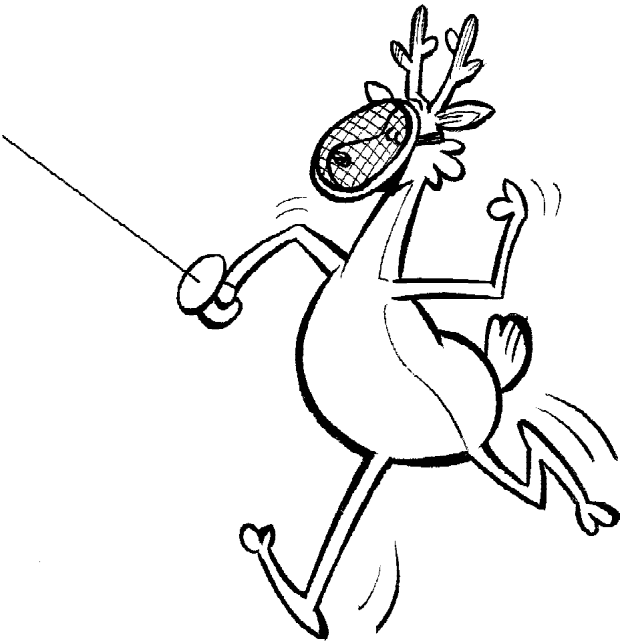
# FENCING



# FENCING

## General

Deer can be farmed in most environments in Australia although enterprise development must consider the economy of scale required for a particular species in a specific location.

The cost of new deer fencing is often the greatest initial cost. There are many factors that influence the style of fence chosen for a deer farm. They include:

- Size of the area to be fenced
- Quality and style of any existing fences
- Topography of the site
- Availability of electricity
- Species of deer farmed
- The particular enterprise chosen
- Enterprise layout.

### *Enterprise Size*

The minimum area for a commercially profitable enterprise is influenced by a range of factors that includes:

- Species farmed
- Enterprise structure
- Pasture quality and availability
- Cost and availability of supplementary feed
- Land value
- Distance from markets/processors.

Like most agricultural production systems, large enterprises offer more cost effective management and economics of scale that are not available with small enterprises.

### *Property Layout*

As with more traditionally farmed species, property layout should take advantage of natural features of the property. For example paddocks for velveting males are ideally located in a situation where there is no visual or down wind contact with mating herds.

Control and ideal management of stock can reduce time associated with stock handling. Pasture damage can also be minimised with good management, especially that caused by males who 'miss out' during the rut.





Cost of fencing can be minimised by following existing fence lines and where possible, adapting existing fences. Fence costs can be significantly reduced if existing fences are suitable for adaptation for deer.

Shelter is important for deer. Young animals need protection from the direct sun in summer and from the chill caused by wind and low temperatures in winter. Trees planted for shelter can also provide a visual barrier between adjoining paddocks of animals but they need to be fenced to prevent direct access by the deer.

The farm layout should consider the need to move machinery along laneways and into paddocks. In principal, the laneways and gates should allow easy access for machinery and allow easy access for other stock that may graze the deer paddocks.

### *Paddock Size*

Deer are usually more settled in large paddocks and they pressure fences less in large paddocks. Overall costs of fencing for an enterprise are less if large paddocks are used rather than many small ones.

Deer are said to be selective grazers that prefer the tips of the pasture. In large paddocks lactating females, and growing deer can be given access to the paddocks for initial grazing with little stress. Grazing by males and dry females can complete the grazing of the paddock, improve pasture quality and reduce parasite contamination.

### *Quality Assurance*

Design of deer enterprises should take account of the recently developed Deer Farming Best Practice Program.

The aim of Quality Assurance (QA) programs is to produce consistently high quality product for consumers. Consumers alone determine the quality of product. It must meet their requirements.

QA programs are developed to encourage producers to undertake management programs that ensure highest quality products are available to consumers. They also remind consumers that the industry is committed to ensuring that client requirements are considered through all phases of product development from paddock to plate.

