Eliciting Decision Structure and Decision Rules

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Q: Why Talk to Farmers?

A: Local Knowledge

Theodore Schultz: Agricultural technology is highly "location specific" and must be adapted to the cultural and resource conditions where it is to be applied.

Wendell Berry: the problem is not one of choosing between scientific and local knowledge, but of creating conditions in which these separate realities can inform one another.

What Would We Like to Know?

What are the most important decisions and what's their timing?

Which decisions are climate sensitive?

Which decisions can be modified?

Who makes decisions?

What information is used and which are the preferred sources?

How important is climate compared to other risk sources?

Two Types of Decision Models

Prescriptive: simulations of ideal responses

Descriptive: observed decision making

Jochec et al. 2001: does both.

- Focus groups elicit decision rules.
- Economic, biophysical models simulate forecast value.

Participatory systems approach.

Elicitation Methods

Field interviews: less structured.

Focus groups: group dynamics.

Survey questionnaires: prevalence of views.

Focus Groups in Jochec et al.

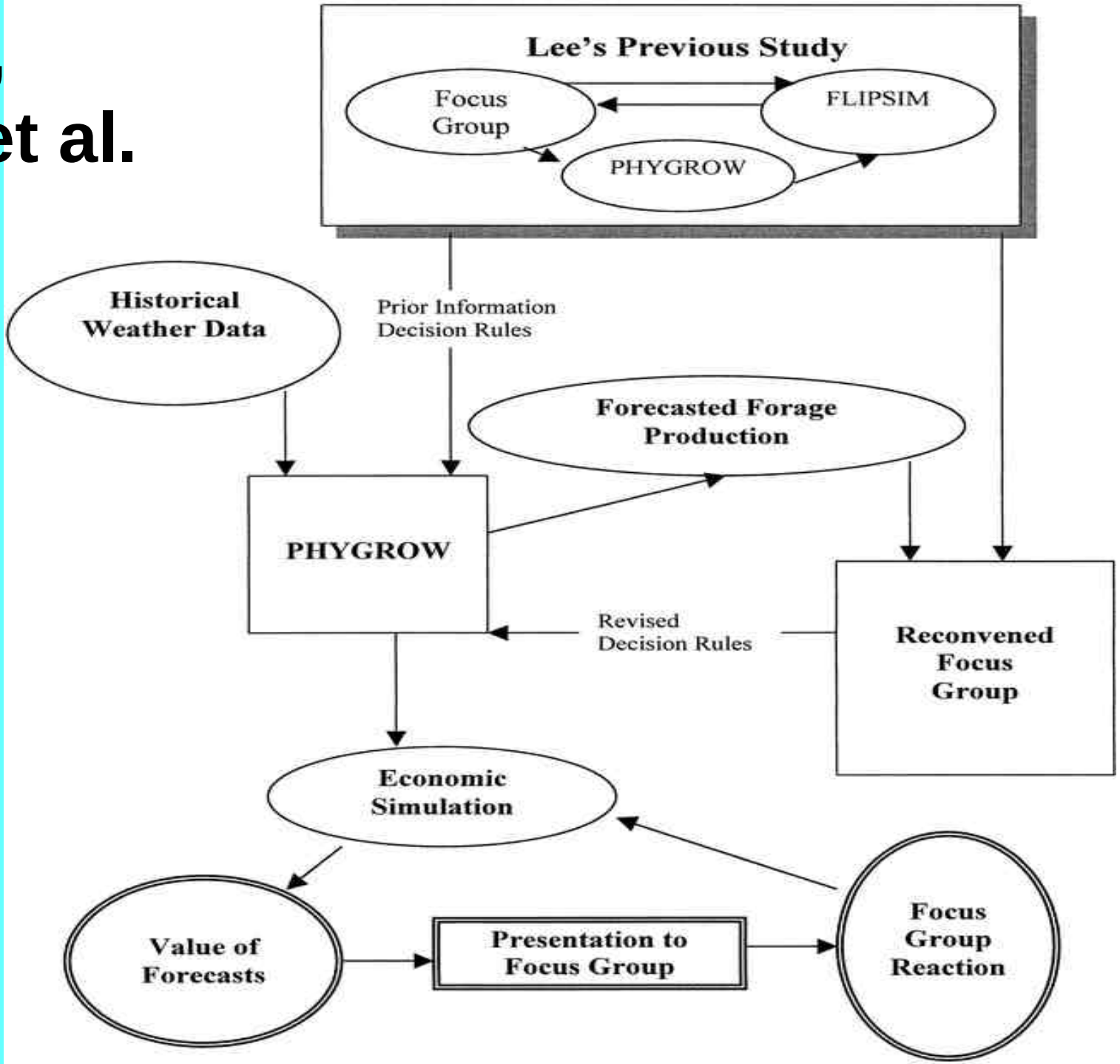
Seven ranchers met with research team twice 7 months apart.

