Shrimp Culture in Low-Salinity Water in Arkansas

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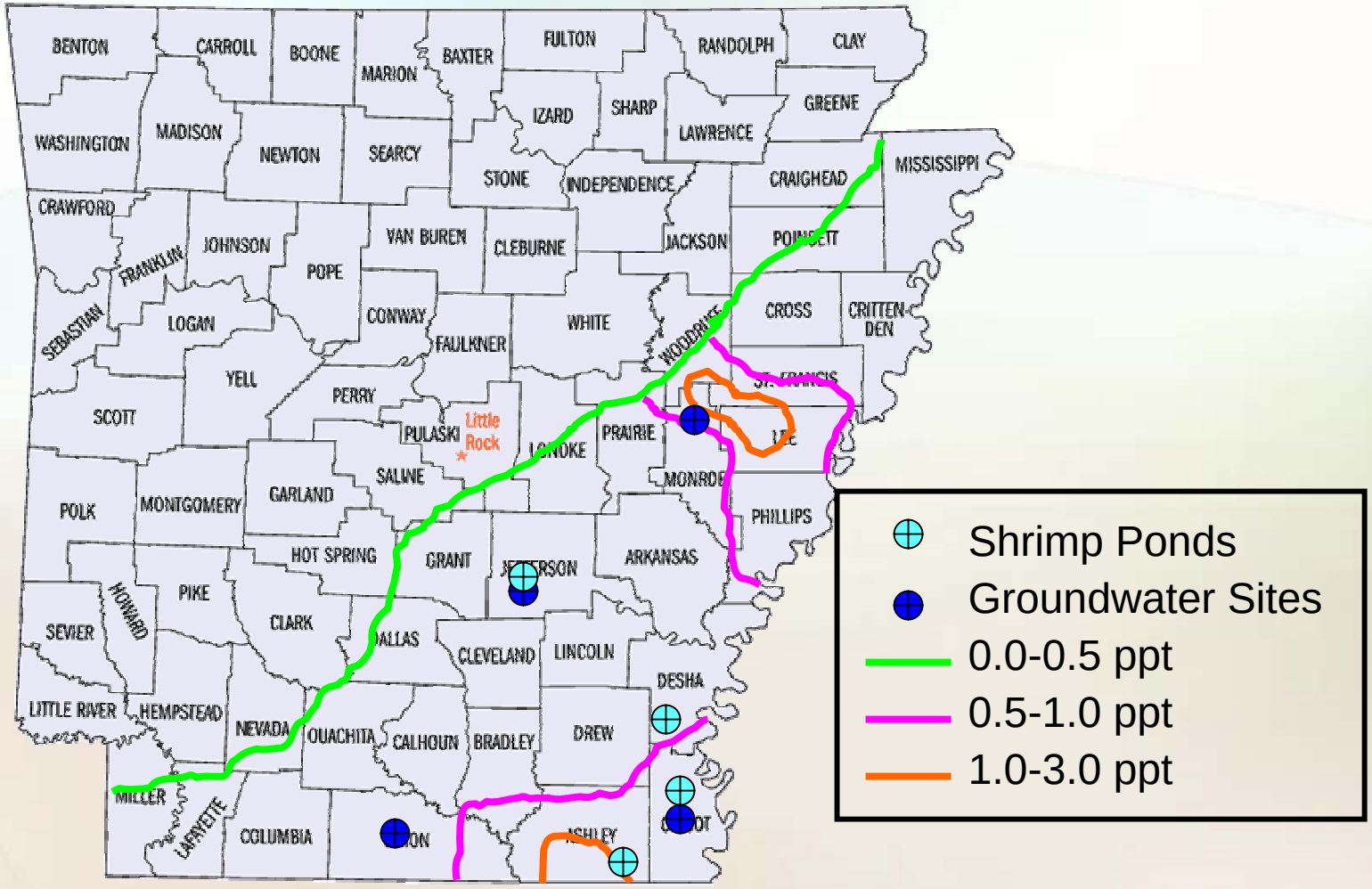
Introduction

