

Irrigation



Surge irrigation can save both time and water over conventional irrigation. Another benefit of surge is the ability to improve uniformity, getting more water to the end of the field without over-irrigating the top. Uniformity is essential when trying to alleviate the effects of salinity. Surge irrigation is also complementary with PAM.



PAM

Polyacrylamide (PAM) is an environmentally safe, water-soluble polymer that works by binding clay and silt particles together, enabling them to settle to the furrow bottom. PAM has been studied for many years and found to be both environmentally safe and effective, reducing soil loss from 30 to 90%. PAM also increases lateral movement of water to row centers and improves infiltration on fine-textured soils. Because PAM increases infiltration, irrigators should increase stream size to maintain uniformity and advance times.

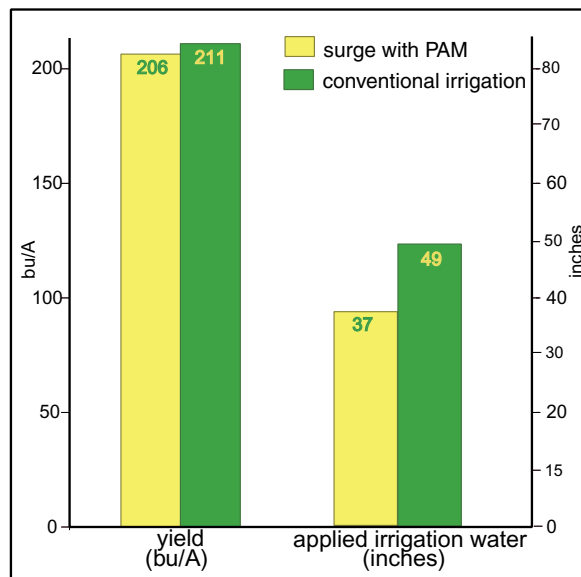


Figure 32. In trials conducted by Jim Valliant, Colorado State Extension, in the Arkansas Valley, surge irrigation with PAM produced an average corn grain yield of 206 bushels per acre while using 37 inches of applied irrigation water. The conventionally irrigated areas yielded only about four bushels more than the surge irrigated areas, while using 12 inches per acre more water. Top soil loss was reduced by 76% with PAM.

Top photo, without PAM; bottom photo, with PAM. Furrow-irrigation-induced soil erosion causes a multitude of problems for both farmers and the environment. Sediment carried in tail water removes valuable silt and clay sized soil particles, plant nutrients, pesticides, and organic matter. As sediment is moved from the top of fields and deposited lower, it changes a field's intended slope. Sediment in runoff also fills up drainage ditches and tail water pits, and causes problems for other downstream users.