First meeting:
Briefed on PHYGROW model.
Briefed on NOAA/CPC seasonal climate outlooks. Key points:
- Outlooks not certain.
- Outlooks have more skill than historic averages.
- Forecasting will improve over time.
- Outlooks will become more user friendly.

Asked how forecasts might influence stocking decisions.

Second meeting:
- confirmation of decision rules;
- verifying basic structure and results of economic model.

Figure 1, Jochec et al. (2001)



How Did They Represent Climate Conditions?

Forage forecasts: as deviations from long-term mean.

- Simulated over 49 years of daily weather.
- Easier to interpret.
- Outcome of interest to ranchers.
- User friendly.

Representative years: above avg, typical, below avg.

Uncertainty portrayed with a set of analog years within categorical forecast.

Scenarios based on both current and forecasted conditions.

Figure 2 from Jochec et al. (2001)

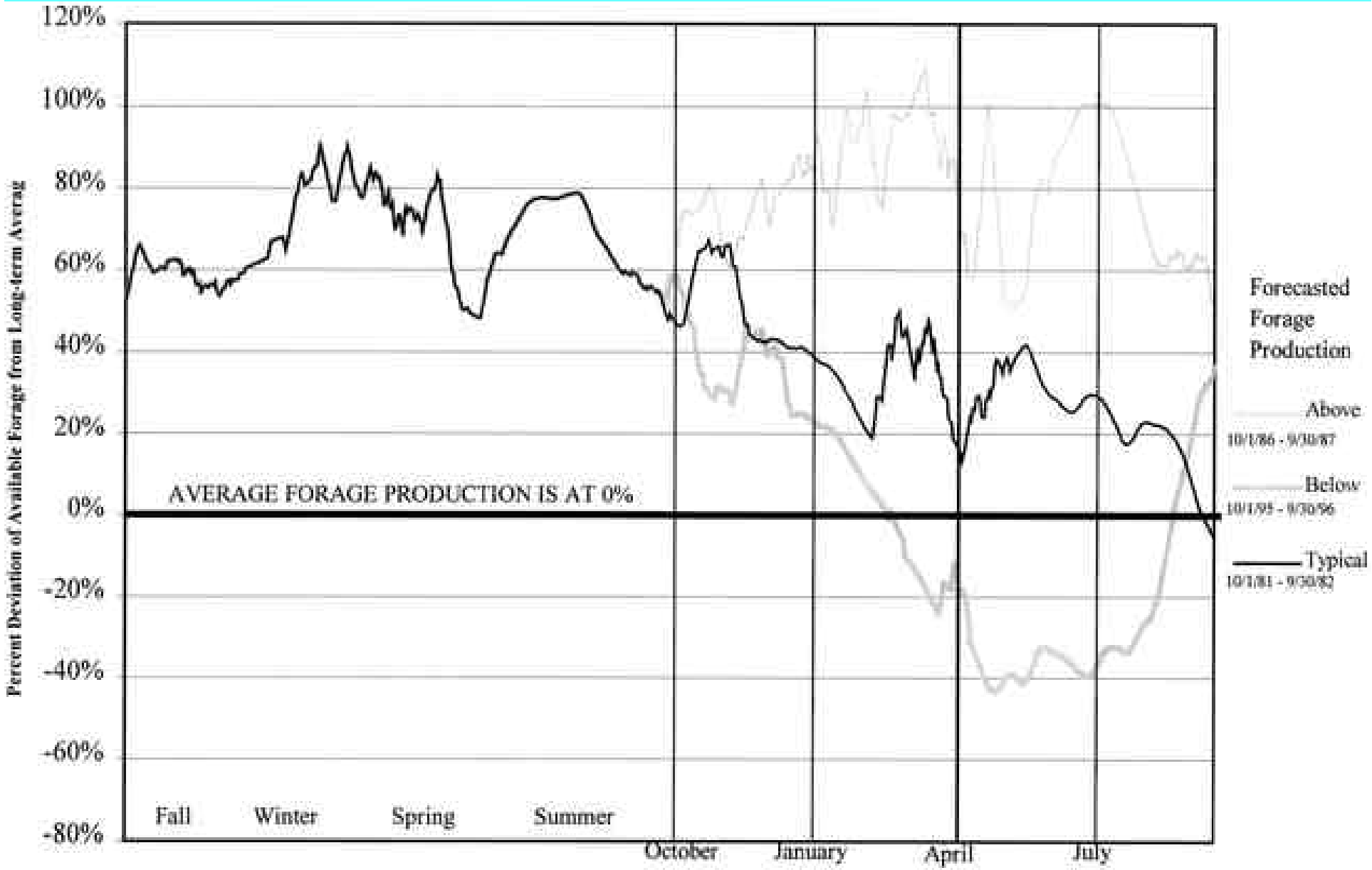