QA programs are based on 'best practice' principles. Adoption the of 'best practice' principles of the QA program usually results in an improvement in production efficiency that in turn leads to increases enterprise profitability and ease of management.

Consideration of QA should be a priority for those constructing new deer enterprises or expanding or upgrading existing enterprises.

The Australian Deer Industry Quality Assurance Board has trained assessors who can provide advice on QA and requirements for fencing and yards.

***Regulatory Requirements***

Deer farming in most states of Australia is governed by specific legislation. Minimum standards for boundary fencing are often controlled by legislation.

People should seek clarification of minimum standards for deer fencing prescribed by legislation in their state before construction begins.

***Barbed Wire***

Barbed wire should not be used in areas subjected to high stock pressure, including yards, fencing pens and laneways. It can be, and is, used successfully in paddock fencing where animals do not pressure fences.

A single strand of barbed wire at the bottom of the fence (ground level) can help deter predators from pushing under fences.

***Specifications of Deer Netting***

Deer netting is usually described by three numbers separated by a colon (:) or slash (/). The first number shows how many horizontal wires are used in the mesh. The second number shows the height (in centimetres) of the mesh and the third number shows spacing of the vertical wires in the mesh. For example wire mesh described as 17/190/30 has 17 horizontal wires in its 190 centimetres height and the vertical spacing wires are 30 centimetres apart.

Typically, wire mesh 190cm high is used in boundary fences and laneways. Mesh with 13 lines is typically used for Red and larger species deer while 17-line mesh is used for Fallow and smaller species deer.

Internal fences made with deer mesh are commonly made with mesh that is 150cm high.

Horizontal wires used in deer mesh are close together at the bottom of the fence and the space between successive wires increases toward the top of the fence. The close wires at the bottom of the fence limit the ability of fawns to escape and make it more difficult for predators to enter.

***Choice of Netting***

If deer netting is a preferred alternative, factors that influence the wire used include:





- Species of deer
- Fence location (internal, boundary, laneways)
- Environment (risk of rust/quality of galvanising)
- Strength of the knots used in the mesh
- Price per metre

***Controlling Post and Fence Damage***

During the rut male animals will rub their antlers (or buttons if antlers have been removed) against trees or other objects in the paddock. If the animals choose to rub against fence posts, the posts can be rapidly worn away until they break.

*Figure 1: Damage to posts caused by male Red deer*

Electric outriggers on permanent fences are useful modifications that can reduce pressure on fences created by males that are in the rut.

The outrigger also protects the netting from other stock that may be grazed in the deer paddocks.

*Figure 2: Electric wire outrigger to protect posts*

### *Gates*

Commercially available gates are easily and cheaply extended to 1.8 metres by welding an extra section of frame onto the top of the gate. The frame is covered with deer netting.

Generally gates should be located in the corner of paddocks because:

- It is very difficult to encourage deer to move through a gate located in the middle of a fence (a 'hole in a wall')
- Corner located gates allow for long uninterrupted strains of fence wire
- Gates located in corners can be used to help move deer between paddocks

*Figure 3: Gates enlarged for deer*

Gates can be simply fabricated on farm with galvanised water pipe and weld mesh.

*"V" Gates*

To assist the ease of movement of machinery from the laneways into paddocks and to assist the control of deer movement along the laneways and between paddocks some owners construct a system of "V" gates.

In principal, the strainer for paddock fence that joins the laneways fence is set back away from the line of the laneways fence. The paddock gate that usually runs in line with the laneways fence is now angled away from the line of the laneways back to the fence strainer.

The gate on the adjoining paddock is similarly angled back to the division fence strainer post. The result is a "V" shape in the line of the laneways that provides more room to manoeuvre machinery in and out of the paddocks.

If gateways on either side of the laneways are constructed in a "V" style, a diamond section exists at intervals along the laneways. With appropriate





gates the diamond sections can be invaluable in controlling the movement of deer. In the diagram the gate hinge points are represented by the black dots.