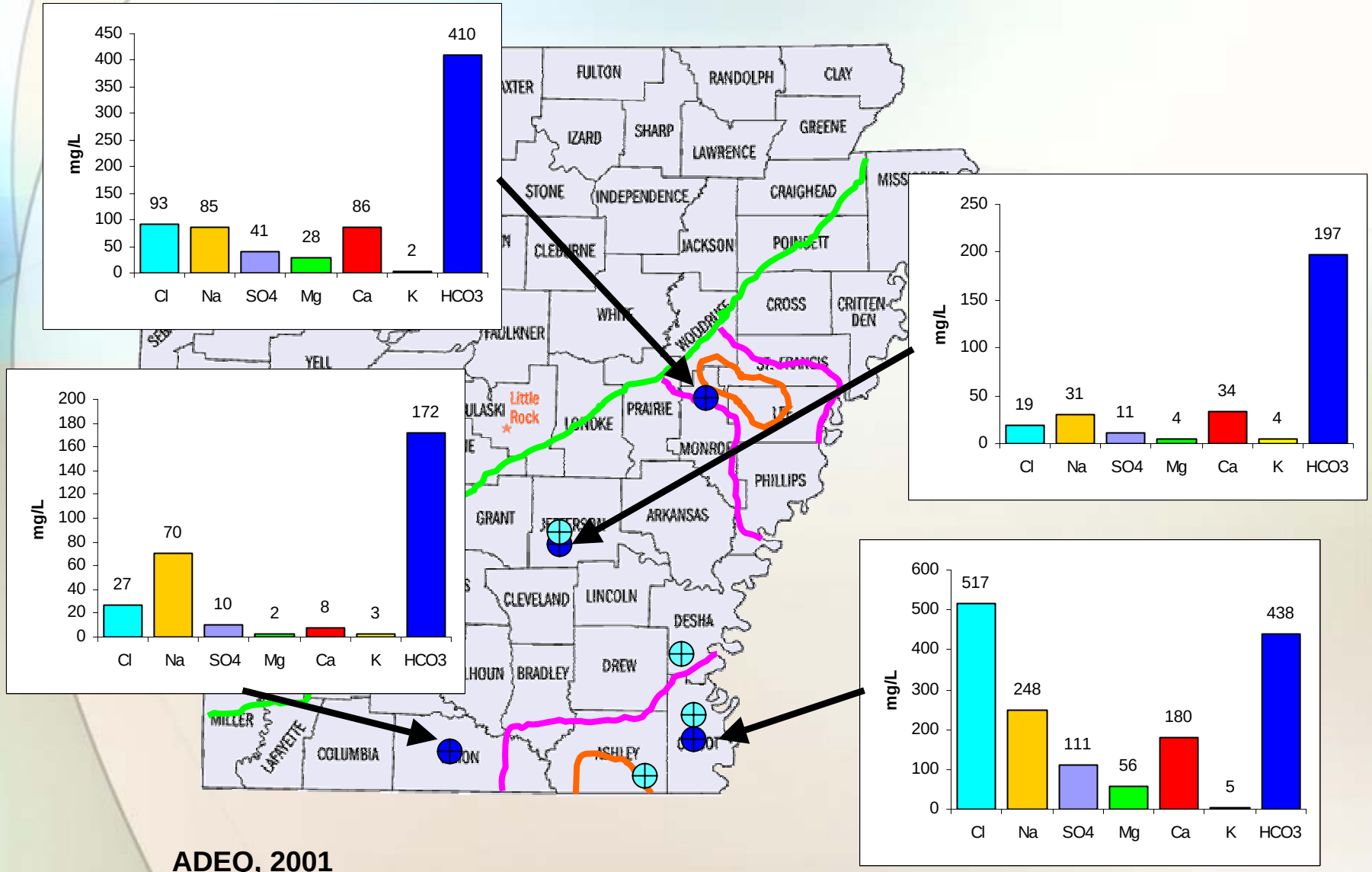
- Low-salinity (<10 ppt) ground water present in Arkansas.
- Long used by catfish farmers
  - Elevated chloride concentrations combat NO_2^- - induced brown blood disease.
- Inland culture of Pacific white shrimp
  - Diversification strategy.

