rented to others? _____

Rented from others? _____

Exercise: Inventory your land and natural resources, con't

Natural resources

Forest. Who can help? You may want to contact a state forester to assist you with the inventory and evaluation of your forest resources. He or she can advise you on the procedure for developing a forest stewardship plan. In some states, a state forester can help you prepare a forest stewardship plan. In all states, they can provide names of private consultant foresters to assist with a timber sale or assess the potential of your forest under different management options.

Total number of acres of forest _____

Three most common tree species (oak, poplar, pine, hickory, etc.) _____

Do you have a written forest management plan? _____

If yes, what year was it prepared? _____

Have your property taxes been reduced because you are enrolled in a land-use-tax assessment program for forestry? _____

What nontimber forest products, if any, are present on the property? (Include edible and medicinal plants, decorative or floral products, specialty wood products, and native wild plants.)

Have you or has a past owner sold timber to a commercial timber harvester?

If yes, when? _____ How many acres? _____

(Developing a forest stewardship plan will provide the information to answer the last two questions.)

Exercise: Inventory your land and natural resources, con't

How many acres of forest could a commercial operator potentially harvest during the next five years?_____

Within the next five years, what is the estimated income from a commercial timber harvest(s) that is compatible with your forest stewardship objectives?

Wildlife

Who can help? State wildlife biologists have limited time but may be able to visit and discuss options. Leasing the hunting rights is an option that could generate income to pay taxes or more. Investigate educational materials on hunting options and discuss them with your extension wildlife specialist. Also contact the U.S. Fish and Wildlife Service.

Are deer causing significant crop or forest damage?

Are other wildlife species causing crop damage? _____
If yes, what species?

Do you have large numbers of geese on your property? _____

Do you have quail or pheasant on your property? _____

Do you have wild turkeys on your property? _____

What other type of wildlife have you seen on the property?

Exercise: Inventory your land and natural resources, con't

What type of habitat improvements could be made to attract the wildlife you are interested in introducing to the property (timber harvesting, food plots, tree planting, etc.)?

Do you or other family members hunt on the property?

Do neighbors or other local residents now hunt on the property, with or without permission? _____

Do existing hunters pay you for the right to hunt on the property? _____

If yes, how much are you paid a year? _____

List any unique wildlife habitats or species on your property (e.g., forest ponds, wetlands, old forests, caves).

Aesthetic or intangible resources

List locations on your property that have aesthetic appeal and could be developed for recreational enterprises, such as vacation cabin or hunting camp. Unique locations include rivers, streams, scenic overlooks, rock cliffs and wetlands.

Exercise: Inventory your land and natural resources, con't

Water resources

If you have more than one pond, or spring, assess each.

Who can help? For assistance with evaluating your water resources, you may want to contact your local cooperative extension office. An extension agent should be able to direct you to a water-quality specialist in your area.

Ponds. Pond size (in acres) _____
Maximum pond depth (in feet) _____
Maximum summer water temperature at 2 feet _____
pH _____
Alkalinity (in parts per million) _____
What type of fish live in the pond? _____
Do livestock have full access to the pond? _____
Does livestock waste drain into the pond? _____

Streams/Rivers. Stream width _____
Stream depth _____
Does the stream run all year? _____
What type of fish live there? _____
Do livestock use the stream or does livestock waste run into the stream? _____
Is the stream bordered by forest of at least 25 feet in width along each side? _____

Springs. Number of springs on the property _____
Rate of flow of largest spring (gallons per hour) _____

Exercise: Inventory your physical and personal resources, con't

Buildings, houses, barns and other structures

List size, age, condition and the cost to convert or upgrade structures for use in the enterprise.

House

Barn 1

Barn 2

Other

List rental cost and location of any available public or private structures or facilities that you can use for your enterprise (e.g., kitchen, storage facility, or processing facility).

Machinery and equipment

For each piece of equipment (tractor, chainsaw, wagon, rototiller, backhoe, bulldozer, etc.), list make, horsepower, age, condition, attachments, or other relevant information.

