Charles Sturt University

ACEC SOP116
Approved December 2020

Cattle Temperature Loggers Manufacture and Use

Category
3. Minor conscious intervention

Objective
To log core temperature of cattle over time.

Alternatives to animal use
No alternative to animals, as an *in-vivo* system needs to be measured.

Equipment
- Heavy duty zip tie for rectal insertion
- Ezishrink 40 mm diameter- cut into ~60mm sections
- Ezishrink 12 mm diameter cut into ~ 40 mm sections
- ibutton temp logger + reader
- Heat gun
- Obstetrical lube
- Duct tape
- Elastoplast
- Electrical tape

Safety and Risk considerations
Animal injury whilst in crush
Injury to staff performing procedure – e.g. kick from animal

Drugs, chemicals or biological agents
Obstetrical lubricant to coat the end of the probe.

Procedure

Procedure Adapted from CSIRO (LI, Armidale, NSW).

Fabricating probes

A 180 mm long × 8mm in diameter piece of PVC rod is fitted into a 120 mm long piece of flexible high pressure rubber hose pipe (with reinforcement weave incorporated) and the join covered by 20mm sleeve of heat shrink (see figure 1). A 16mm notch is cut out of the end of the PVC rod to seat the iButton. A heavy duty zip tie is threaded through a hole drilled in the other end of the probe.

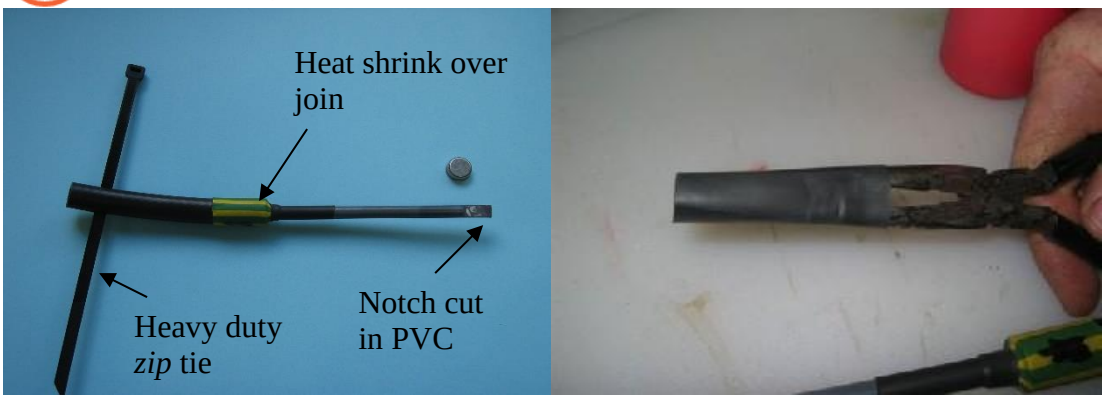

Figure 1

To attach the pre-programmed (using eTemperature program, see figure 4) *Dalllas Thermocron® iButton®* (DS1921H/Z); place it on the notch cut out of the end of the PVC rod, and slide a pre-stretched 45mm length of 12mm diameter (see figure 2) (NB stretch only one end out to approx. 22mm) over the iButton and PVC rod.; then heat to shrink the cover. It is preferable to cover the end of the probe in liquid plastic to protect against internal scratching, (silastic can also be used, but it must be dry before insertion .

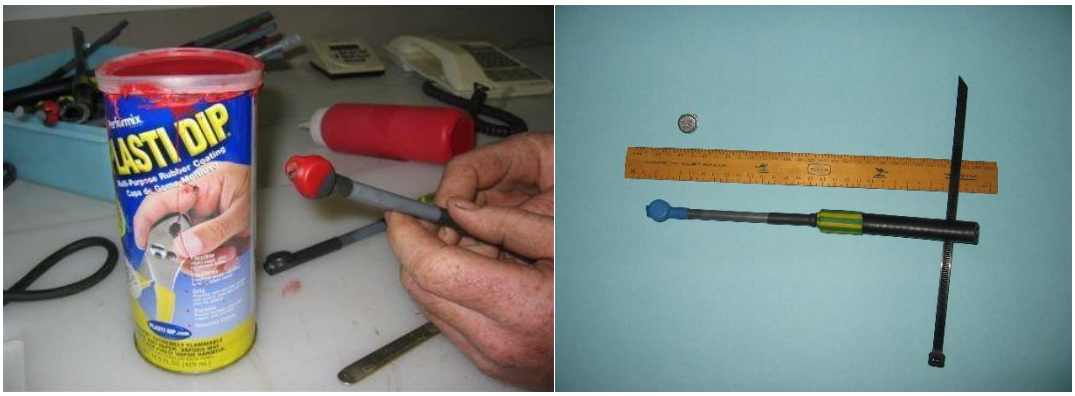

Figure 2

Fitting probes

A layer of Elastoplast is wrapped around the tail to prevent rubbing, the tip of probe lubricated with obstetrics lubricant and probe gently inserted into the rectum. The zip tie is gently tightened around the tail (As in figure 3), another layer of Elastoplast is then wrapped around zip tie and a 3rd and final layer of plastic gaffer tape (or similar) is wrapped around tail. Then the probe is secured with another layer of Elastoplast.