*Figure 4: "V" gates along laneways fence*

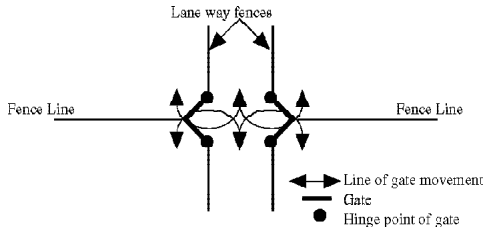



*Diagram 1: "V" gates included in a laneways*

*Four-Way Gates*

An alternative way to construct gates to ease movement between paddocks is to construct a four-way gate system.

In a corner where the paddocks meet, the strainer for each fence is set back a gate length from the corner. Gates are hung on each strainer and the join to complete the corner of each paddock. The gates can be opened to suit stock movement requirements and to allow a double gate access to each paddock for machinery (check machinery width before construction - some equipment is more than 6.0 metres wide). In the diagram the gate hinge points are represented by the black dots.

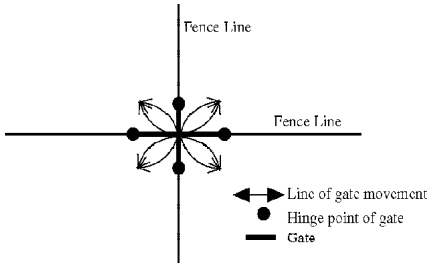



*Diagram 2: A four-way gate system*

*Three-Way Gates*

An alternative way to construct gates to allow double gate width movement of animals and machinery between paddocks is to construct a three-way gate system.

The strainer for each fence is set back to form an equilateral triangle. The length of each side of the triangle equals two gate lengths. Gates are hung on each strainer and the join to complete the corner of each paddock. The gates can be opened to suit stock movement requirements and to allow a double gate access to each paddock for machinery (check machinery width before construction - some equipment is more than 6.0 metres wide). In the diagram the gate hinge points are represented by the black dots.

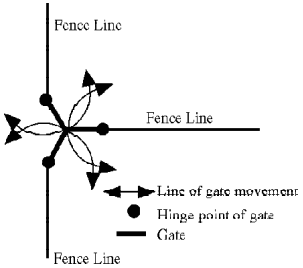



*Diagram 3: A three-way gate system*





*Figure 5: A three-way gate system*

**Construction Considerations**

It is important that boundary fencing is secure and that a handling facility is easily accessible from all areas of the enterprise.

Boundary fencing, and usually laneway fencing, must be capable of minimising deer escape and so they are usually the most expensive fences constructed on the deer enterprise.

Many styles of internal fences are suitable for deer. They range from simple temporary electric fencing to expensive, permanent 1.9 metre deer mesh fencing. The actual choice of wire type often relates to species or enterprise type more than other considerations.

***Post Size***

Post length must meet requirements of the fence under construction and most agree that at least one third of the post length should be firmly held in the ground to ensure fence stability.

Careful consideration of post diameter should be made before purchase. Required post size (diameter) is dependent on many factors including:

- Length of strain to be supported
- Species of deer to be contained
- Soil type
- Fence type
- Post spacing anticipated

### *Boundary Fences*

Fences used in Australia and New Zealand include:

- Typical 1.9 metre high boundary deer netting fence supported on 3.0 metre wooden posts or star pickets (1 metre into the ground) spaced from 10 to 15 metres apart
- Typical sheep and cattle fence where the original wire is removed. New deer posts are not used but steel or wooden droppers (1.8 metres) are fastened to existing posts and deer netting is attached to the new posts
- Typical sheep and cattle fencing 'topped up' with 4 or 5 electrified wires to a height of approximately 2.0 metres
- Rusa and Red deer have been effectively contained in large paddocks with cattle fencing where a plain electrified wire has been added between each barbed wire. The barbed wire is used as an earth field. An extra line of electrified plain wire is added above the existing fence and is supported by wooden droppers attached to existing posts.

### *Internal Fences*

There is an infinite range of internal fences that are able to successfully contain large deer species.

