

Scheduling the Last Irrigation on Cereals

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Three years of testing indicate that maximum grain yield and quality for winter and spring grain can be achieved by scheduling the last irrigation so that the crop root zone is filled to field capacity (1-3 days after irrigation) at soft dough. If the soil is shallow or of low water holding capacity, at least one more irrigation after soft dough should be made.

These guidelines are based on the observation that it takes about 2 inches of water to mature the crop after the soft dough stage. By peak water use time of the year, roots of winter and spring grain have developed to extract water from a three foot depth of soil if rock or hard soil layers are not encountered first. Therefore, for soils that are at least three feet deep, and have a water holding capacity of at least 1.3 inches per foot (see table below), no additional irrigation is required if the soil is near field capacity at soft dough. For soils only 2 feet deep, the minimum water holding capacity would be 2 inches per foot to stop irrigation with a full soil profile at soft dough.

Water cutoff before soft dough reduces yield and test weight on all but the deepest high water holding capacity soils. Irrigation after soft dough does not increase yield and can increase fungal problems like black tip and can also decrease test weight and protein content.

Many people have their own method of determining soft dough and the methods vary somewhat. In general, at soft dough, when the kernal is squeezed, the contents come out as a soft doughy consistency, not milky and not hard and granular. Another approach says that soft dough is when a fingernail indentation will disappear within a few seconds and yet the contents of the kernal are not milky. If the fingernail mark remains, the kernal is closer to hard dough.

Water holding capacity for various textural classes of soils. To be used when soil series is unknown. Source: R.O. Ashley, W.H. Neibling and B.A. King.1997. Irrigation Scheduling Using Water Use Tables. CIS 1039. University of Idaho Cooperative Extension System and Agricultural Experiment Station.

| Soil Texture Class | Water Holding Capacity, (in/ft) |
|-----------------------------|---------------------------------|
| Sand | 0.43 |
| Sandy loam, sandy clay loam | 1.67 |
| Loam | 2.10 |
| Silt loam | 2.44 |
| Silt | 2.12 |
| Clay loam, silty clay loam | 2.16 |
| Silty clay | 2.04 |
| Clay | 1.94 |