1. _____
2. _____
3. _____
4. _____
5. _____

Exercise: Inventory your physical and personal resources, con't

Use of byproducts of farm/forest operation

Is animal manure produced from the farm operation? _____

Can it be used onsite? _____

List other byproducts, if any, from farm operations

Can they be used onsite? _____

How and where?

Are limbs and other wood from a recent timber harvest currently available for use? _____

What is the type and quantity of this material (e.g., cords of firewood that it would produce and number and species of vines)?

Labor and management resources

Time for management and labor involved in an enterprise must come from the team members or from outside sources. The opposite chart will help team members determine how much time they have available during each quarter of the year for management and labor activities. The time available can be on weekends or weekdays. Completing the chart will help you look at your time realistically and determine whether the enterprises you are investigating are compatible with the time you have available.

Exercise: Inventory your physical and personal resources, con't

Resource person	Hours by season and time of the week				
	Total hours avail/year	Jan-Mar Weekday/Weekend	Apr-June Weekday/Weekend	July-Sept Weekday/Weekend	Oct-Dec Weekday/Weekend
Management/labor					
Labor					
Potential labor sources outside team					

Exercise: Inventory your physical and personal resources, con't

Financial resources

How much startup money can you raise by using personal or family resources? _____

Where will the startup money come from (e.g. personal savings, family member, farm credit, bank, cooperative)?

Do you plan to borrow money from a bank for the enterprise?

Is there a grant program that could provide some startup money? _____

Exercise: Inventory your physical and personal resources, con't

Special skills that are commonly overlooked

If you or any of your team members have any of the following skills or experience, fill in the names. Also, add the names of relevant agencies or organizations with which you or your team members may have connections (such as cooperative extension, university agricultural experiment stations, the U.S. Department of Agriculture, state department of agriculture, and state forestry agencies).

Relevant experience	Name of person	Short description of skill/experience
Marketing skills		
Computer skills		
Production skills		
Sales ability		
Special skills, such as innovative thinking		
Other <i>(list skill)</i>		

Biophysical Site Assessment

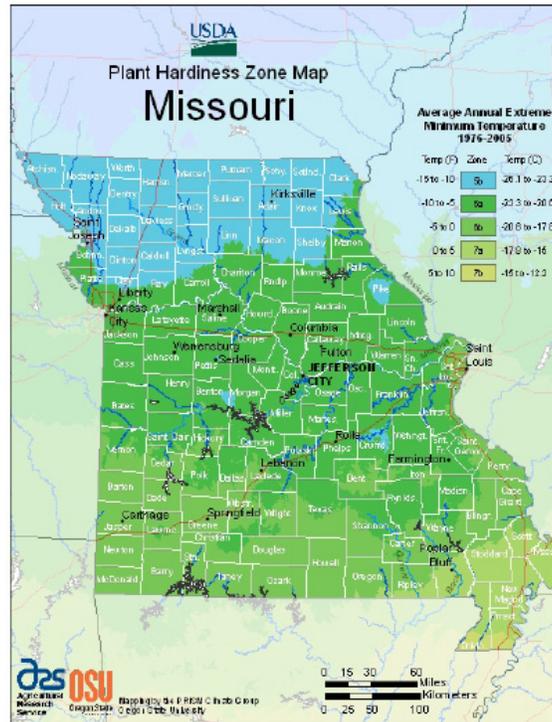
Step 5: Climate Assessment

Simply stated, the site assessment provides an overall measure of a land area's ability to support, or grow, a desired plant. Therefore, as a part of this assessment, the biological areas that will be considered include the climate, the soils and the land's physical features, sometimes called the topography or terrain.

