



# QUAIL-NEWS

THE QUAIL-TECH ALLIANCE NEWSLETTER  
Summer 2010



Quail-News: Issue 2.0

## What's Been Going On?

May, June, and July have really flown by. Our scientists have completed 445 call count points on 19 anchor ranches since the 15<sup>th</sup> of May. Anchor ranches averaged 2.8 calling bobwhite males per point with a range of 0 to 4.6 calling males per point. We have also completed about 70% of the 4,450 vegetation survey points that correspond (10 per call count point) with the call count points. Our scientists are monitoring the survival of 12-week-old pen-reared birds released into the wild on 2 separate anchor ranches. Bird location and survival is being monitored using 1.5 gram radiotransmitters. From the field to the lab, we have established our wild-strain colony of bobwhites using clutches of eggs from radiomarked wild hens in Dickens County. We will



A 12-week-old, pen-raised male bobwhite being fitted with a 1.5 gram radiotransmitter before release.



12-week-old, pen-raised covey mates head out after release into the wild. Note the radio antenna (white arrow) extending from the left side of the male bird on the left.

million acre study area. These analyses will help us begin to answer many questions concerning disease interactions and genetic diversity in quail of the Rolling Plains.

add to this colony with additional birds each year and use them to test hypotheses within a controlled laboratory environment. The lab is also buzzing right now as our scientists analyze serum and tissue samples from wild northern bobwhite and scaled quail caught on several ranches spread throughout our 22



Doctoral students Kristyn Urban and Anna Gibson analyze serum samples of quail from anchor ranches in the laboratory of Dr. Steven Presley at the Institute of Environmental and Human Health at Texas Tech University.

## Land Management Calendar

### Aug. 2010

Cleaning Feeders

Testing Feed Grains

Begin Dog Conditioning (Be Careful with the heat)

Pull Dates for Grazing

Shred sunflowers only after seeds are hard & dry (Remember to leave brooding lanes & cover)

### Sep. 2010

Shred sunflowers only after seeds are hard & dry (Remember to leave brooding lanes & cover)

Begin Fall discing

Supplemental feeding only after grain testing

# Creating Disturbance for Enhanced Quail Habitat

This past autumn and winter were very wet in most areas of the Rolling Plains of Texas. However, most years are not as wet as 2009/2010. "Weed years" usually reflect wet autumns and winters. Weed years generally represent good years for quail, because seeds from these plants compose the bulk of fall and winter food sources. These plants also provide excellent substrates for growth of insects which are important food sources during spring and summer. If the environmental conditions are not naturally conducive for weed production, then we as landowners need to create an

environment that is conducive for weed production for good quail habitat. So, if the autumns are not as wet as 2009, then we can enhance weed production by creating some form of disturbance that exposes mineral soil. Disturbance is commonly accomplished by discing, but can also result from fire and grazing.



Discing

What has disturbance got to do with weed production? Most of our weedy species are annuals. Annuals are ecologically classified as "r-selected" species. "r-selected" species refers to a plant's high intrinsic rate of reproduction. Certain traits are characteristic of "r-selected" species. These characteristics include the following:

- ephemeral (technically, lasting a day; i.e., practically, short-term; i.e., one growing season, or less), disturbed, uncertain, or non-stable habitats;
- high light requirement for germination;
- extreme fluctuations in the environment;
- ability to germinate, become established, reproduce and complete annual cycle quickly; and,
- production of large quantities of viable seed (generally quail foods).

"r-selected" species expend their energy in seed production in order to proliferate the population for years to come. They expend almost all of their energy in survival mechanisms of individual plants for the future (i.e., seed production). All of these characteristics allow "r-selected" species to take advantage of the growing conditions provided by disturbance.

In contrast to the "r-selected" species are the "K-selected" species. "K-selected" species are those species that typify late succession and climax ecological stages. Traits that characterize "K-selected" species include the following:

- long-lived, stable, and predictable habitats;
- low light requirement, tolerant of shade conditions;
- stable environmental conditions;
- production of low quantities of viable seed (usually less than 5%); and,
- rigid germination and establishment requirements, usually resulting in low rates of germination and establishment.