Internal fences that successfully contain the deer include:

- Typical deer netting fences either 1.5 or 1.9 metres high with posts spaced from 10 to 15 metres apart
- Typical sheep and cattle fences 'topped up' to about 2.0m with 4 electrified wires
- Typical sheep fence 'topped up' to 1.5 metres with a single electrified wire supported by droppers attached to existing posts
- Temporary electric fencing, 1.5 metres high supported by fibre glass spacers
- Use of sheep or cattle mesh on top of an existing fence

The ability to manage stock within any type of fencing relates not only to the stock confined by the fence and their temperament, but also to the design layout of the enterprise and the stock skills of the people managing the deer.

### *End Assemblies*

End assemblies vary and experienced fencers often debate the alternatives. Two alternatives are described here.





*Box or Horizontal Stayed Assembly*

The end assembly has 4 principal components. They are: a strainer post, a stay post, a backing post and a wire stay.

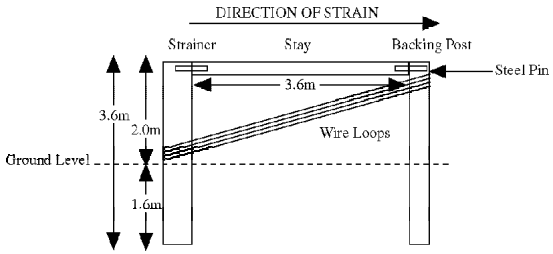



*Diagram 4: Box Assembly - guide measurements only*

The strainer is usually a large post 150 to 200mm in diameter and usually has at least 1m of its length below the ground surface.

Backing posts are usually of a similar diameter to fence posts (100 to 125mm) and similar length to strainers. Stays held parallel to the ground surface at the top and between the strainer and the backing post. Prior to the fence being strained, stays are held in position with metal pins at each end. At one end the metal pin is pushed through a pre-drilled hole at the top of the backing post and into the stay. At the other end the pin locates the stay on the strainer.

The backing post is positioned as close to the line of the fence as possible but not so close as to force the fence wire out of alignment.

The strainer takes the strain imposed by the wire and the end assembly prevents the strainer from being pulled out of the ground.

To finish this end assembly a wire stay formed by 2 or 3 loops of wire is looped from the top of the backing post to the bottom of the strainer. The loops are held in place on the strainer and backing post by staples. Twisting the wire around itself after it has been tied off tightens them.

To ensure maximum strength for the end assembly, a rule of thumb that should be followed is that the ratio of the length of the strainer to the length of the backing post to the length of the wire stay is ideally 3:4:5 (ie if the strainer is 2 metres out of the ground, the backing post should be at least 2.7 metres long and the wire stay at least 3.3 metres long).

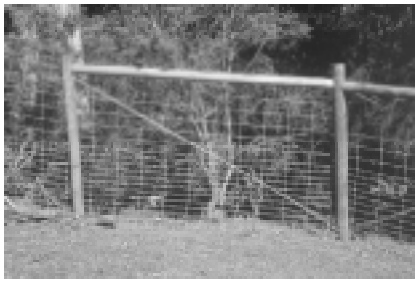


*Figure 6: Box style end assembly*

*Diagonal Stayed Assembly*

This end assembly has 3 principal components. They are: a strainer post, a backing post and a bed log.

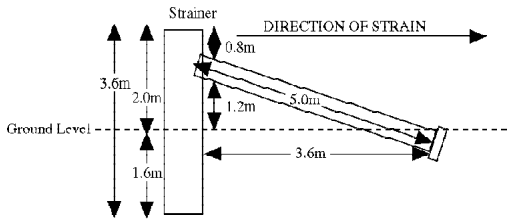



*Diagram 5: Diagonal Stayed Assembly - guide measurements only*

Like the box assembly, the strainer is usually a large post that has at least 1m of its length below the surface of the soil. The stay is of a similar diameter to fence posts, its length is defined by its position on the strainer. The bed log is a piece of hard wood timber approximately 600cm by 15cm by 30cm. After a strainer has been positioned, a stay is measured for the strainer. Fencing contractors suggest that the length of the stay should be 4 times longer than the distance from the ground to the position on strainer where the stay joins it.