Development Area	
Hardiness Zone: Include frost-free days, first and last frosts (see heat zone map on the next page).	
Indicator Plants	
Other Useful Climate Information: <ul style="list-style-type: none">- Mean annual rainfall- Mean annual snowfall- Average temperatures- Open ground: Average date of spring thaw and fall freeze	

Biophysical Site Assessment

Step 5: Climate Assessment, con't



USDA Hardiness Zones and Average Annual Minimum Temperature Range

Zone	Fahrenheit	Celsius	Example Cities
4a	-30 to -25 F	-31.7 to -34.4 C	Minneapolis/St. Paul, Minn.; Lewiston, Mont.
4b	-25 to -20 F	-28.9 to -31.6 C	Northwood, Iowa; Nebraska
5a	-20 to -15 F	-26.2 to -28.8 C	Des Moines, Iowa; Illinois
5b	-15 to -10 F	-23.4 to -26.1 C	Columbia, Mo.; Mansfield, Pa.
6a	-10 to -5 F	-20.6 to -23.3 C	St. Louis, Mo.; Lebanon, Pa.
6b	-5 to 0 F	-17.8 to -20.5 C	McMinnville, Tenn.; Branson, Mo.
7a	0 to 5 F	-15.0 to -17.7 C	Oklahoma City, Okla.; South Boston, Va.
7b	5 to 10 F	-12.3 to -14.9 C	Little Rock, Ark.; Griffin, Ga.

Biophysical Site Assessment

Step 5: Climate Assessment, con't

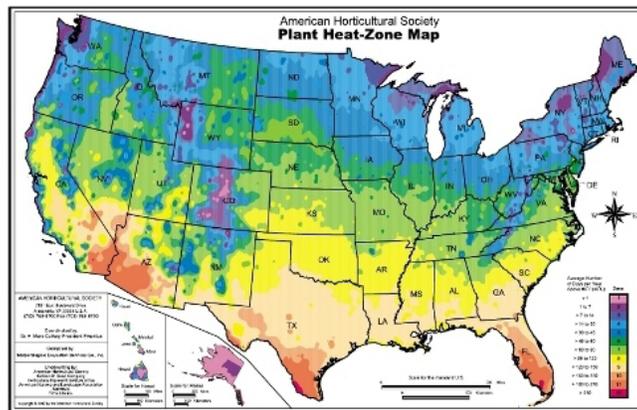
AHS Plant Heat-Zone Map

The 12 zones of the map indicate the average number of days each year that a given region experiences "heat days" – temperatures over 86 degrees (30 degrees Celsius). That is the point at which plants begin suffering physiological damage from heat. The zones ranges from Zone 1 (less than one heat day) to Zone 12 (more than 210 heat days).

Avg. No. Days

Annually Temp. is over 86 degrees F

- ZONE 1: -1
- ZONE 2: 1-7
- ZONE 3: 7-14
- ZONE 4: 14-30
- ZONE 5: 30-45
- ZONE 6: 45-60
- ZONE 7: 60-90
- ZONE 8: 90-120
- ZONE 9: 120-150
- ZONE 10: 150-180
- ZONE 11: 180-210
- ZONE 12: 210+



Biophysical Site Assessment

Step 6: Soil Assessment

This area is for notes about the soil(s) present on specific areas of the sketch map. You should include information that is directly useful to your agroforestry development. Photocopy the table below if you are assessing more than one development area.

Development Area	Soil Type(s) if Known
1. Soil texture and composition: Sand and gravel, loam, silt and clay, organic layer (depth).	
2. Soil depth: Include rock outcroppings and hardpan (depth of soil cover), rockiness.	
3. Soil moisture: Particular note of wet areas and flooding (with time of year).	
4. Soil nutrients: pH, salinity, fertility (attach soil reports).	
5. Aspect: Especially south vs. north facing.	
6. Terrain relief: Slope, steepness, gullies.	
7. Soil stability: Presence of high risk indicators such as sheet, rill or gully erosion.	
8. Frost pockets.	
9. Roots, stumps and other debris in or on soil.	

Biophysical Site Assessment

Step 7: Physical Features (Terrain)

There are a number of physical features, or topography characteristics, that can influence the capability of your land to produce particular crops on a site. Because physical features are often closely related to soil characteristics, the information you obtain for each of your agroforestry development areas should be entered into the same table as the information from Step 6: Soil Assessment.

