

Considerations For Pastures That Have Lost Irrigation Water

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Irrigation water in short supply for many irrigated pasture ranches this year. Possible fall rains are still more than two months away. Now is the time to prepare for restoring irrigated pasture production when irrigation water becomes available. A plan should be developed that addresses grazing management, fire protection, planting preparation, planting and grazing management after seeding.



MANAGING DRY PASTURES

Grazing management now

Grazing off dead forage helps for fire protection and is necessary prior to drilling or harrowing in the fall. However, there is one downside to grazing off forage in summer versus the fall. The standing forage provides cover for the soil during the hot summer, essentially acting as a mulch. With a lack of moisture and soil cover the sun burns off the soil organic matter and results in a compacted soil that is more difficult to plant into in the fall. This management decision will have to fit your specific needs.

Fire protection

Dry grass is a fire hazard. Cattails and black berries are extremely flammable. The greatest threat comes from roadways where vehicles and equipment may ignite a fire on the side of the road. Consider developing fire breaks along roadways, fence lines with dried blackberries, and around buildings to reduce fire hazard.

PLANTING PREPARATION

Soils

Soil type will influence pasture survival. Gravely and sandy soils have less water holding capacity (usually class 2-3). Desirable plant species will have a tough time surviving drought in these soils. Class 1 soils could have higher plant survival in a drought situation. Information pertaining to your soils can be found in a USDA Soil Survey (hard copy) or you can use an on-line soil survey <https://casoilresource.lawr.ucdavis.edu/gmap/>. It's important to note that full pasture survival is unlikely regardless of soil type. The main difference is that less seed may be required for class 1 soils.

Pasture plant composition is also important. Most pasture grasses and clovers are shallow rooted. Orchardgrass, clover (white, red, strawberry), and trefoil plants will likely die in the absence of irrigation water. Adequate clover and trefoil seed is likely in abundance in the soil, negating the need for reseeding. Dallisgrass and tall fescue are generally deeper rooted and more drought tolerant. In high quality soils some of these grasses may survive.

Weed control

Once the pasture plants die the pasture loses its competitive advantage against weeds. Weeds such as blackberries and starthistle may increase and should be controlled now, before you reseed. These weeds should be controlled while they are still green and can take up herbicide. For blackberries spray 2/oz per gallon of water of a triclopyr based product (Garlon, Remedy, Triclopyr). Make certain the entire plant is sprayed as any missed part will not die.

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For other weeds such as starthistle or tall mustard type plants a glyphosate (Roundup, etc.) product should be used at 3 oz/gallon of water. Adding a surfactant is an easy step to skip, but including a surfactant helps to ensure herbicide sticks to the plant to improve uptake of the herbicide.

Smutgrass – There is one silver lining to the loss of water. Drying the pasture up should kill the established smutgrass plants that are present. But, the seed bank from previous years is still viable and will bring seedling smutgrass plants back in the future. In order to prevent smutgrass reestablishment, it is crucial to establish desired grasses that will shade the soil surface. Planting should occur in the fall so that grasses are up and growing by spring when smutgrass plants will germinate.

PLANTING

Many pasture plants not irrigated for the season will be dead. To have a stand worthy of irrigating in the future, a fall planting is necessary. Early fall plantings will be more established in the spring than later plantings, but even those will need to be managed to ensure their success. If the seeding fails, only weeds will be irrigated in the future. Planting a perennial crop is a gamble because it does rely on winter moisture, and there is no guarantee that irrigation water will return next year. However, following the steps below will reduce the risk of failure as much as possible.

What to plant

A mixture of $\frac{3}{4}$ tall fescue and $\frac{1}{4}$ orchardgrass is ideal for pastures in this area (remember that orchard grass seed has 540k seeds/lb., Tall Fescue has 227k seeds/lb.). If seeding broadcast, the mix should be planted at 20 lbs./acre. If the seed is drilled the planting rate can be dropped to 15 lbs./acre. The variety of orchardgrass chosen is not important, but tall fescue breeding has come a long way in the last 20 years. Avoid older varieties such as Fawn and Kentucky 31 tall fescue. Rather chose a newer variety such as Evergraze, Cajun II, Martins II, BarOptima, STF-43, or Bariane. These are examples (there are more) that will produce better forage than older varieties.