Arkansas Shrimp Trials



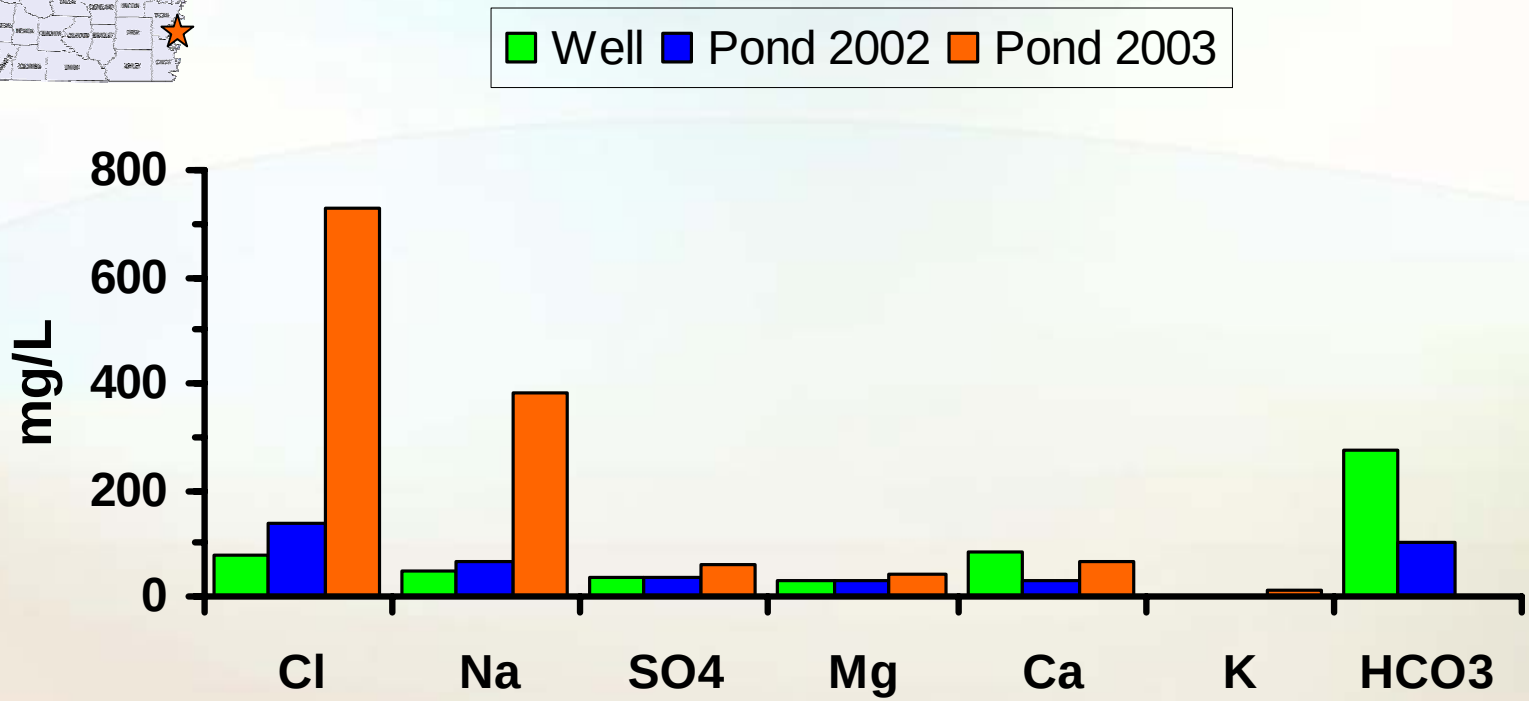
USGS, 1998; ADEQ, 2001

Ground Water Ion Concentrations



ADEQ, 2001

Desha County Farm