"K-selected" species expend most of their energy for survival for future generations. They do not expend much energy in sexual reproduction (i.e., seed production). It is only during environmentally favorable years that K-selected species regenerate themselves from seed

## Land Management Calendar

### Oct. 2010

Continue Fall discing

Dogs should be well conditioned

Pray for Fall rain

## GOOD NEWS FLASH!!!

In early August a wild Bobwhite brood was spotted in Eastern Palo Pinto County! Don't give up your quail management in the Eastern counties because the birds continue to persevere.

production. They regenerate and rejuvenate themselves by reproduction via basal and aerial buds, stolons, rhizomes, etc.

In many years, if a landowner has good vegetative cover, there will be little exposed bare mineral soil in which weeds will get established. Therefore, in order to enhance weed production, one might want to disc some areas around a pasture, or through a pasture, depending upon the size of the pasture to create a disturbed area and expose some bare mineral soil. Discing could be accompanied by seeding a mixture of species preferred by quail, or by leaving the area bare. Bare areas will yield weedy species naturally when the rains come (and if it doesn't rain, seeding won't matter anyway), because there is usually a bank of weed seeds waiting in the soil for the right growth conditions.

Timing of discing is important for enhanced weedy cover and thus food production for quail. Because "weed years" are initiated in wet autumns and winters, the earlier that one discs, the sooner one can have a food source for the quail. Weeds germinate in a wet autumn or winter and overwinter in the rosette stage ready to bolt (produce a flowering stalk) as soon as the day length reaches an appropriate number of daylight hours. Therefore, it is recommended that one disc as early as September or October to enhance weed production early in the spring.

Have a great quail year.

Ron Sosebee

## GULAR FLUTTER IS NOT THE LATEST SUMMER DANCE CRAZE

By Brad Dabbert

I don't have to tell you this, but after a relatively cool and rainy July, it is hot!! As you enjoy your air conditioning, you may wonder how quail cope with this heat? What temperatures can they tolerate? We actually have fairly good data concerning this topic. In the late 60's, researchers from the lab of Professor Robert Robel determined that exposure of adult bobwhites to an ambient temperature of 106°F for 15 hours was lethal. And, long-term exposure to 104°F is likely lethal as well. Researchers from the lab of Professor Fred Guthery carried this area of research further in the last decade to conclude that prolonged exposure of quail to temperatures > 102.2°F would result in a plethora of negative consequences for quail populations including reduced egg hatchability, chick survival, and reproductive season length. My work in 1997 revealed that bobwhites can physiologically cope with short-term (4 hour) exposure to 102.2°F by turning on their evaporative cooling system. Bobwhites don't have sweat glands so they cannot sweat. But, they can rapidly vibrate their throat or gular region (basically panting). This activity, called gular flutter, channels air through their extensive air sac system and open beak to help cool the bird. Bobwhites exposed to 102.2°F for 4 hours in an environmental chamber were able to use gular flutter to

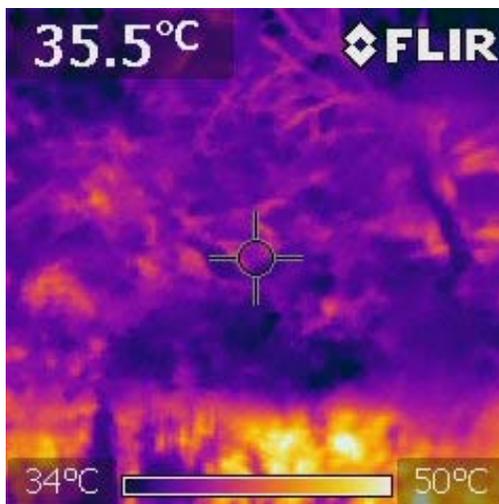


Figure 1

## Q&A

**Q:**

We have been debating in Spur on when to shred the sunflowers looking for a hardened seed status?