The dimensions of the assembly in design 2 relate to a strain length of 500 metres. If the strain length is less than 500 metres, the stay post may not need to be as long. The stay should be long enough to ensure that it does not work to jack the strainer from the ground. The longer the strain, the longer the stay length needed.

To ensure the stay does not create a pivot point for the strainer to rotate around, the distance from the top of the strainer to the stay should be less





than half the total length of the strainer post. A guide rule of thumb is that the stay should join the strainer at a point about one third of the distance down from the top of the strain (wire) to ground level. If the stay joins the strainer too close to the top the strainer will be jacked out of the ground. Too low and there will be excessive pressure on the bottom of the post.

Once the stay has been cut to length, a notch is cut in the strainer at the point where the stay meets it. The end of the stay is shaped to fit into the notch on the strainer. At the point where the stay meets the ground a trench is made. The trench is dug in an angle towards the strainer so that when in place on the strainer, the stay will rest on and perpendicular to the bed log. The bed log should rest just below the surface of the ground and the soil behind the bed log should remain undisturbed.

The strainer takes the strain of the fence wire and the end assembly prevents it from being pulled out of the ground. A Diagonal Stayed Assembly is very useful in conditions where soil conditions change from very wet swollen clay to dried cracked and shrunken clays or sand.

Users of this end assembly say it is able to pivot on the foot and stay without failing when the soil around the strainer allows the strainer to move. This type of assembly also is cost effective where local timber is available and posts can be cut to required specifications.

*Figure 7: Stay and bed log end assembly*

***Stays for Fence Curves***

*Reverse Stay*

When a fence is strained tightly around a curve, the pressure of the fence will pull a post out of the ground with obvious collapse of the fence. To prevent

a post in a curve from being pulled out of the ground, it can be stabilised with either an internal or external strut, similar to an end assembly.

If a common 'pushing stay' is used on the inside (paddock side) of the corner, action must be taken to reduce risks of injury caused by the stay extending out into the paddock. Often the corner is fenced off around the stay and planted with trees.

*Figure 8: Corner stay (strut and bed log style)*

An alternative option is to use a reverse stay. A reverse stay is constructed on the outside of the corner (outside the paddock) and it pulls the strainer post to keep it in position and to resist the strain exerted by the fence wire.

The strut is constructed in a similar manner to the end assembly 1 described above, with an exception that wire strut is placed from the top of the strainer to the bottom of the stay post. A disadvantage of this stay can be that the assembly extends past the line of the fence. In the photo, the stay post used is a strainer from the original cattle fence. The deer wire is strained to the post on the bend of the deer fence so end assemblies are used each side of the strain.

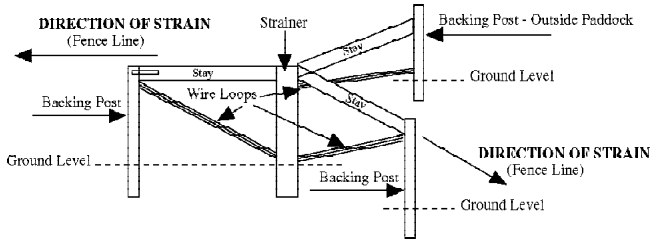



*Diagram 6: A reverse (box style) stay attached to a corner strainer*





*Figure 9: Reverse (box style) stay*

*Bed Log Stays*

In some situations it is impractical to use internal or external fence stays. For example a fence that curves around a road where the owner does not want a strut extending into the road and does not want a strut extending into the paddock on the other side.

In this situation a bed log stay can be used. As its name suggests a bed log stay relies on a hardwood log bedded into the ground beside the post on the inside of the curve. The hard wood stay is approximately 3m by 10cm by 25cm (an old railway sleeper is ideal). Before wire is added to the fence the bed log is placed in a carefully prepared excavation in the ground beside the post. It is important that the ground behind the bed log remains undisturbed. The excavation must only just allow the bed log to fit between the post and the earth wall.

In wet or very sandy conditions or in conditions of intense strain, a bed log may be needed on the foot of the post on the opposite side to the strain.

