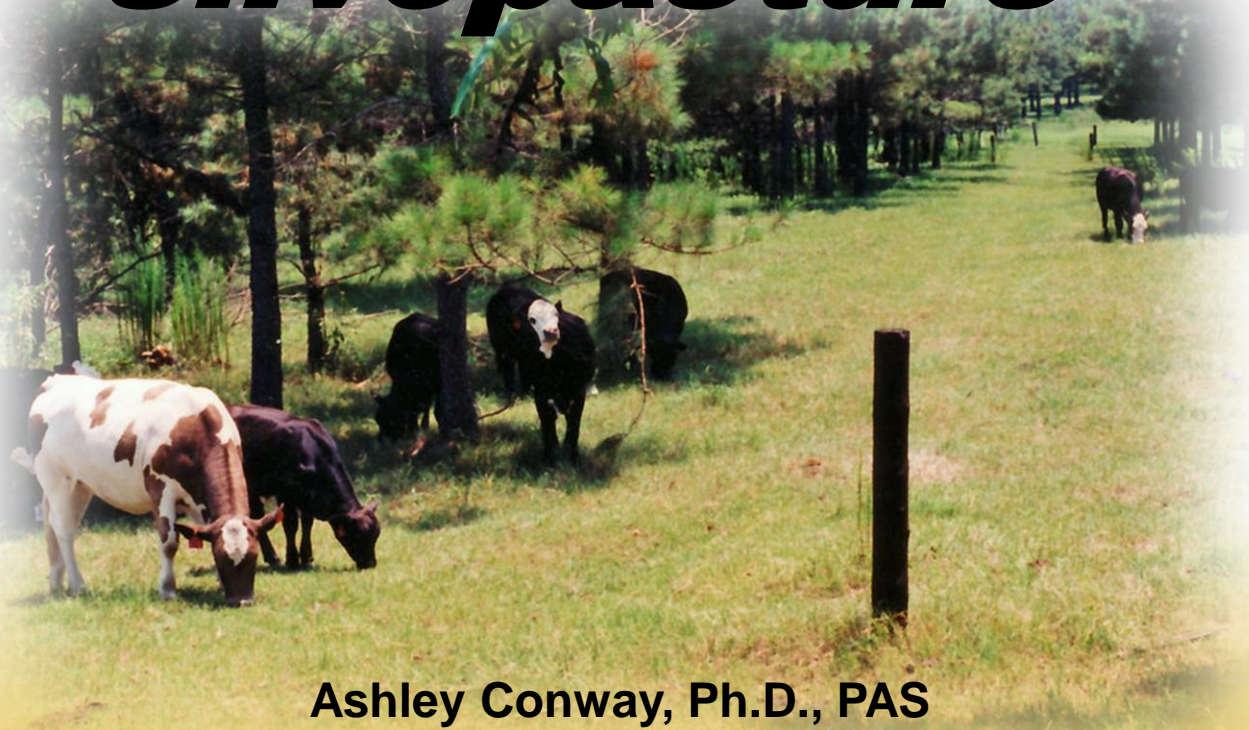




Center for Agroforestry
University of Missouri

Getting started with silvopasture



Ashley Conway, Ph.D., PAS

September 21, 2019

Douglas Co. Conservation District Agroforestry Workshop



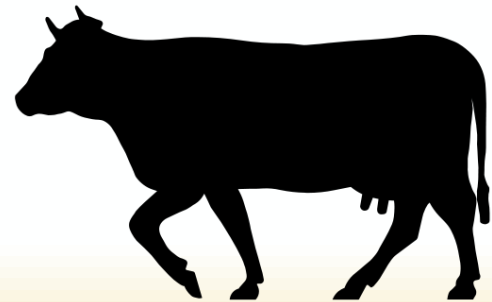
Five Common Agroforestry Practices

- Windbreaks
- Riparian forest buffers
- **Silvopasture systems**
- Forest farming
- Alley cropping



Silvopasture Systems

- Intentional integration and management of:





Silvopasture \neq forested grazing



ALL system components must be intentionally managed!