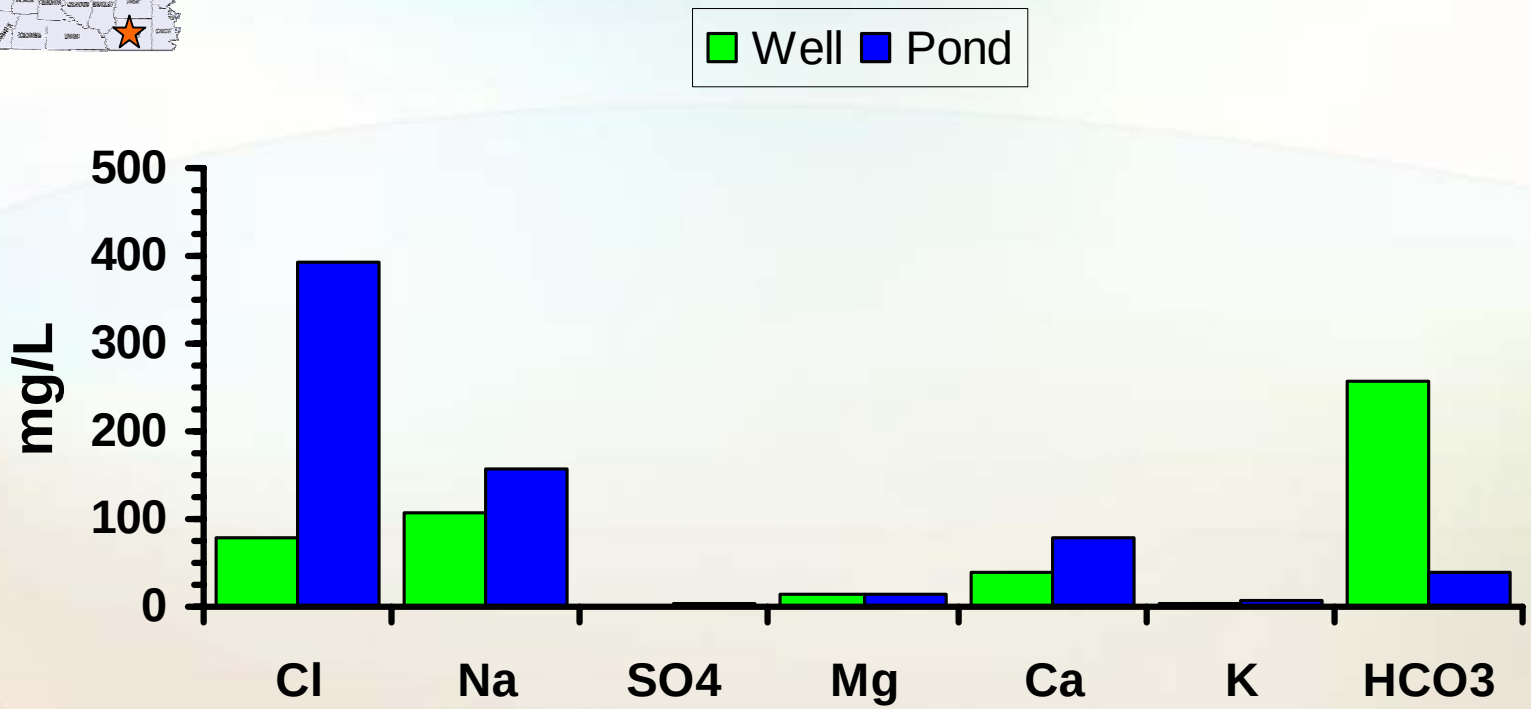


<u>Water Amendments</u>

2002: 2,240 kg/ha ag lime; 187 kg/ha $CaCl_2$

2003: 3,360 kg/ha ag lime; 6,700 kg/ha NaCl; 709 kg/ha Potash (KCl)