**A:**

We checked some of the sunflower flowers for maturity. There are all stages of development. Some flowers have new yellow petals and currently shedding pollen and on the same plant, and there are mature flowers that have already shed their seeds and there are flowers at all stages in between. The native annual sunflowers have probably evolved this adaptation for the survival of the population in years to come. Confectionary sunflowers that are planted have not yet been harvested in our area, and might not be for another month. These plants have been selected for uniformity in seed maturation. But they might serve as an indicator when most sunflowers have the most mature seeds. (Continued)

cool themselves and avoid body weight loss or any suppression of their immune system. Work in Professor Robel's lab suggested bobwhites need this cooling system at temperatures as low as 95°F.



Figure 2



Figure 3

differentials between bare ground and adjacent vegetation to provide a range of possibilities. The average ambient temperature at the time of our measurements was 98.6°F and the average heat index was 109.9°F. [Figure 2](#) shows bare ground to be 135°F. The partial shade from sparse shortgrass cover in [Figure 3](#) is only slightly better at 117.9°F. When the probe was fully shaded beneath herbaceous cover such as in [Figure 4](#), temperatures ranged from 93.8°F to 104.4°F. The dense shade of a yucca ([Figure 5](#)) held a relatively frigid 83.8°F.

Sites appeared to provide the best thermal protection when they held a low growing shrub or combination of a shrub or tree with accompanying abundant herbaceous cover.

Given the excellent rains during July, odds are your habitat is in the best shape it has been for some time. It is likely there are many shaded areas for birds on your property to seek refuge. But, as you make your management plans, remember that besides food and protection from

Beyond gular flutter, quail also deal with hot temperatures by trying to avoid them. Researchers from the lab of Professor Fred Guthery determined that bobwhites actually avoid areas in the landscape which hold temperatures > 102.2°F. Thermally unsuitable area sometimes amounted to more than 50% of the available habitat of their study sites. So what types of areas in the landscape lend themselves to cooler temperatures that are beneficial to quail? [Figure 1](#) is a thermal image we took during June of a mesquite tree and the area surrounding it. The brightest (hottest; 122°F) spots are bare ground and the darkest (coolest; 93.2°F) spots are in the shade beneath the mesquite tree. Clearly then, shade from woody cover can provide areas of thermal refugia for quail. But what about other types of vegetation in the Rolling Plains. During a breather last week between vegetation sampling transects, Ron Sosebee and I decided to measure temperature



Figure 4

## A (continued):

So the time to shred will depend upon one's objective in shredding. If the objective is to disperse as many mature seeds as possible, I would suggest waiting for some time yet. If one's objective is to facilitate travel along pastures roads etc., then shredding can be done at any time. The longer one waits, more mature seeds will be dispersed into the community. If one wants to provide shade for the birds during this hot part of the summer, then it would be a good idea, based on our measurements, to wait until after September 1st (or even much later). We can have some very hot days during early September so, if one could wait until after September 15th or 20th to shred the sunflowers, it would probably be to the benefit of the quail.

predation, the woody and herbaceous plants in your habitat are vital for thermal protection for quail populations. It is likely that in the Rolling Plains thermal protection is one reason quail require the presence of woody cover.



Figure 5

## Changing Minds

When making the rounds of the anchor ranches enrolled in the Quail-Tech Alliance, many different perspectives are employed from managers, wildlife biologists, landowners, and recreational users of the land. These perspectives vary with the priorities that each person places upon the recreational or wildlife enhancement uses of the various ranches. Having to think about the balance between wildlife and livestock is a complex problem and it deals with a lot of different overlapping time frames, management techniques, and priorities. The problem that all ranch managers and owners face in trying to achieve that balance in an economically viable way when, in fact, certain sacrifices on both sides might need to be made.

### COVER

The first and most important issue to be dealt with is a balance in overall herbaceous cover. Many ranches dominate the thought process with the idea of controlling weeds, improving grass and forage and not really thinking about the amount of natural food left through this process for Quail. There are many management choices that are proposed such as fire, spraying, discing, and planting in order to achieve not only brush control but to enhance forage capabilities.

