

Decision Support Tools

Current context for cattle

Prepared for Time2Graze meeting at LAPIG 15 Sept
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What are the “ingredients” for our decision?

- (1) What actions or alternatives are being decided?
- (2) What information or data is used to determine the “best” choice?
- (3) What does “best” mean for this decision?



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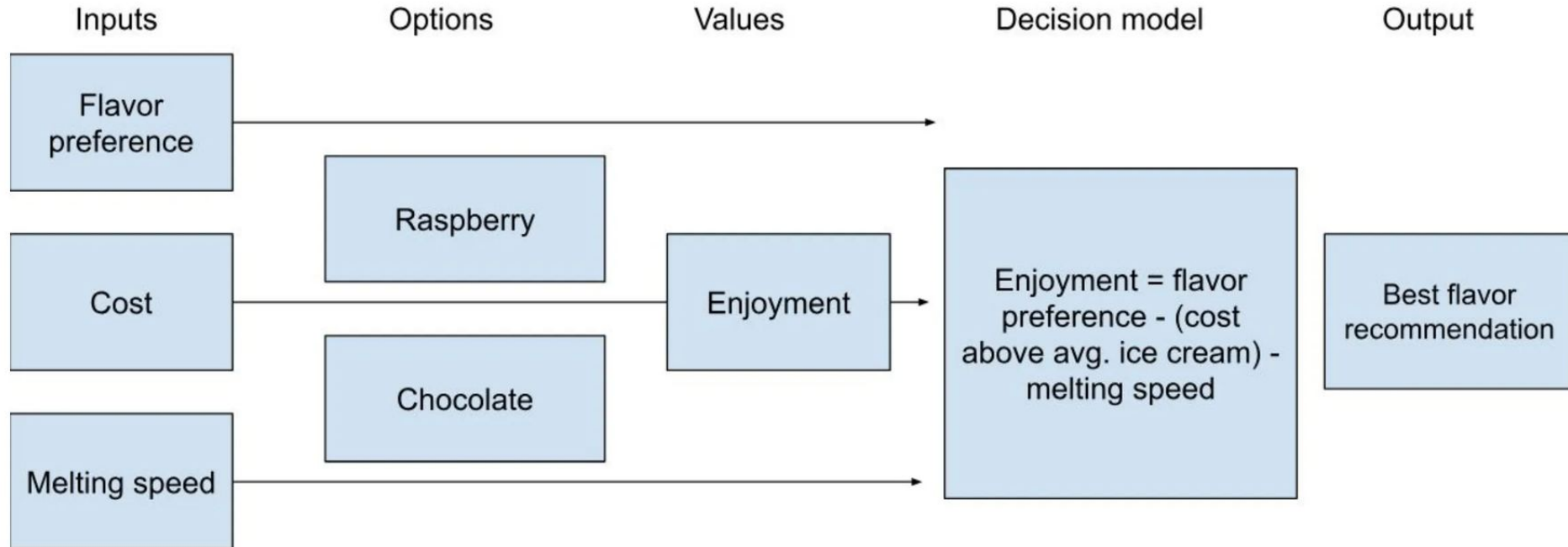
Comforting

Pick Laerte's
favorite
flavor

Try
something
new

Probably tasty

A decision support tool links these elements



Cattle context

Inputs

Options

Values

Decision model

Output

- Forage quantity and quality
- Feed composition
- # of cattle
- Cattle characteristics
- Farm boundaries

Cattle context

Inputs

Options

Values

Decision model

Output

- # of cattle to own
- Feed purchases
- Breeding timing
- Rotation times
- Planted pasture species