Multifunctional system



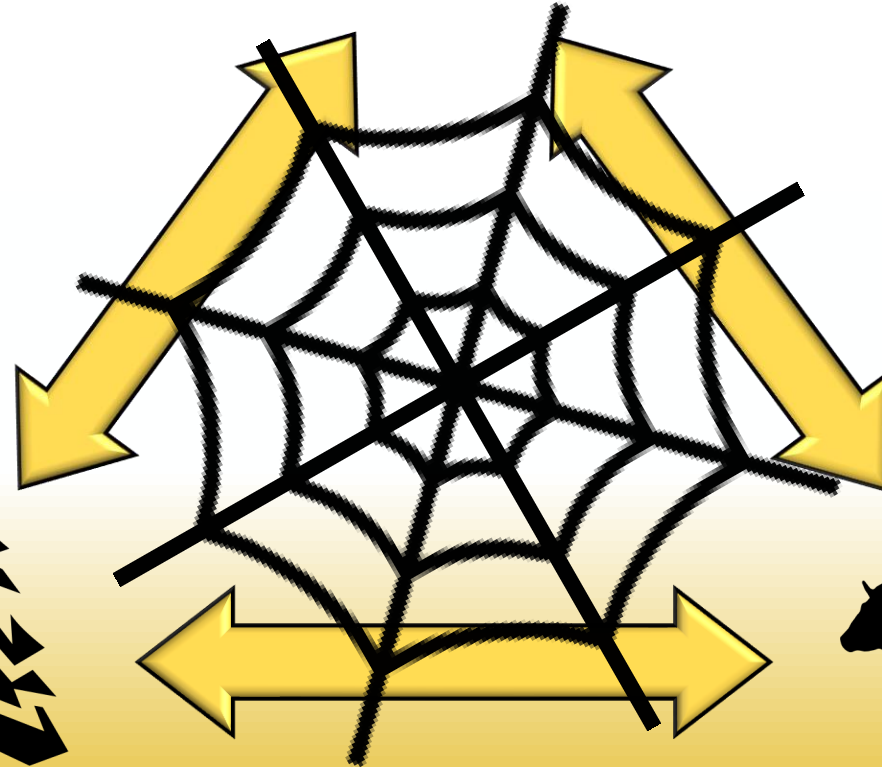


“*A la carte* agriculture...”



- Cool season grasses
- Warm season grasses
- Legumes
- Brassicas

- Timber
- Specialty Crops
- Habitat
- Windbreaks
- Fodder



- Cattle
- Small Ruminants
- Swine
- Poultry
- Pollinators





Previous work

Hardwood silvopasture management in North America

H.E. Garrett^{1,*}, M.S. Kerley¹, K.P. Ladyman¹, W.D. Walter¹, L.D. Godsey¹, J.W. Van Sambeek² and D.K. Brauer³

¹Center for Agroforestry, University of Missouri, Columbia, MO 65211, USA; ²US Forest Service, North Central Research Station, Columbia, MO, USA; ³Dale Bumpers, Small Family Farm Research Center, Booneville, AR, USA; *Author for correspondence: e-mail: GarrettH@missouri.edu

