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Forage Fact # 22

Winter Watering: Kelln Solar System

Winter Kelln Features

- * Non-Freezing: water drains back to source
- * Motion Detection switch: controls pump
- * Culvert acts as heat tube allowing below ground air to rise up culvert
- * Inexpensive to run
- * Initial cost higher
- * Pump options to meet your needs
- * Monitoring to ensure proper functioning

Wilson's Specs

- * Pump- Two 12 volt submersible pumps
- * Filter on pump to prevent plugging pump
- * Waters 200-250 head
- * Panels- Four @ 64 watts
- * Batteries- Four @ 12 volts

For more information call:

- * Bill Wilson
(250) 782-2866

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Introduction to Wilson's Kelln Solar Winter Water System

The Wilson ranch installed their Kelln Solar winter watering system in the fall of 2001. They have used this system for 2 winters now and have learned a great deal about it.

Bill has hosted two Forage Friendly Field Days, where he showed the group how the system works. At our AGM this winter Bill told us about the features of the system and why the water doesn't freeze. He also explained some of the changes he has made to the Kelln watering system since he installed it.

Why doesn't the Bowl Freeze?

There are several reasons why the water does not freeze in the bowl. The first of which is entertaining to watch producers try and discover. Picture this 12 ranchers gathered around the bowl, Bill says "Ok nobody move". This allow the motion sensor to send the message to the bowl that tells it to drain, no more cows are wanting a drink. The water drains down in the 16' culvert below the frost line.

Then all 12 ranchers try to peer into the bowl to see it drain without moving or stepping into the motion detection area. After this happens, Bill moves and swoosh the bowl once again fills with water.

The culvert also acts as a tunnel, in which the warm air from below ground can travel through. This warm air helps keep the system thawed.

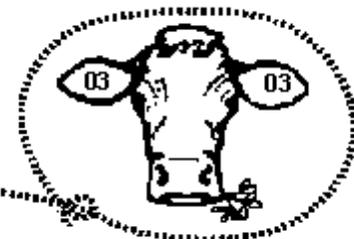


Wilson's Kelln Solar Winter watering system.

Installation of System

Installation for dugouts is easiest to set up with a gravity feed system. A 2" poly line is trenched in from the dugout to a 16 foot long culvert/casing. The first step in installing this system is to dig in a 24 inch x 16 foot casing at the location where you want the Kelln system, trying to keep your water level at around 8 feet in the casing. Then trench in a 2" poly line to the dugout, this will act as a gravity feed from the dugout into the culvert. The water is moved from the culvert to the water bowl with the Kelln submersible pump.

**Peace River Forage Association
of British Columbia**



Dealers & Suppliers

Kelln Solar
Lumsden, Saskatchewan,
(306) 731 - 2224
1(888) 731 - 8882
www.kellnsolar.com

CRC Ranch Supplies
Randy Haddow
Dawson Creek, BC
(250) 782-9893

Pump Regulator:

The Kelln regulator did a good job of preventing the batteries from being overcharged by the solar panels.

"I had very few complications with this system and the few I had, Kelln and Randy at CRC, were more than helpful in fixing. I think the regulator is essential to keep this system running."

*Bill Wilson
Dawson Creek*

Capacity:

- * Adding one panels enables you to water 50 more head
- * \$800 per panel

Other water system websites:

www.capsolar.com
www.frostfreenosepumps.com

Pump

Bill has two submersible 12 volt pumps in series. They are a floating, self priming, battery powered pump. After the cows drink, the water from the bowl drains back into the culvert, taking some grain and chaff with it. There is also an overflow system, so that water flows directly back into culvert when the water level in the bowl reaches a certain point thus preventing overflow.

Bill feels that one pump can keep up with his 150 cows. Kelln has since added some screens to their system to protect the pumps from getting debris in them. Once a wire broke off of Bill's pump but it was easily found and fixed. Electric pumps are also available.



Four 12 volt batteries hooked in parallel

Motion Detector

One of the challenges that Bill faced was stabilizing his motion detector. After a windy night he checked his Kelln system, and discovered that it had been pumping all night and therefore, his batteries were dead. He soon pieced it together, that this was due to the motion sensor itself moving in the wind.

The post that he had fixed the sensor to moved in high winds thus causing the sensor to detect motion. This was soon rectified by stabilizing the posts that the sensor was attached to.



The submersible pump has been pulled out of culvert. This pump is controlled by motion sensor.

Panels & Batteries

Bill had four 64 watt panels and four 12 volt batteries, this provides enough stored energy for the pump to continue being able to work even during the short daylight hours of winter.

Cost of System?

The total cost to buy and install the system was close to \$5000 dollars for a system to water 200 head. This breaks down into:

- * \$800 — per 64 watt panel (4 in total)
- * \$350 — 24" by 16' long Culvert
- * \$170 — 2" Polypipe & Wire
- * \$600 — Kelln System
- * \$400 — Four 12 volt batteries
- * Trenching and moving dirt

Compiled by: Glenn Hogberg & Julie Robinson

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