Cattle context

Inputs

Options

Values

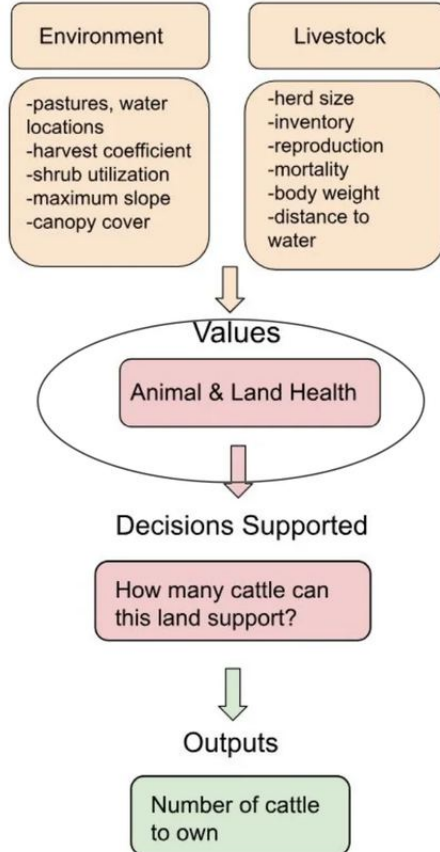
Decision model

Output

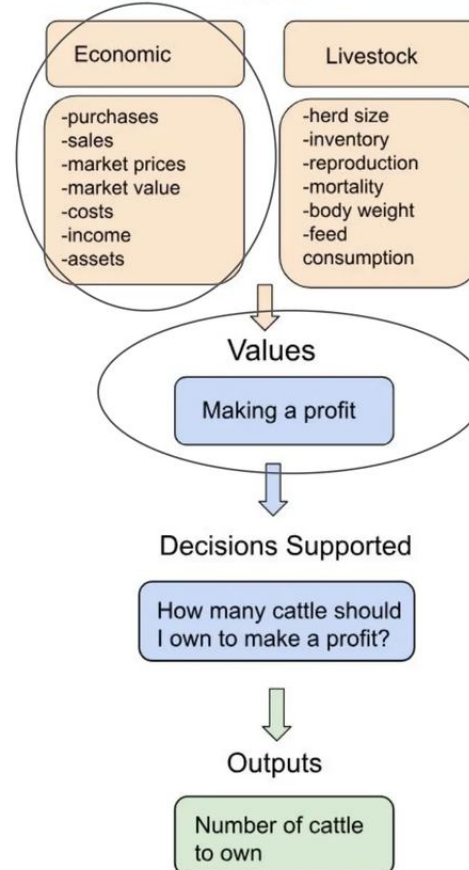
- Money
- Cattle health
- Low disease spread
- Low carbon emissions

How many cattle should I own?