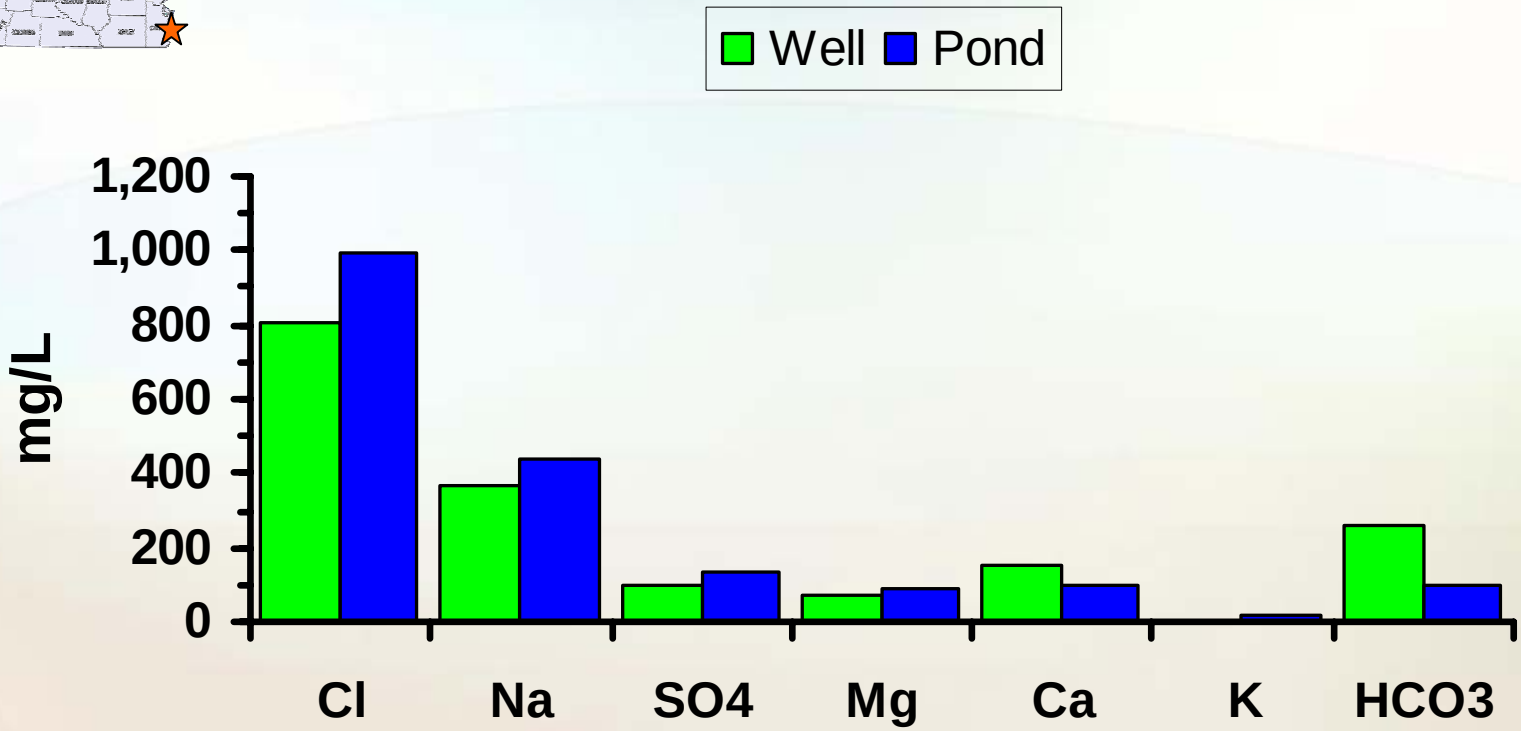
Ashley County Farm



Water Amendments

2002: NaCl, $MgCl_2$, $CaCl_2$ added to obtain Ca^{2+} hardness > 350 mg/L and Mg^{2+} hardness > 100 mg/L