In combination, the terrain relief and aspect create a lay of the land that often will enhance the opportunities for a successful agroforestry practice. By listing unique land features you will be better able to place practices and plant species to the landscape to best ensure their survival and growth. For example, slope is very important in relation to the moisture available for plant growth. In general, north-facing slopes will have better moisture than south-facing slopes that are typically drier.

Agroforestry Development Ideas

Step 9: Agroforestry Ideas – Brainstorming

List your agroforestry ideas separately for each development area. An additional category (Associated Practices) is provided for systems that are not real agroforestry systems, such as hybrid poplar plantations.

Development Area	Agroforestry Ideas
1. Forest Farming	
2. Alley Cropping	
3. Silvopasture	
4. Riparian Forest Buffers	
5. Windbreaks	
6. Associated Practices (e.g., Poplar plantations)	
7. Wildlife Areas (e.g., increase quail habitat, lease hunting)	
8. Other ideas for integrating forest practices on the farm	

Exercise: Assessing my resources, goals and possible enterprises

1. Describe the long- and short-term goals that you and your team hope to achieve by starting this new enterprise.

(a) Long-term goals

- 1.*
- 2.*

(b) Short-term goals

- 1.*
- 2.*

2. List the family members or team members who want to be actively involved. Describe each person's responsibilities.

3. Specify how much time each week you and your teammates will have available to spend on your new enterprise.

4. How much money can each team member provide now to initiate the enterprise?

Exercise: Assessing my resources, goals and possible enterprises, con't

(Read and fill in number 5 only if you currently run a natural resources-based enterprise; otherwise, go to number 6).

5. Check the responses that best characterize your business goals during the next 3 to 5 years for your current enterprise. Answer any follow-up questions.

Maintain at about the same level as in the past

Expand. How?

Get out altogether. Why?

Other:

6. The following information will help you determine your financial goals for any current or new enterprise. List the yearly income (you and your family or teammates) expect from the sources listed below:

Current farm/forest enterprises

New enterprise (once it is established)

Non-natural-resource employment (current job)

Other

TOTAL

Exercise: What will it take to produce my product or service?

You will probably have to make some capital purchases, such as buying buildings, equipment or land and making major improvements, to start your new business. List the capital purchases and their costs.

What will be your major production tasks, such as planting, harvesting, building, advertising, sales and maintenance? Describe the tasks according to the month they should occur. Also indicate which months you expect to receive income.

Month	Task
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Exercise: Relative merits of various enterprise ideas

Criteria	Enterprise ideas*				
Total					

*Rated on a scale of 1 to 10, with 1 being least compatible and 10 being most compatible

Example EXERCISE for Smiths: Relative merits of various enterprise ideas

Criteria	Enterprise ideas*				
	Shiitake	Grape-vine wreaths	Hunting lease	Ginseng	Aqua-culture
Compatible with residency status	10	10	7	10	10
Preferred by family	9	6	7	9	3
Meets financial goals	9	9	5	10	9
Uses underused physical resources	4	9	8	6	8
Uses management/labor resources	8	6	5	3	6
Potential market exists	10	5	9	10	6
Uses farm, forest byproducts	9	9	3	7	5
Family financial resources avail.	10	8	10	4	8
TOTAL	69	62	54	59	55

*Rated on a scale of 1 to 10, with 1 being least compatible and 10 being most compatible

Evaluate the 'Best Bets' in the Context of the Industry

Step 11: SWOT Analysis

Start the evaluation with an assessment of internal factors (strengths and weaknesses) and external factors (opportunities and threats). (Refer to the Training Manual, Chapter 9 – Marketing Principles for this exercise)

Internal Factors	External Factors
Strengths	Opportunities
Weaknesses	Threats

Exercise: Identify suppliers and supply availability

Development Area	Available Government Incentive Programs:		
Crop/Product	Supply Needed	Supplier	Information about supply (quality, availability)

Exercise: Identify buyers and their needs

Development Area	Available Government Incentive Programs:	
Crop/Product	Buyer (and reasons)	Buyer needs

Exercise: Identify substitute products

Development Area	Available Government Incentive Programs:		
Crop/Product	Unique characteristics of product	Substitute product	Unique characteristics of substitute product

Exercise: Researching the competition

Development Area	Available Government Incentive Programs:	
Crop/Product	Competitor	Competitor Info

Evaluate the 'Best Bets' in the Context of the Industry

Step 13: Revising Your 'Best Bets'

List your revised 'best bets' in the table below, based on what you know about the marketing potential of the plants listed. This list will form the basis for your in-depth market research. Photocopy the table if you are assessing more than one development area.

