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On-Farm Reservoirs

A complete solution relies on seasonal water imports to supplement irrigation

MEMPHIS, Tenn., Wednesday, May 2, 2001 — Arkansas' first storage reservoir for rice irrigation was built on the Grand Prairie in 1926 by A.A. Tindall. Constructed in a forested drainage south of Stuttgart, Tindall's reservoir provided a dependable water source for rice production and attracted large numbers of wintering waterfowl, especially mallards.

By 1950, about 200 reservoirs had been built within the region and fifty were "greentree" reservoirs, similar to Tindall's. These so-called "greentree" reservoirs had been built, in part because of their double benefit – rice irrigation and waterfowl attraction. Most "greentree" reservoirs were typically filled during the fall and winter with rainfall, but dry by summer, allowing the trees to continue growing.

East of Stuttgart and along the White River, rice farmers had been trying to solve their lack-of-water problems differently since the early 1900s.

A pumping station was built in 1908 on Stinking Bay and adjacent to the White River. This brought river water to rice fields into eastern Arkansas County. By 1910, a larger 12,000 gallon per minute pump was put into the White River at Crocketts Bluff and 6-8 miles of canals delivered the river's water to about 1,500 acres of rice.

Rice farmers prefer water from rivers and reservoirs – surface water - because it's warmer than groundwater, and much less alkaline (having a pH greater than 7). Pumping colder groundwater over an emerging rice crop can often shock young plants, slow their growth, and ultimately, reduce the crop's yield. Typically, more alkaline soils yield less rice and require rotation with soybeans to help reduce the soil's alkaline level.

As commercial rice production continued to increase on the Grand Prairie the demand for irrigation water forced most farmers to drill wells because it took less than constructing a reservoir. Consequently by 1936, the region's shallow Alluvial Aquifer had begun to decline and alkaline soils had increased.

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Today, most of the Grand Prairie's 250,000 irrigated acres have been leveled and about one-fourth precision leveled, meaning that the natural surface water flow and runoff have been disrupted. Weather and drainage conditions dictate that reservoirs can no longer be expected to fill themselves with rainwater, and some mechanical assistance is required to ensure an adequate, year-round water supply.

The Grand Prairie Area Demonstration Project (GPADP) will add about 8,800 surface acres of on-farm reservoir capacity within the region. This additional storage capacity will also allow for winter flooding of more than 38,000 acres. Generally, this winter flooding would cover harvested rice fields for waterfowl, but hinges on the project's ability to supplement natural rainfall with stored water diverted from the White River.

Redistributing water from the White River at DeValls Bluff would provide new winter habitat for waterfowl on the Grand Prairie. This water may also be used to restore seasonally flooded, forested habitat within the region to assist ecosystem restoration.

Scheduled diversion from the White River varies by month and on an as-needed basis. To ensure environmental integrity, pumping would not be permitted when the actual level of the river at Clarendon is below various predetermined levels.

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