The Quail manager specifically looks for enhanced food opportunities, brush control, increase of usable areas, and overhead and herbaceous cover for predator protection. The Quail-Tech Alliance is doing a substantial amount of range analysis through the use of over 4,500 points of cover analysis in its first year in order to establish and look at relationships between various types of cover and the Quail population dynamics. As Dr. Dabbert mentioned in the preceding report, we have now conducted call counts on 455 stations



Scaled Quail chick



throughout our 38 county area and will begin the database analysis and look for correlations between good Quail populations and certain combinations of cover so that our managers and members can better dial in the optimum situation.

## FOOD

When speaking of food value, the obvious first response to soil disturbance without supplemental seed is generally the annual sunflower. Field sunflowers provide a substantial food value for the birds with each flower itself containing approximately 400 seeds which will provide tremendous opportunity for natural feed for the wild Northern Bobwhite. Fields that have been plowed or disced that are not tended will respond with a tremendous population of sunflowers. At Esperanza Ranch in Dickens County, we relish the sunflowers in our disturbed Quail lanes, throughout our pastures, and along the roadsides due to this year's wonderful rainfall. The investment made by disking Quail lanes throughout your ranches pays many years after the initial disturbance. The response of native sunflower seed that we are seeing now in the common pastures are the result of a seed bed which has been there waiting for the correct rains for many years or decades. Think of this year's sunflower crop as being free Milo. Those of us who believe strongly in supplemental feeding and its benefits look forward to the sunflower providing an additional food benefit that might help us reduce the cost of our supplemental feeding programs for this coming season.



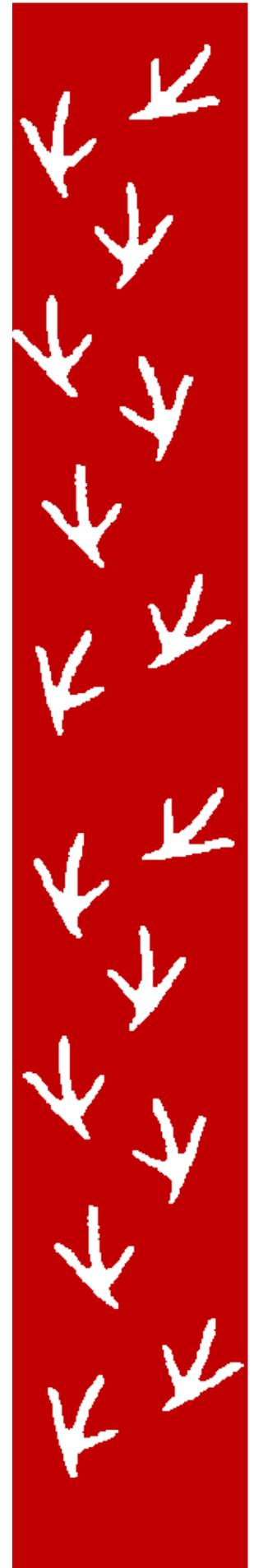
Sunflower response in disc lanes at 6666 Ranch

This research has yielded several byproducts including new and improved feeding techniques, the analysis at certain ranches of the merits of creating Quail lanes through disking, and the value of sowing or broadcasting additional Quail friendly seed composites in order to create supplemented growth of Quail feed. In a year such as this, it has really proven that the additional seed does not give a substantial improvement in feed value over non-seeded disc areas which responded with tremendous growth this year of sunflowers, buffalo burr, and native weed species. It has truly been a remarkable year of rainfall at critical times in the rolling plains.



Quail Nest

A note from Dr. Sosebee  
Sunflowers are somewhat unique as a weed. It produces an autotoxin that in a couple of years inhibits further sunflower populations unless the area continues to be disturbed. So if you want to maintain a sunflower crop for quail, etc., you must disturb the area every couple of years.