- Soil characteristics
- Nutrient retention
- Water quality
- Biodiversity

Environment



- Livestock performance
- Forage quality
- Tree growth
- Health

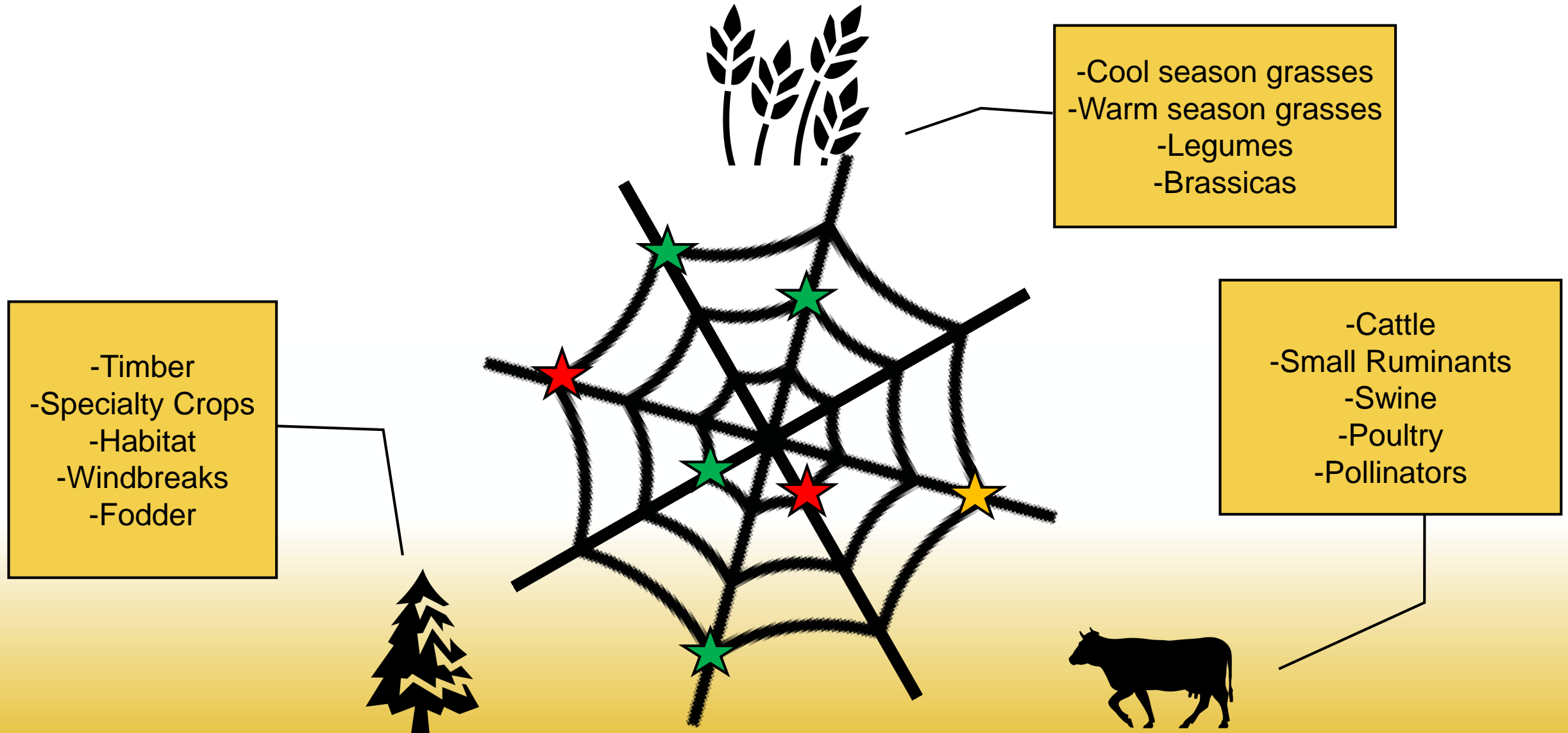
Production



- Revenue diversity
- Increased income
- Land efficiency

Economics









A tale of two starting points...