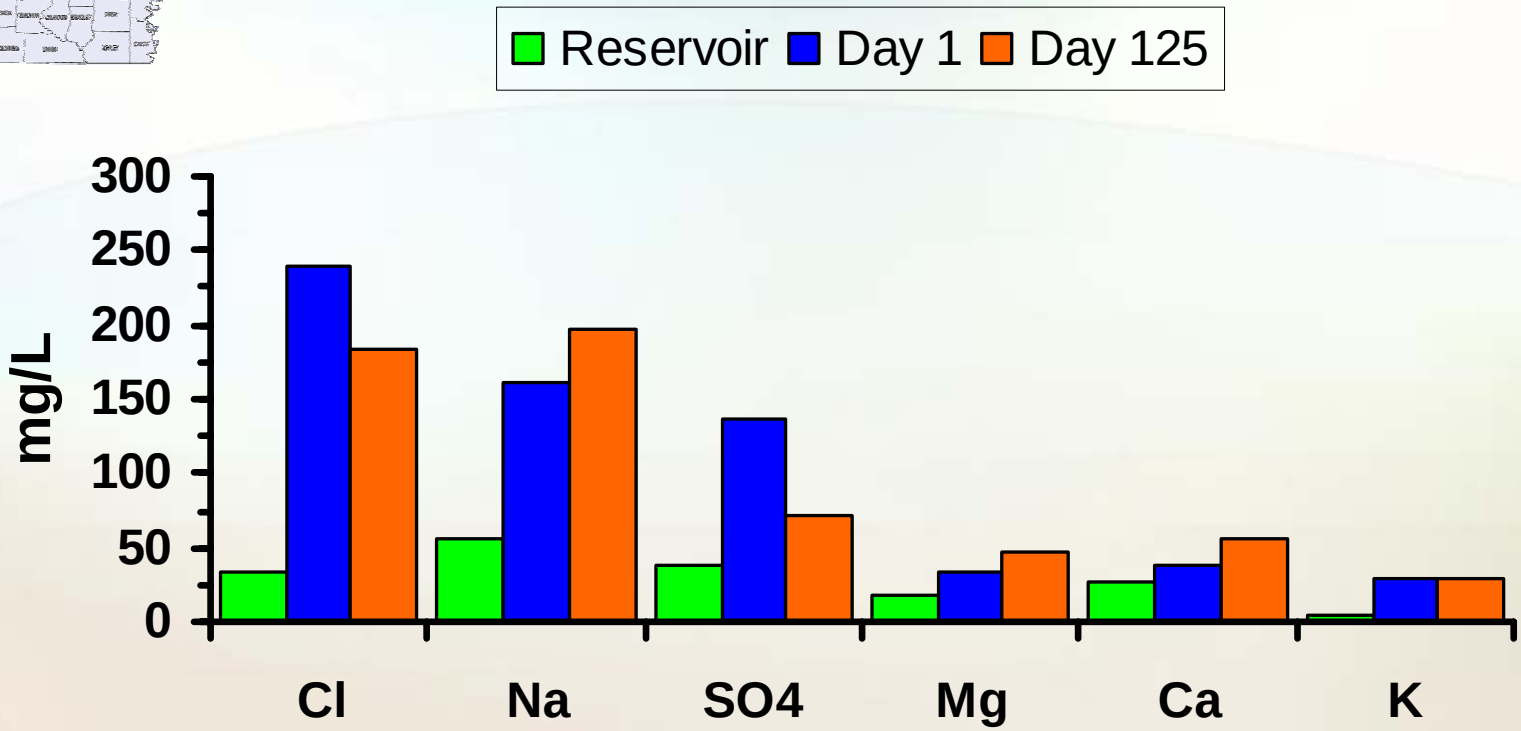
Chicot County Farm



Water Amendments

2002: 6,720 kg/ha ag lime; 2,240 kg/ha K-Mag (0-0-22, 11% Mg, 22% S)

Jefferson County Farm



Water Amendments

2003: 5,600 kg/ha NaCl; 3,100 kg/ha K-Mag (0-0-22, 11% Mg, 22% S)

