Measuring Water & Farm Labor Interactions

Richard E. Howitt
University of California, Davis

Labor, Water, and California Agriculture in 2014
King Hall, UC Davis, April 18 2014
Measuring Water & Labor Interactions in 2014

- Value and scarcity of water varies greatly, since the priority of the water rights is determined by the appropriation date.

- Measuring labor impacts of drought needs to consider:
  - What crops are grown in the area?
  - What are the water rights in the area?
  - How mobile is the labor force?
  - How mobile are the crops and crop contracts?

- The 2014 water supply/demand imbalance is made worse due to:
  - Increased Delta export restrictions
  - Increased perennial crop plantings
  - Depletion of groundwater stocks
Regions in the Economic SWAP Model
Wide variation in Labor Expenditure/Acre foot

- Alfalfa
- Almonds and Pistachio
- Corn
- Cotton
- Onions and Garlic
- Pasture
- Processing Tomatoes
- Rice
- Safflower
- Citrus
- Vines
Perennial Crop Acreage Trending Up

Source: USDA NASS
Delta Exports Reduced in Drought Years

Total Delta Exports (Acre-Feet)

1,000 Acre-Feet

Depth to Groundwater is Trending Down
(Famiglietti et al 2011)
Record Bids for San Joaquin Valley Agricultural Water

Buena Vista Water Bids - February 7, 2014

$ / Acre-Feet

$ = 1257e^{-0.05x}

R² = 0.96702
South of Delta received only 25% of transfer requests in 2009

<table>
<thead>
<tr>
<th>Region</th>
<th>Requested Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>North of Delta</td>
<td>44,860</td>
</tr>
<tr>
<td>South of Delta</td>
<td>824,045</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regions</th>
<th>Transfers as of October 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>North to North</td>
<td>93,466</td>
</tr>
<tr>
<td>North to South</td>
<td>200,185</td>
</tr>
</tbody>
</table>
Conclusions

- Adjusting to droughts has become more difficult
- Lessons from 2009 will help to estimate 2014 labor impacts
- Record water prices in SJV may stimulate ground water management initiatives
- New East-West transfers are needed in the SJV
- Authorities should not attempt to set prices, but to facilitate the operational aspects of transfers
- Long run adjustment by agriculture will involve field crop flexibility and fallowing as part of the rotation