Figure 3 Inserting and Attaching probe

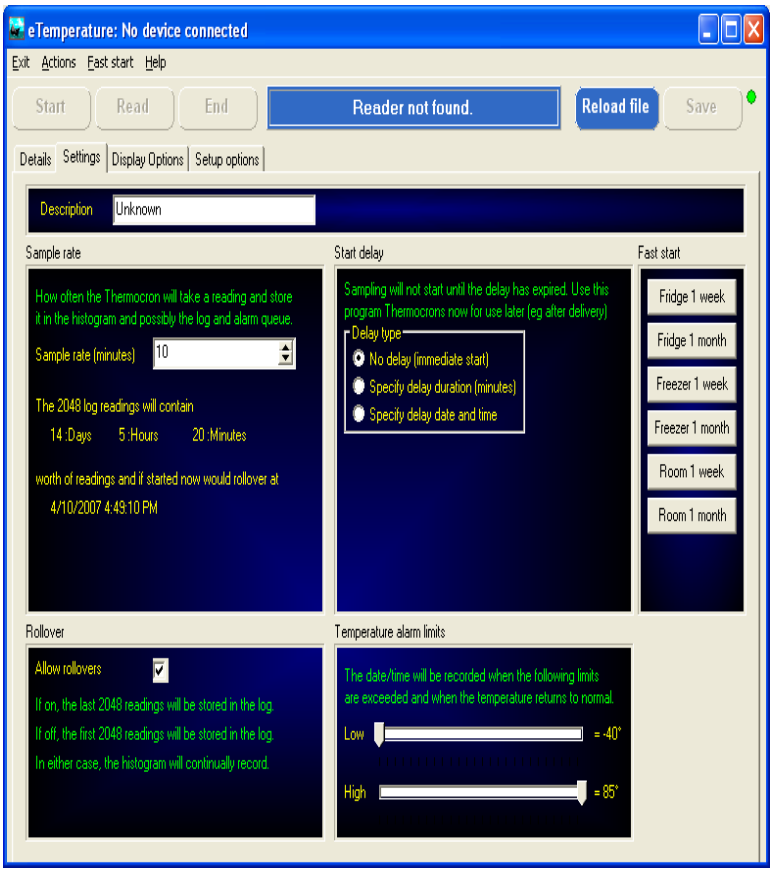

Figure 4 eTemperature program

This program is simple to use, and sample rates can be set to suit the required outcomes (for instance every 5 minutes will give you 5 days of recording). It's probably best to delay the start, and reporting on a group of animals can be made much easier by specifying a common start time.
When the desired parameters have been set hit the start tab and data collection can commence.
To down-load recordings, remove the iButton from probe, attach to reader and hit the read tab. There are several options for exporting files and the operator should choose the option most appropriate for their project.

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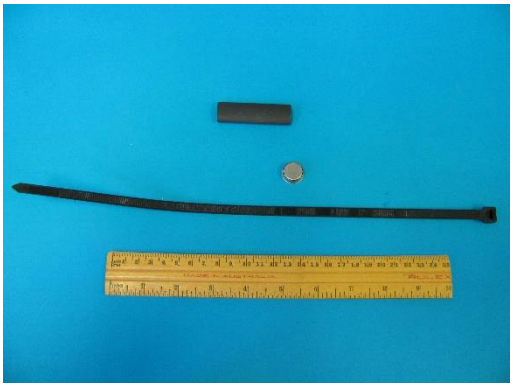
A possible alternate. (the zip tie method)



a.

b.

c.

d.

e.

Using a folded in half heavy-duty zip tie and heat shrink (a thru c) encase the programmed iButton, in the zip tie and apply heat to shrink (d). You can make the probe less pliable by adding several layers of heat shrink to the shaft.
The probe is then inserted and attached in a similar way to the more robust probe (best used on larger cattle) described above.

A smaller version has been successfully used in day old lambs, working well provided the tape was applied right up to the head of the tail.

Impact on wellbeing of animals

This procedure will have minimal impact on the wellbeing of the animal. The animal may experience minimal discomfort during the insertion of the logger. The logger will remain inserted for no longer than seven (7) days in the animal.

Animal Care
The animal will be monitored daily for any changes whilst the logger is inserted.

Pain Relief
No pain relief is required for this procedure.
In the event of an emergency where veterinary assistance is required, pain relief may be administered upon veterinary instruction.

Reuse and repeated use
After the animal has been checked, the procedure can be repeated seven (7) days after the logger has been removed.

Qualification, experience or training necessary to perform procedure
This procedure can be performed by trained technicians, scientists and veterinary professionals. Training will need to be endorsed by competent professionals performing this procedure.

References and relevant links