Production Strategy

	Desha		Ashley		Chicot
	2002	2003	2002	2003	2002
Ponds	3	3	2	1	1
Total Area (ha)	4.9	4.9	1.6	5.7	1.3
Stock (PL/m^2)	-	31	25	9	15
Feed (% protein)	35	35	35	35	35
Aeration (hp/ha)	11	11	-	1.75	7.5

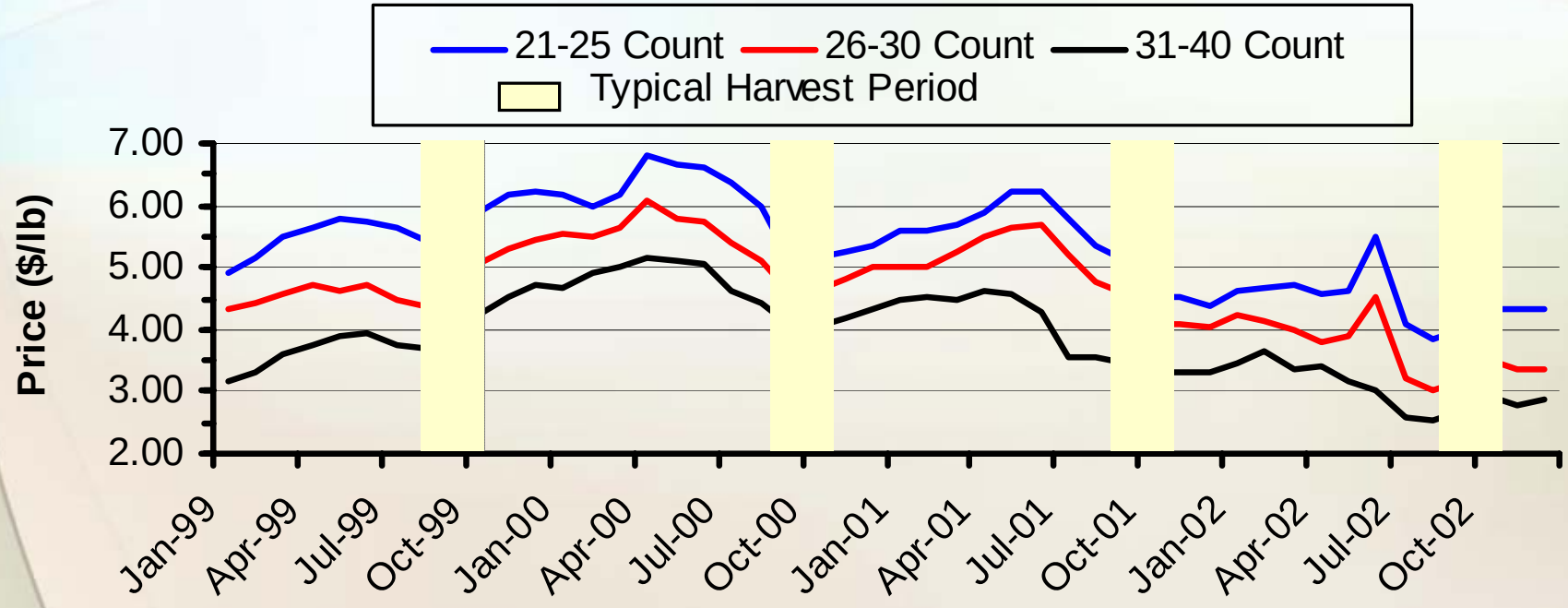
Production Results

	Desha		Ashley		Chicot
	2002	2003	2002	2003	2002
Yield (kg/ha)	560	2,275	2,241	425	300
Mean size (g/shrimp)	25-30	32	29	35	35
Survival (%)	~ 20	21	38	13	11

“A Long, Hard Slog”

- Marketing
  - Prices
  - Seasonality
  - Niche v. commodity
  - Live-haul

Texas Ex-Vessel Shrimp Prices
(Headless)



Summary

- Water resources and aquaculture expertise present.
- Shrimp can be reared successfully.
- Marketing challenge
  - Farmers are addressing marketing issues before expanding production.