## Shade

We now suffer the inevitable August heat that can be damaging to newly hatched broods of Northern Bobwhite and Blue Quail. Cover dynamics become most important from a temperature control standpoint at this time and rather than cussing the plain ol' Mesquite tree, pay particular attention to Dr. Dabbert's article concerning temperature differentials provided by these often maligned brush species. The 25 degree differential pointed out in the article is enough to save a bird that at 102 degrees begins the process of thermal stress. Remember that the average body temperature of a Northern Bobwhite is approximately 107 degrees. Prolonged exposure to the temperatures that our bare ground and marginal cover provide throws the birds into a stressful situation of trying to vent heat faster than their body temperature is rising. The balance of cover dilemma that each Manager struggles with is brought to a heightened importance during not only the harsh predator times during which the hawk population migrates through our area, but is in particular importance during the heat waves of August. The practice of providing shade as well as concealment is one that helps balance the overall Quail management approach to our ranches.



Quail Nest

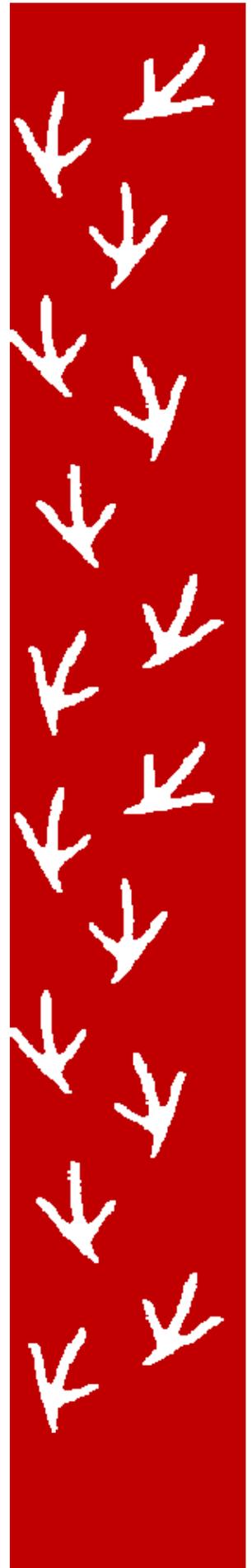
## Balance

This new mindset gives Ranch Managers a balance for not only grazing but wildlife, as well as changes with regard to the calendar and historic dates of removal of life stock. Dr. Ron Sosebee in previous newsletters has provided an insight into the ability of plants to recharge for next year's growth during the months of September and October. This recharge period is essential and is one that can add extra insurance of adequate herbaceous cover for the following year if the grazing is restrained during the months of September and October. This becomes just another element in the



Bobwhite in Dickens County

balance and thought process of grazing animals versus wildlife. The different "pull off" dates that have been discussed in Dr. Sosebee's article mean that Managers must create a new mindset as to weaning times, removal of steers, and rotational grazing schedules. All of this ensures better response of not only the forage for the following year, but also the herbaceous cover that can be severely restricted through grazing during September and October. This might mean that the deferral of the early "pull off" on only one unit of a very large ranch complex might be a valuable experiment for the Ranch Manager in seeing what different deferral dates can provide as far as cover differentials the following year. Better grass response obviously yields better weight gains and this recharge period has proven many times over to be a profitable decision for the following year.