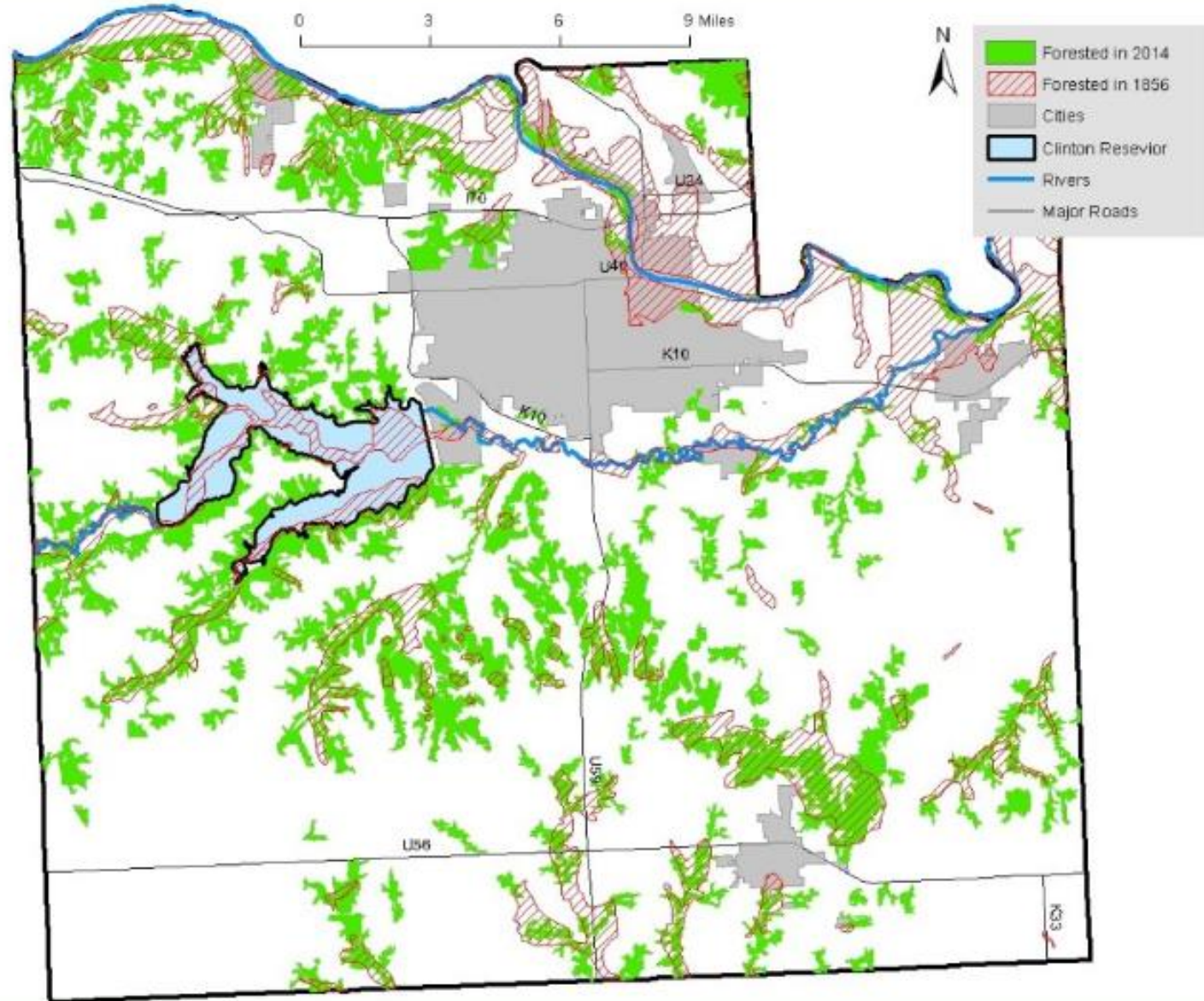




Be aware of historical native ecology of your property.

Are there species/habitats that could be negatively impacted in forcing a new ecological system?

Kindscher et al., 2015
Kansas Biological survey



82% of the forested areas seen today are "new growth" forests that have developed in areas once occupied by prairie



Silvopasture Transition Stages

Forested Conversion

- Property assessment
- Property planning
- Forest thinning
- Forage planting
- Grazing planning
- Animal care and mgmt. plan

Open Field Establishment

- Property assessment
- Property planning
- Tree planting
- Grazing planning
- Animal care and mgmt. plan





Property assessment

- Acreage available for usage
- Land slopes
- Soil type and characteristics
 - Tree species survey
 - Understory survey
 - Pasture/forage survey
- Water sources and/or riparian areas?



Take pictures!
Take measurements!
Utilize public data if
available!
Write everything down!