Development Area	Available Government Incentive Programs:	
'Best Bet' Plants	Marketable Products	Volumes (indicate when available)

Marketing Strategy for 'Best Bets'

Step 14: Select and Describe Target Market(s)

Complete this worksheet for each major product you plan to produce. Develop a profile of the customer(s) you intend to target by market segment. (Refer to the Training Manual, Chapter 9 – Marketing Principles for this exercise)

Development Area	Available Government Incentive Programs:		
Product			
Customer Segment	1.	2.	3.
Geographic			
Demographic			
Psychographic			
Needs/ Preferences			

Marketing Strategy for 'Best Bets'

Step 16: Getting Products to the Buyer

Use the table below to outline how you will get each of your products to buyers. The three main factors to consider are:

- 1. Location:** Where will you sell your product?
- 2. Distribution:** Which sales channels will your product follow?
- 3. Transportation:** How will your product reach the buyer?

Photocopy the table below if you are assessing more than one development area.

Development Area	Available Government Incentive Programs:		
Product	Location	Distribution	Transportation

Marketing Strategy for 'Best Bets'

Step 18: Promoting Your Products

Complete this worksheet for each major product you plan to produce. Choose a promotion approach for each customer segment. (Refer to Chapter 9 – Marketing Principles for this exercise)

Development Area	Available Government Incentive Programs:		
Product			
Customer Segment	1.	2.	3.
Message			
Tools			
Frequency			
Cost			

Agroforestry Practice Design and Management

Step 19: Revisit Your Objectives and Priorities

List your top five land management goals (see original objectives listed in Step 1):

Top Five Land Management Goals:
1.
2.
3.
4.
5.

Agroforestry Practice Design and Management

Step 20: Detailed 'Best Bets' Crop Information

Use the table to summarize everything you know about each plant you plan to grow in one agroforestry development area. You can photocopy the table below so that you have one for each crop plant.

Crop Plant:	
Agroforestry practice (best produced in)	
Where produced (in development area)	
Shade (requirement or tolerance)	
Soil and water (requirement or tolerance)	
Particular plant needs (to produce needed quantity and quality)	
Labor required to grow and harvest (amount and time of year)	
Resource use fit (time, labor and other resources with other activities)	
Compatible crop plants (can be grown with or should not be grown with)	

Agroforestry Practice Design and Management

Step 20: Detailed 'Best Bets' Crop Information (con't)

Crop Plant:	
Compatible livestock (animal and useful interaction)	
Harvest requirements (e.g., by hand, machine, cut tops, dig)	
Post-harvest requirements (e.g., storage, drying)	
Packaging and shipping requirements	
Cost to grow and harvest	
Product(s) on market	
Current market price	
Profit potential	

Agroforestry Practice Design and Management

Step 20: Detailed 'Best Bets' Crop Information (con't)

Crop Plant:	
Volume (potential production)	
Grade standards in market	
Product influences and trends	
Value-added opportunities	
Other	

Agroforestry Practice Design and Management

Step 21: Designing Your Agroforestry Practice

Depending on the size of your operation, you may be able to put your entire development area on one table, or you may need several. Photocopy as required. You will want to create a separate table for each development area.

Development Area	Available Government Incentive Programs:	
Crop Plant(s)	Agroforestry Practice	Management Required (to grow marketable quality)

The Agroforestry Development Plan

Step 22: A Five-Year Management Projection

Using the information compiled in your Workplan, complete the following table. Depending on the size of your operation, you may wish to complete one table for each proposed system. Photocopy this table as required.

Development Area	Available Government Incentive Programs:		
Size of Area	Practice and Associated Crop	Year	Management Objectives

Notes