Tool 1



Tool 2



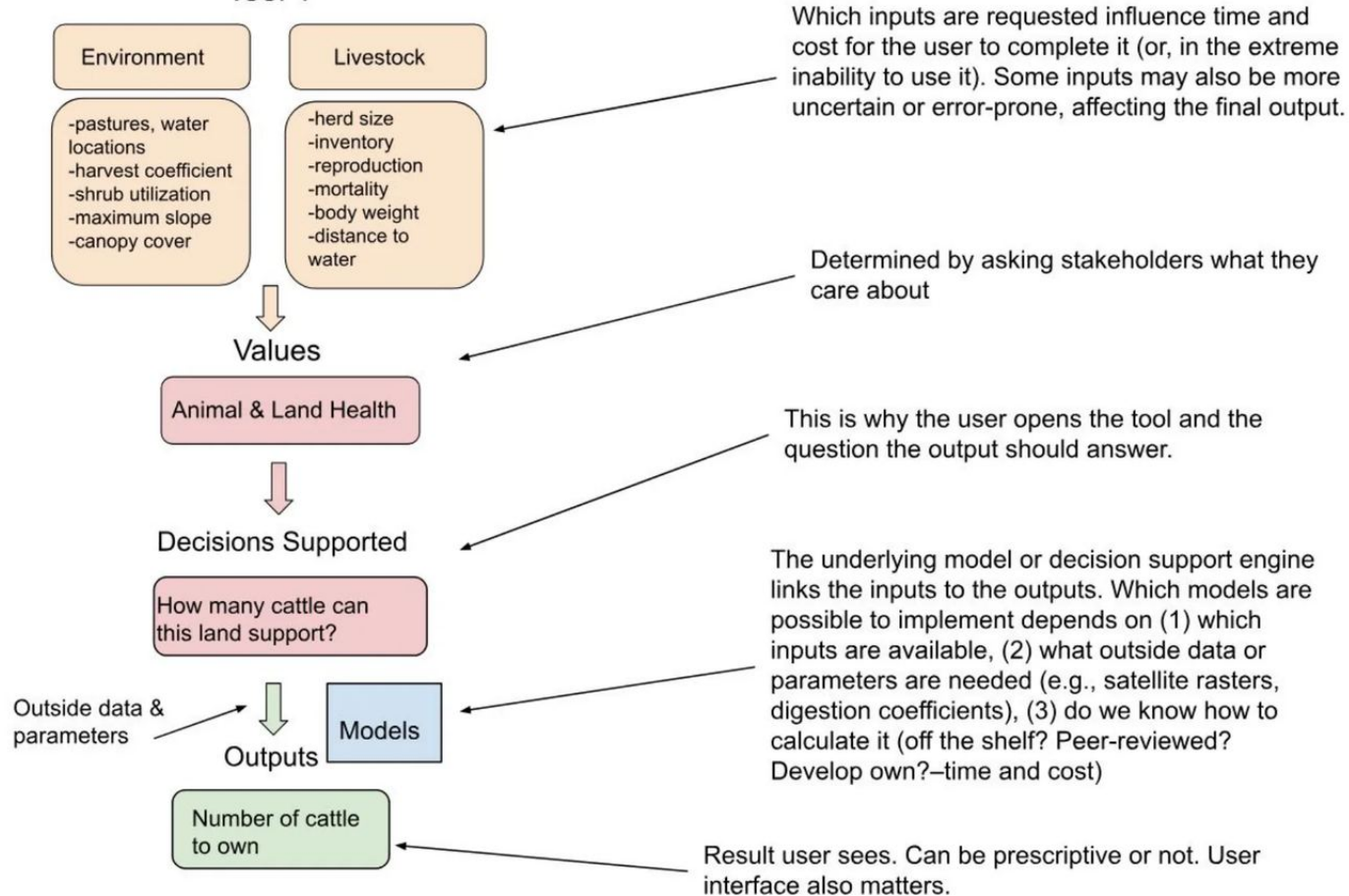
Our question as Decision Support Tool developers is...

... how do we **link** the data we have (near real time estimate of biomass)

- + other data we can get (from the user or other data sources)

to compare or allow a user to compare choices against the values they care about

Tool 1



Carrying capacity

Inputs

Options

Values

Decision model

Output

cattle?

Supplemental feed?

Correlation
model

Biophysical
model

Fixed %
eaten by
weight

Carrying capacity

Biomass available



Review of cattle decision support tools

42 tools IDed, 28 analyzed in more depth @

<https://docs.google.com/spreadsheets/d/1O-z96ml8j1i8tUKZtkJFjPZ8f1KiC0tYZXui9pMQEcA/edit?usp=sharing>

- Most tools ask for animal and herd characteristics (e.g., #, class, weight, age)
- Many ask for
 - farm geographic information,
 - rangeland/grazing conditions, → **herd management, field rest periods, pasture choices, grazing capacity, purchases and sales**
 - general management practices,
 - health information, and information on feed
- Outputs range from dashboards to single-metric characterization of performance

Next steps

- Expand models surveyed
- Investigate modeling approach within tools – i.e., many herd-size models use yearly stage-structured model
 - I can also coordinate across teams and keep track of who is using which model approaches for which components if that would help the teams

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Organization	Vegetation Conditions	Economic Scenarios	Water Carrying Capacity	Land Carrying Capacity
Farmbrite	Every.Farm	RanchVision	StockSmart	AgriWebb
Cattlytcs	StockSmart	PastureMap		AtlasGrazing
Smarter Cattle	AfriScout	CattleFlow		PastureMap
CattleMax	EOS Crop Monitoring	SimHerd		StockSmart
Modisar	RDST	iCLEANED		
+ more	Farmonaut			

Review of cattle decision support tools continues

Drought Risk	Soil Conditions	Est. Feed Req.	GHG / Methane Emissions	Disease Risk
KAZNET	LandPKS	AtlasGrazing	iCLEANED	RVF DST
US Drought Monitor	Farmonaut	iCLEANED	SimHerd	
			Cool Farm Tool	
			GLEAM-i	