Avoid planting annual ryegrass with mixtures of tall fescue and orchardgrass. Annual ryegrass is very competitive and could cause an establishment failure with the seeded perennial grasses. If clover was previously in the pasture, there is plenty of residual seed and replanting is not necessary. If no clover was present prior to losing irrigation water 1-2 lbs./acre of white clover (Ladino), strawberry clover, or trefoil can be added either alone or in combination. These low seeding rates will provide an adequate stand but should avoid excessive clover that can lead to bloat.

When to plant

Planting is best done as early in the fall as possible. Ideally planting would occur in September. If rains are required prior to working the ground because it is too hard, planting as soon as possible after the first rains is best. Seeding after December 1st can result in delayed germination until March, which will slow establishment before summer. Although growth above ground will be slow through winter, roots below the soil surface will be developing.

How to plant

Determining how to plant is a major consideration. There are basically three choices, each with distinct benefits and liabilities

1. Traditional farming - Ground is disked to prepare a seedbed, seed is broadcast, and then covered. Discing opens the sod so that broadcast seeds can land on the soil surface and makes root penetration easier once germination occurs. After seed is broadcast it should be harrowed, cultipacked, or both.

1. This will provide the seed contact with the soil for germination and prevent birds from consuming the seed on the soil surface. Skipping harrowing or cultipacking after seeding will result in failure. If the ground is soft, cultipacking rather than harrowing to cover the seed is better because it avoids seed being planted too deep. The disadvantage of discing is the loss of surviving grasses, equipment requirements, and necessity to repair boarders.
2. A less intensive option is to harrow the field, broadcast seed, and harrow again to cover the seed. Skipping harrowing before or after seeding will result in poor stand establishment. Prior to working the ground, the pasture should be grazed to a level that the harrow teeth contact with the ground rather than bouncing above a thatch layer. The advantage of this method is that the equipment investments are low. The disadvantage is that harrowing doesn't make a perfect seedbed which results in slower establishment and potential loss of some seed.
3. Till drill seeding provides optimal seed placement and seed to soil contact. Besides removing thatch, drilling requires little ground preparation. The biggest downside to drilling is the cost to have a custom farmer drill the pasture. You also have to have a tractor large enough to pull a rented drill. Drilling also requires some set up time to check that tubes are not clogged to ensure seed flow as well as drill calibration.

Grazing the new stand

Reseeding a pasture is a costly and time-consuming endeavor. All of the previous efforts can be negated if the pasture is grazed too early or too hard prior to establishing. The pasture should not be grazed during the first winter. Doing so will cause germinating grasses to be pulled out of the ground. Pull plants by hand prior to grazing to make sure they have enough root development prior to grazing. If you can pull them out of the ground, so can cattle. Even late spring and summer forage production will be lighter than before. Stocking rates should be considered at least half that of previous rates. Heavy grazing will prevent plants from becoming established or potentially kill the establishing grasses. The first fall after seeding is also important. Cool season grasses tiller (expand laterally) in the fall. If grazing is deferred at this time the plants will be able to fully establish and be ready for full stocking the following season. The pasture should be established the following season, and regular stocking rates can resume.

Planting a pasture can be a lifetime investment. Skipping any crucial step can lead to complete failure. If done correctly, this could be an opportunity to establish high quality forage for many years.



Do you still have irrigation water for pastures? Now is the time to think of irrigated pasture renovations

Josh Davy, Dan Macon, Larry Forero – UC Farm Advisors

Spring and summer are the perfect time to start thinking of pasture improvement. It provides ample time to look for potential improvement areas and the opportunity to make a plan to act on them. Here's some things to consider:

How much clover is in the pasture?

