



# Irrigation of Cotton and Soybeans on Level-Basins in Louisiana

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Water Resources

# Irrigation of Cotton and Soybeans on Level-Basins in Louisiana

- Level-basin irrigation of cotton in Arizona
- Level-basin irrigation of rice in Mississippi
- Louisiana level-basin field design
- Typical irrigation sequence
- Irrigation in 2005 and 2006
- Results
- Recommendations

# Team

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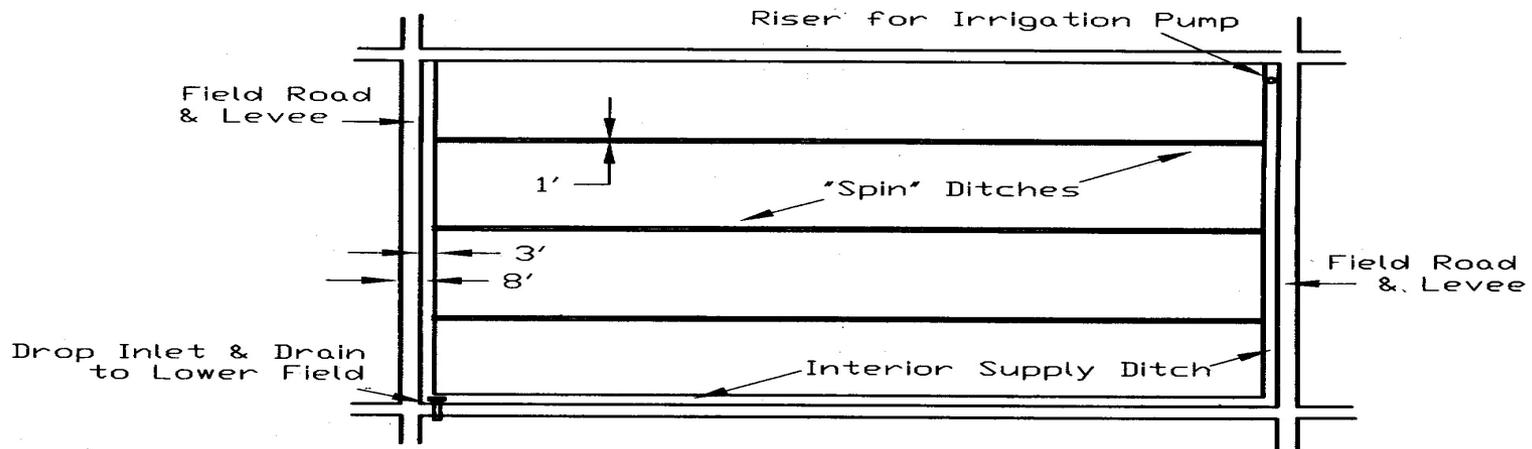
# Level-Basin Irrigation of cotton in Arizona

- 19.7% less water and 12% more yield (Bathurst, 1988)
- 10 acre fields with drain-back capability and 500+ gpm-acre pumping capacity (Clemmens, 2000)

# Level-basin irrigation of rice in Mississippi (2003-2006)

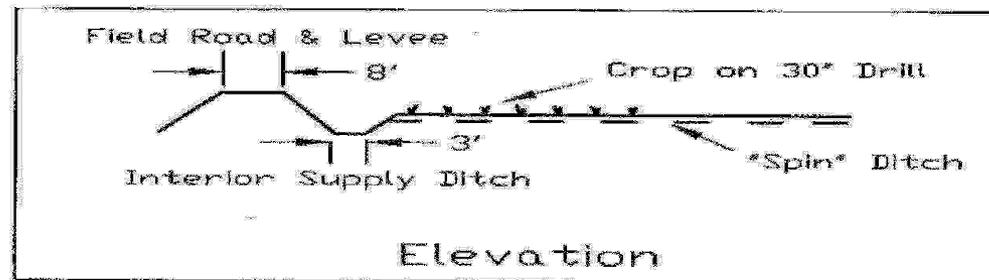
Field design	Number fields	Feet of water
Contour levee	39	3.69
Straight levee	67	3.06
Multiple inlet	20	2.34
Level basin	21	1.48

# Louisiana Level Basin Design



Plan View

note: Exaggerated Scale



Elevation

# Typical Irrigation Sequence

- Use Arkansas Irrigation Scheduler to trigger at 2" soil moisture depletion
- Fill interior supply ditch
- Water moves out into spin ditches
- Water moves on to field surface
- Drain water to next field

# 2005 Cotton

- Hipped at 38", pulled down top, planted
- Installed 3 spin ditches
- Closed bottom drain
- Ran pump until field covered
- Shut off pump and opened bottom drain

# 2006 Cotton

- Rehipped and shaped beds
- Installed three spin ditches
- Installed 15" poly tube
- Used sliding gates on 90" centers
- Plugged interior ditch end of spin ditches
- "Border" irrigated
- Shut off pump and opened bottom drain

# Cotton Irrigation Results

	2005	2006
Irrigations	2	3
Water used	5.3"/4.6"	5.4"/4.5"/5.1"
Time required	38/32 hours	38/32/36 hours

# 2006 Soybeans

- Drilled flat at 30" centers
- Rice levees not pulled down enough
- Several irrigations stopped due to rain
- 1<sup>st</sup> irrigation at <2" depletion
- Subsequent irrigations at 2" to 4"

# 2006 Soybean Irrigations

	Wtr	Depl	Wtr	Depl	Wtr	Depl
2-9L	4.1	1.58	4.4	4.51		
2-11L	3.6	1.59	5.3	3.72		
2-12L	4.1	1.51				
2-10S	3.8	1.63	2.9	2.06	2.4	2.12
2-19S	4.3	1.51	4.2	4.01	4.3	4.78
2-20S	4.5	1.83	5.3	2.79		

# Recommendations

- Row up or plant on bed
- Spin ditch spacing 100' or water furrows
- Fill interior supply ditch at low rate
- Maximum flow rate until field is covered
- Shut off pump and drain field