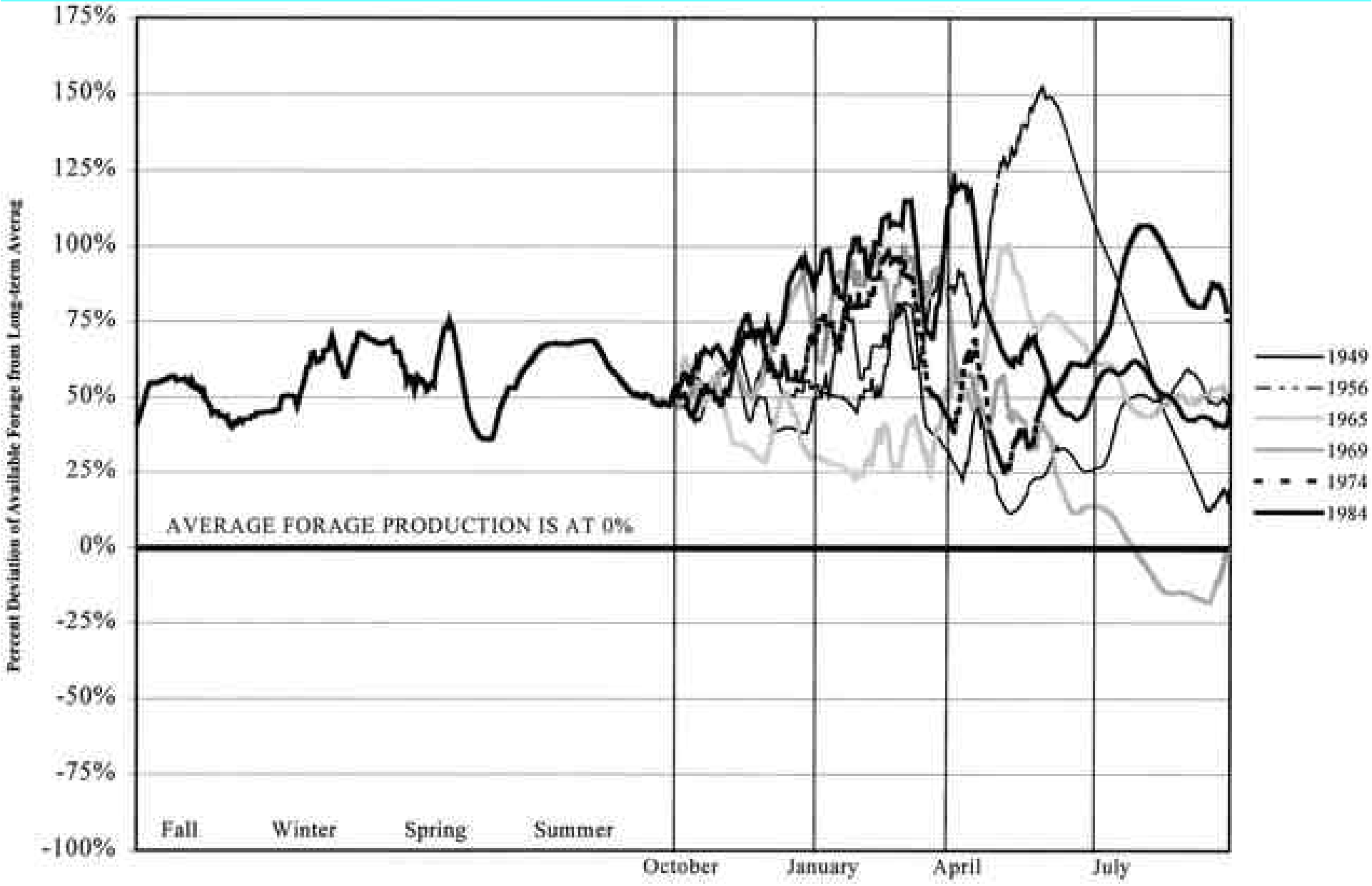


Figure 3 from Jochec et al. (2001)



What Did They Learn?

Ranchers prefer forecast of climate, not of forage production.

Risk aversion. Defensive use of forecasts.

Trust issues:

Govt use of forage forecasts to determine disaster relief.
Possible environmental restrictions.
Ability of PHYGROW to simulate yields at diverse sites.

Not modeled but important:

- genetic preservation,
- supplemental feed decisions,
- second-year in calving cycle,
- deer hunting,
- brush control management

Conclusions

Local knowledge critical for:

- Structure of decision analytic models.
- Interpreting findings of “prescriptive” models.
- Appreciating constraint on forecast use.
- Finding out what information farmers need and when.

Jochec et al. focused on how decisions are made but in a way that can be quantified and evaluated.

Whether or not you will simulate ideal responses, start by learning how climate sensitive decisions are made.