The figure eight knot is quick and easy to tie, even on high tensile wire, and is used to join loose lengths of wire before straining. It is not appropriate to be under tension during straining as too much length is lost as the knot takes up (although it can be done on long strains). The figure eight is the strongest knot, with a 68% efficiency on 2.5mm HT wire (the wire’s breaking strength is reduced to 68% of its previous strength), rising to 80% on 4mm low-tensile wire. It is a good conductor of electricity, and can be used to join barbed wire if a few barbs are removed.

One of the drawbacks of the figure eight knot is the exposed wire tails, which tend to snag other fence wires when impacted by an animal. This is a particular disadvantage on electric fences, as a dead short results from contact with any adjacent earth wires. A simple and neat solution is to leave the tails longer when tying the knot. Once the fence is strained, wrap the tails in opposite directions, then snap or cut them off in a similar manner to the Tex Brown knot at the end of this article. It is quite easy with a little practice, and prevents injury to stock.

Know your knots for better fences

If a chain is only as strong as its weakest link, then a fence is certainly only as strong as its knots. Joining wire reliably is a skill acquired by any good fencer, but have you ever stopped to consider just how good the knots are that join the wire?

If you have suffered a broken wire in a fence, the first place to check is any knots, as they are invariably the first point of failure. This is because all knots, no matter how well tied, weaken the fence wire to some extent. And the more knots you have in a length of wire, the less reliable it becomes.

Not all knots are created equal, and they are all suited to slightly different applications. Some are better at conducting electricity than others, and some are easier to tie. Others, such as the figure eight, are about as good as you can get from a strength point of view, but can hitch on other fence wires if the tails are left exposed.

As a companion to the Exclusion Fencing research report in this month’s Farming Ahead, this article re-examines some of our favourite knots, and their best and worst features. In a future article we will examine mechanical joiners, such as crimps and Gripples.

We’ve shown how to tie these knots in several previous editions of Farming Ahead, but www.youtube.com is also a great source for instructional videos to help when learning a tricky knot. Our Fencing Fundamentals book also contains instructions on how to tie several of the trickier knots shown below, such as the speed knot, Tex Brown knot and the extended bullwire loop.

THE FIGURE EIGHT KNOT

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One of the drawbacks of the figure eight knot is the exposed wire tails, which tend to snag other fence wires when impacted by an animal. This is a particular disadvantage on electric fences, as a dead short results from contact with any adjacent earth wires. A simple and neat solution is to leave the tails longer when tying the knot. Once the fence is strained, wrap the tails in opposite directions, then snap or cut them off in a similar manner to the Tex Brown knot at the end of this article. It is quite easy with a little practice, and prevents injury to stock.
The double loop is an old favourite, and easy to tie across the strainers when the fence is under tension. But it does have several drawbacks. On 2.5HT wire it is only 38% efficient, although better on medium and low tensile plain wire. Perhaps its best use is for joining barbed wire, where the barbs help prevent the wire tails unravelling.

The small contact area between the two loops will wear and eventually corrode due to natural movement of the fence wire over time, leading to further reduced strength. The small area of contact also offers greater resistance to current flow for electric fences.

The pin and loop is a good knot for tying across the wire strainers when tensioning short strains, as there is almost no loss of tension as the knot takes up. It is also used for joining prefabricated sections, and is about 60% efficient on 2.5mm HT wire. The knot performs better on lower tensile wire as it can be tied more reliably than on HT wire.

The speed knot is a very handy knot to tie across the wire strainers, and no fence tension should be lost if done correctly. It is easy to learn, but a little difficult to tie on high tensile wire and requires a reasonable amount of spare wire at the strainers (at least 300mm either side of the clamp) to tie neatly.

Electrical conductivity is good, and while we have no figures on wire strength, expect it to be better than the double loop, but less than the figure eight. Check out youtube.com for a great video on tying this knot, or refer to Fencing Fundamentals.

The bullwire loop is similar to the Donald knot, but inferior for joining high tensile wire, and is probably not worth using, as there are several better alternatives. It reduces the strength of 2.5mm HT wire to just 38%.
The Donald knot is a step up over the double loop knot, with an efficiency of 67% on 2.5mm HT wire, but it needs to be tied tightly to avoid unraveling under tension. It has superior electrical conductivity to the double loop.

We've saved the best till last. The Tex Brown knot is not widely known in Australia, and appears to have originated in New Zealand. It is tied across the wire strainers, and is regarded as the strongest knot that can be tied under tension. We expect strength to be equal to the figure eight. There is heaps of electrical contact, and the wire tails can be wound either side of the knot and snapped off to neaten the job. It is a difficult knot to master, but you will use it exclusively once you learn it (see Fencing Fundamentals or youtube for instructions).