Fall Irrigation of Forages?—Generally, it's not needed

However, timing depends upon the forage

Many growers wonder this time of year: is it safe or advisable to stop irrigating my forage crops for the season? The concern is that fall production will suffer, or worse, next year's production or the plant stand may be injured due to fall drought.

As you are well aware, crop water needs vary dramatically over the growing season. Water needs peak in mid-summer (the middle of July), but are much less in the spring and trail off in the fall. Therefore, if you use the same irrigation frequency or schedule throughout the season, you are likely over-irrigating at times of the year and under-irrigating at other times of the year.

Fall irrigation needs depend on the type of forage crop. Alfalfa and irrigated pasture grasses respond very differently to irrigation, or more precisely lack or irrigation, so the question will be addressed separately for the two types of forages.

Is it necessary to irrigate after the last cutting of alfalfa? While some intermountain alfalfa growers do irrigate after the last cutting, I would say that most do not. It is somewhat a question of economics. Since most alfalfa fields are not grazed after the last cutting, it is typically not worth irrigating after the last cutting. Even if the aftermath is grazed, the cost of the irrigation water is probably not justified. Alfalfa responds to temperature, photoperiod (day length), and soil moisture level. Even if we have a warm fall and soil moisture levels are sufficient for growth, there is minimal fall growth due to short days and low nighttime temperatures. The alfalfa varieties we produce (fall dormancy score between 3-5) are strongly influenced by day length and alfalfa growth slows dramatically even when we have a warm fall and adequate soil moisture. Then growth nearly ceases after we have had frosts down to the mid 20's, which typically occurs in early October.

Irrigating after the last cutting has been considered beneficial in some areas. However, those areas are typically extremely dry regions where there is insufficient rainfall over the winter to refill the soil profile to the depth of the rooting zone of the crop. If the grower does not start irrigating early enough the following spring subsequent yield can be affected. In our area, winter rains in most years are sufficient to refill the soil profile. And, irrigation water is typically more plentiful in spring than it is in fall. So as long as a grower watches soil moisture levels come early spring, is aware of the winter rainfall received and irrigates as needed to refill the soil profile in spring, then I feel irrigation after the last cutting in the fall is not necessary. Irrigations should be postponed until spring, closer to when the crop starts re-growing.

We have conducted numerous trials over the past decade in both the Intermountain area and other areas of California to assess the effect of deficit irrigation of alfalfa on yield that year and the subsequent year. Even when irrigation water was cut off early in the season, yield rebounded the following year to the same level as the alfalfa that was fully irrigated for the entire season. If water is withdrawn early, even before the last cutting, the alfalfa goes into a drought-induced dormancy and it recovers and produces normally the next year. This suggests that irrigating after the last cutting is not necessary for full production the following season. Irrigation of alfalfa can often cease by early September.

How late should pasture be irrigated? The situation with pasture is different from alfalfa. Irrigated pasture does not go into the same type of drought induced dormancy as does alfalfa, it has a fibrous

root system that is less able to access deep soil moisture. Livestock producers desire fall feed from grazed pastures so they can delay feeding hay as long as possible. Therefore, for maximum production of fall feed for livestock irrigation later into the fall may be desirable for pastures. However, given this situation the logical question is how late in the fall is irrigation really necessary. Unfortunately, there is no set fixed date when irrigation can cease—it depends on the weather in a specific year, the soil type and previous irrigation practices. In most years, irrigation can usually cease by the end of September. Especially if previous irrigation practices were adequate there should be enough soil residual to sustain the pasture through fall.

Yield increases from irrigating very late in the season are typically not economical. The growth rate for pasture drops way off as fall progresses and the yield increase from irrigation is minimal. In a study conducted in Scott Valley a few years ago, I found the difference in the aftermath yield for grazing on October 20th was only 0.08 tons (not a statistically significant difference yield) when irrigation ceased on September 20th versus October 5th. In a similar study there was no difference in an October 7th simulated grazing harvest when irrigation ceased on September 5th versus September 20th. When you consider pumping charges, possible electric company standby charges, and irrigation labor, it unlikely that an October irrigation will result in an economical yield increase. Once the low temperatures fall into the mid 20's (many areas have already experienced 25 degree temperatures or less) grass top growth nearly ceases. I have experienced cases where frost injury was mistaken for drought stress when there was plenty of moisture in the soil. Soil moisture sensors are very useful to assess the soil moisture status to determine fall irrigation needs. But even a soil auger or shovel can be used to evaluate the soil moisture content. Ordinarily, the soil moisture status is sufficient so that irrigating in October is unnecessary.

Although October irrigations are generally not recommended, it is important to monitor soil moisture in your pastures and alfalfa fields over the winter to assess the water status so that the early growth in the spring is not harmed. That's when the crop REALLY needs the water.

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