Clover provides the high quality portion of the pasture and fixes some nitrogen. If by late spring it appears the stand is far below 25% of the pasture, it's most commonly a phosphorus deficiency causing the problem. Very seldom is adding clover seed necessary when pasture has been in production for multiple years. A soil test is a cheap way to determine if phosphorus is low (~\$12 a sample) and how much is needed. Phosphorus is expensive so making application decisions warrants sampling soil. Usually 50 lbs/acre of actual phosphorus (100 lbs/acre 11-52-0) will fix a deficiency problem. It's possible to bank phosphorus with higher rates because it is not mobile in the soil, which could eliminate the need to reapply phosphorus for several years, but higher rates could cause excessive clover leading to bloat. Phosphorus can be fertilized any season of the year.



Is there an adequate amount of cool season grasses?

These include fescue and orchardgrass. Cool season grasses provide the bulk of forage at all times except the mid-summer months when dallisgrass prevails. Besides production, cool season grasses provide soil cover in late spring, which can help prevent weed invasion. If these grasses are not producing adequately, it could be for several reasons.

- ◆ *Nitrogen deficiency*: the grasses may be present but they are low in production because they aren't getting enough nitrogen for growth. This could be the case if clover levels are low, pastures are frequently hayed, or a fertility program is needed. Applying 50-70 lbs/acre of actual nitrogen can alleviate this problem. An adequate stand of clover can also provide some needed nitrogen.
- ◆ *Pastures are grazed to closely or too early during establishment*. Pastures need to be fully established before they are heavily grazed; grazing too soon can result in plants being pulled from the ground. More commonly, established pastures are grazed too short, which limits the root system, and requires longer rest periods between grazing bouts. This is common in winter grazed pastures. Consider adopting a simple rotational grazing system that will provide enough rest for plants to recover.



- ◆ *Cool season perennial grasses were never there or died out.* In many cases, cool season grasses never established. This is frequently seen in mixes containing annual ryegrass (which also can be volunteer), which has strong seedling vigor that can crowd out the establishing perennials. Annual ryegrass is valuable in already established pastures, but can be very detrimental during establishment. Perennial ryegrass is also commonly added to pasture mixes. Although a high quality grass, perennial ryegrass has a short life span of only 3-4 years. It would need to be replanted frequently to maintain it as a component of the pasture. If plants simply don't exist, early fall planting can bring this component back to the pasture. Planting in early fall favors early germination and better establishment. Winter seedings may not germinate until March leaving little time for establishment before the grazing season. Refrain from older tall fescue varieties. New varieties cost more (\$3 vs \$2 per lb), but have much better quality and palatability. Orchardgrass variety selection is less important.
- ◆ *Is irrigation adequate?* Pasture roots grow in the presence of water, not with a lack of it. Of course over irrigation doesn't help and leads to rush growth rather than grass, but a dry pasture will cease production. Consider monitoring soil moisture periodically during the irrigation season to determine whether you're getting adequate water to the root zone. Soil moisture can be monitored with moisture sensors or simply by feel. (here's a link to monitoring soil moisture by feel: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_051845.pdf)

Does the summer slump cause a lack of feed?

Dallisgrass production can be high in the summer provided it has adequate nitrogen and irrigation water. Economical increases in production can be attained by applying 50-70 units of actual nitrogen. This practice can actually eliminate the common "summer slump" seen in irrigated pastures that have adequate moisture.

Do you have the grazing right?

Appropriate grazing management is crucial to maintaining your investment in irrigated pasture productivity. Adjusting the rest period between grazing periods to match the recovery rate of pasture plants can help maintain root vigor. Leaving adequate stubble height to accommodate rapid recovery from grazing can also help reduce weed invasion.



Neospora in Beef Cattle

By Dr. Gabriele Maier, UCD Beef Cattle extension veterinarian

What is Neospora?