## Supplemental Feeding

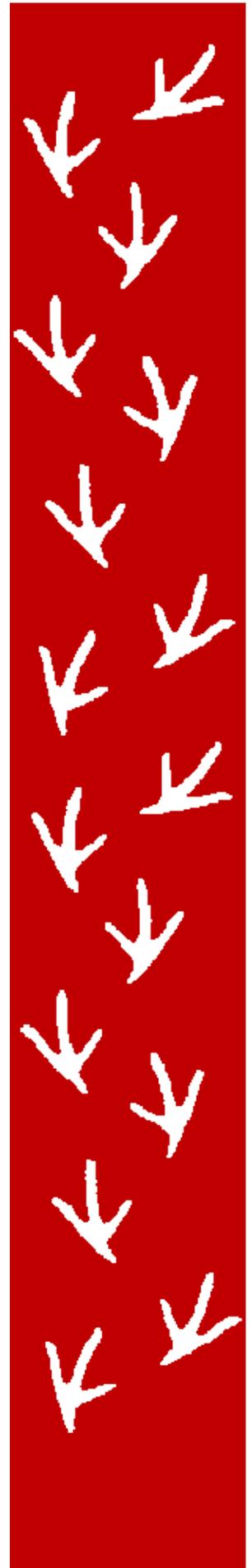
New research also looks towards older techniques of feeding providing for supplemental feed zones and the overall improvement of Quail nutrition. New techniques such as side throw feeding of roads provide an opportunity for the birds to get to the supplemental feed lanes without exposing themselves to avian predators who can't "line them out" so to speak on a bare road utilized as a feed lane. The testing of feed has been brought to the forefront of any supplemental feeding program. The examples that we have cited in past newsletters give you the opportunity to look at real world problems that were avoided by pre-testing the feed stock before distribution into the feeders. Remember that there are twelve mycotoxins that negatively affect Quail and can be fatal in the feeding process. Although Aflatoxin has received a tremendous amount of discussion, Fumonisin has proven to be a problem with grain generated in the five state region. Diligent testing of the feed is one way to avoid a tragedy that can severely damage the population of great Quail ranches. The intensity of natural feeding areas can be exemplified by Quail lanes and their response as shown in the photograph whereby the 6666 Ranch in King County has created a tremendous amount of Quail lanes adjacent to their hunting roads and those Quail lanes have responded tremendously with the rainfall that we enjoyed.

In addition to the value of food generation, the disc strips also become valuable brooding lanes. The disc strips provide great opportunity for perfect brooding habitat whereby the stand of sunflowers provides overhead protection but also as noted in Dr. Sosebee's article this month provides for a great substrate for bug generation. Although the grasshoppers are generally seen as a destructive force, because of the amount of forage available this year the grasshoppers have done much less damage to the overall pastures and they have provided a tremendous food source for the chicks as they venture out from the nest and learn the nutritional value of those wonderful yellow grasshoppers. As noted by one of our field biologists, even pen raised birds adapt very quickly to the opportunities provided by the grasshoppers as a high energy food source. They witnessed release birds in Archer County actually jumping and grabbing grasshoppers out of spider webs in the pasture within one day of their release.

## Final Thoughts

Remember it's a complex issue and the thought process that goes along with it is one that requires balance and creativity in the way ranches are managed for both grazing and wildlife. The overall transformation of the thought process is the goal of the Quail-Tech Alliance. Through this transformation, many ranches of our current 1.6 million acres will develop new Quail management techniques, new grazing management techniques, and the results we believe will be one step towards preserving the Northern Bobwhite in the Quail-Tech research area.

Quail First! Charles Hodges



## Activities & Events during the Quail-Tech Alliance Anchor Ranch Visits for August, September, and October 2010

1. Finishing vegetation surveys (August - September)
2. Finishing grazing exclosures (September – October)
3. Conduct covey call counts (Begin in October)
4. Send management history and economic impact surveys to landowners (Begin October)
5. Renew trapping efforts for banding, disease surveillance, and genetics sampling (Begin October)
6. Initiating the supplemental feeding study in the field (Begin September)
7. Initiating nutrition experiments in the lab (Begin October)
8. Field day scheduled for October 23, 2010 on the 6666 Ranch
9. Provide instruction and storage supplies to anchor ranches for supplying crops and tissues from hunter-killed birds during the season (Begin September)

### **6666 RANCH FIELD DAY**

When: Saturday, October 23, 2010 from 8:30am until 3:30pm

Activities:

- Tour of quail management on 6666 Ranch
- Dog training demonstration by renowned trainer Ronnie Smith
- Lunch will be served at a chuck wagon

Free to the public, but you must RSVP by Friday, October 15, 2010 at 5:00pm

RSVP by email to: [bdabbert@quail-tech.org](mailto:bdabbert@quail-tech.org)

For more details and a map to the ranch please visit [www.quail-tech.org](http://www.quail-tech.org) and select the "[Field Day](#)" link.