Property Planning

- Fencing
 - Paddock size and shape*
 - Access to water
 - Animal shelters/feeders
- Access
 - Roads for ALL system components
 - Water crossings?
 - Slope challenges?
- Protected areas plan?

Use existing access points if possible, or design multi-purpose access points to minimize erosion and compaction!





Forest
conversion?



Pasture
establishment?





Forest thinning

- Identify and select species to keep
 - Consider growth pattern, rate, canopy cover, value
 - Allelopathic effects*
 - Establish removal rate
- Will thinned timber be marketed?
- Plan for (1/3) of cleared biomass to remain
 - Chipped and mulched? Road building?
- Plan the spacing and ID specific trees to keep
 - Prune/trim these to reach appropriate canopy cover

Consult with your
local forester and
conservation district
for input!





Forage planting

- Species selection
 - Single species or mix?
 - Native grasses?
- Seeding rates
- Planting logistics
 - Time of year
 - Equipment needed (owned, rental, contract?)
 - Inputs needed: timing and amount
 - Water/irrigation dynamics and needs

Consider the animals you are raising and how different forages can influence their nutrition!





Tree planting

- Species selection
 - Production goal and marketing objective
- Identify spacing and pattern for optimal growth
- Investment budget is critical
 - Timeline for return
 - Specialized equipment
 - Labor needs
- Regulations and restrictions**
 - Chemical treatment
 - Food safety

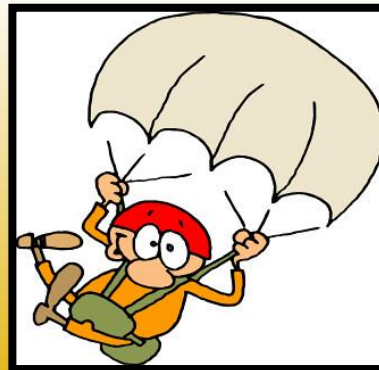
**Poo and
Pesticides are
Problematic...





Grazing planning

- Determine stocking rate
 - Goal vs. reality
- Identify your animal production goals
 - Maintaining dry cows? Grass-fed finishing? Eggs?
- Plan fencing and labor to meet grazing plan needs
- Consider water, mineral and supplement
- Manage Intensive Grazing (MIG) and rotational grazing
- Have a Parachute Plan with a Ripcord Number





Animal Management Planning

- Nutritional plan
 - Forage production and feeding value
 - Supplementation
 - Non-grazing season plan (*hay, stockpiled forages, crop residue, etc.)
- Health management plan
 - Vaccinations
 - Parasite treatments
- Breeding/calving/weaning
- Marketing plan for animals
 - Growing, finishing, replacements, non-meat products



Build a management calendar

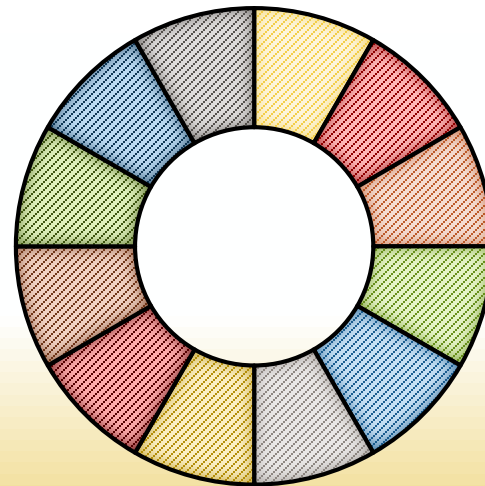
NAME:

Timeline for:

Freeology.com

TASKS

- Jan Feb Mar Apr May June
- Jul Aug Sep Oct Nov Dec







Implementation!





For your consideration...

- Be prepared for investment  
- Ask for help!
 - Professional consultation is key
- Tap into peer-learning opportunities
- Don't be afraid to take calculated risks
- Be patient: it is a *process*
- Consider being a resource and/or collaborator

GOOD LUCK!





Thank you!

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