Neospora caninum is a single celled, parasitic protozoal organism, and the most commonly diagnosed cause of bovine abortions in many regions of the world. Although it may be more common in dairy cattle, beef herds are not immune to it. In the US, studies found a median seroprevalence of 13% in beef cattle estimated to cause an annual loss of US \$111 million. Cows and other ruminants are intermediate hosts, while dogs and other canids are definitive hosts, in which *Neospora* undergoes sexual replication. Dogs, coyotes, or gray wolves typically get infected through consumption of aborted fetuses or infected meat. They will pass the infective form of *Neospora* called oocysts in the feces. When oocysts are accidentally ingested by intermediate hosts such as cattle, they sporulate in the gut and release so-called tachyzoites, which make their way out of the gut and into muscle as well as through the placenta to the developing fetus. The outcome is an aborted fetus, a mummy, a stillborn calf, or rarely a calf born with neurologic deficits such as abnormal gait or birth defects. However, transmission can also occur from infected cow to her fetus where a normal calf is born. Birds, including chickens, sparrows, and crows have also been identified as intermediate hosts and may contribute to the dissemination of *Neospora* when eaten by canids, but more research is needed to confirm. People do not seem to become infected with *Neospora*.

Can cows transmit *Neospora* between each other?

A cow can only infect her own fetus with *Neospora*, there is no cow-to-cow transmission even when a cow aborts from *Neospora*.

What do you see in affected cattle?

Aborting cattle show no other signs of disease and abortions can happen at any time during pregnancy starting at 3 months but are most common during mid-gestation between 4 - 7 months of pregnancy. There may be abortion storms where many cows abort at the same time or there may just be an uptick in abortions above the background level that typically occurs during a season. Infection in early pregnancy may lead to more severe consequences though than infection during the last trimester of pregnancy.

Is there a vaccine or treatment?

No commercial vaccines are available, neither are any drug treatments. The only option to deal with *Neospora* is through management and preventive measures.

How do you know you are dealing with *Neospora* abortions?

It is always good to call the diagnostic lab and ask what tissues they would like to have submitted for a particular case. In general, for abortions, placenta, fetus, and blood from the dam are all important. For *Neospora* in particular, the most common sites to find it in the fetus are in the brain, heart, or liver. If you don't have a placenta or a fetus, which is often the case, it might still be helpful to submit blood from cows that have aborted and those that have not aborted to support a diagnosis of *Neospora* abortion. A positive test means that the cow was exposed to *Neospora* in the past, will stay infected for life, and is more likely but not guaranteed to abort because of it. Infected cows may also test negative on a blood test early in the infection but will likely test positive later on. Serial blood tests several months apart can help detect those cases.

It is not known what triggers the recrudescence of *Neospora* once a cow is infected. Recrudescence means, she got infected sometime in the past, *Neospora* formed tissue cysts in muscle that stay mostly undetected by the immune system, but later on, *Neospora* causes an abortion. Stress, disease, pregnancy, or other immune-suppressing events may be involved, but the science is still lacking to clearly define the cause of recrudescence.

Should you test herd additions?

If you are concerned about *Neospora* in your herd, it is good to ask about abortion history in the seller herd. To be on the safe side, an ELISA screening test will help to eliminate those that test positive and who might be at higher risk of *Neospora* abortion in the future.

How to manage *Neospora* once you know it's in the herd

Testing and culling may be one option, depending on the percent positive in the herd. However, that may not be feasible if there are a lot of cows that test positive. Another option is not to keep replacement heifers from positive cows or test them before making that decision, so the problem does not propagate. Testing calves before they drink colostrum would be ideal, so there is no confounding with maternal antibodies. Since there is very little chance of positive cows transmitting *Neospora* other than to their own calves, keeping those cows does not elevate the risk of *Neospora* infections or abortions in other cows. Positive cows are more likely, however, to abort or have a calf that is infected in utero.

What about cows with high genetic merit that test positive?

Embryo transfer is a way to protect a calf from a dam with high genetic merit and that has tested positive. Make sure the embryo recipient tests negative. In this manner, you can still take advantage of a cow's genetics without running the risk of a *Neospora* abortion.

What about dogs and coyotes?

There is no good test for dogs and they are only infected for brief periods of time. It is therefore not recommended to get rid of dogs on the ranch if there is a problem with *Neospora*. Keeping dogs from defecating anywhere near feed is an important control measure though. In addition, promptly cleaning up any parts of the placenta or aborted fetuses so dogs don't have access to them is important as well. Protecting feed sources from coyotes, and having a rodent control program, so coyotes aren't attracted to feed sources that may be infested with rodents, can also lower the



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