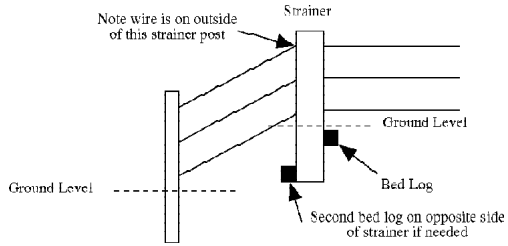



*Diagram 7: Bed Log stay on fence curve - guide measurements only*

*Figure 10: Bed log stay on fence curve*

In the example the post is 3m long and 1m of the post is in the ground. The section in the ground extends 75cm past the bottom edge of the bed log. When the fence is strained the bed log and the undisturbed ground behind the bed log resist the strain of the fence.

**Cost Considerations**

***Materials***

There are many companies that make and sell fencing components. Individual component makers may nominate prices that vary from the figures used.

It is important that each person undertake their own calculations of fence cost according to the actual component costs available at their own location. However component costs used in the following examples provide a good guide of average costs.

***Labour costs***

The cost of erecting fencing is determined by many factors but predominantly by the topography of the land to be fenced. Steep, hilly country usually costs more to fence that flat country because of time involved in digging postholes and because of different straining requirements.

Fencing contractors provide expert services that often allow fences to be constructed more quickly and efficiently while self-construction can be a significantly less cash cost but often more time consuming.

Contractors charge by the hour or the metre and their fees take account of topography, type of fence and distance travelled to the property. Other factors,





which influence the choice between self-construction and use of a contractor, include limitations on available machinery, expertise and confidence.

As discussed contractor costs vary and can range from as little as $1.00 per metre to $4.50 per metre. A reasonable average fee appears to be approximately $1.80 per metre (December 2002).

**Some Alternate Fence Types**

***1.90 high metre small mesh fencing***

The mesh used will contain all ages of deer including Fallow fawns, its description is 17/190/15 (see specifications of deer netting) and posts are usually about 10 metres apart. The fence is suitable for all species of deer and particularly useful for high-pressure areas (yards and the final section of laneway).

***1.90 high metre medium mesh fencing***

The mesh used (17/190/30) is suitable for boundary fences, internal fences and laneway fences for deer. However, the large spacing of vertical wires in the mesh (30cm) may mean the fence is unable to contain fawns of smaller species.

***1.90 high metre large mesh fencing***

This fence uses mesh described as 13/190/30. There are less vertical wires and less horizontal wires in the mesh. The wire is cheaper, but the mesh size is larger so it is less able to contain young of small deer. It is suitable for large species deer.

***Internal Fence 1***

This fence is suitable as an internal fence for all species of deer and as a fence that will adequately protect shelterbelts from deer.

The fence is approximately 1.5 metres high and uses posts typically used in cattle fences. The wire mesh used is 6/90/30 and the fence is completed with 2 plain wires 30cm and 60cm above the mesh. It is protected from damage by an electrified plain wire on each side of the fence. The electrified wire is held on fibreglass outriggers approximately 60cm up from ground level and 25cm out at right angles to each post. Posts are 8 metres apart.

A plain wire is supported on fibreglass outriggers along the top of this fence. The principal purpose of the wire is to easily transport electricity around the farm to allow required fences to be electrified.

*Figure 11: Internal deer fence 1*

***Internal Fence 2***

This fence is made of deer mesh (15/150/30) and is suitable as an internal fence for Fallow deer. The fence is 1.5 metres high. This example does not include electrified wires on outriggers as Fallow deer generally cause less damage to fences than larger species deer. Posts are 10 metres apart.

*Figure 12: Internal deer fence 2*

***Top-Up Fencing***

The most important consideration for top-up fencing is that existing fence posts must be in good condition. If the existing wire is in poor condition, often it is more cost effective to remove the old wire and replace it with deer mesh. To raise the effective height of current posts, sawn timber (100mm x 50mm) is attached to existing posts to achieve approximately 10 metre spacings. The sawn timber can be either 1.8 or 2.1 metres long. The length chosen depends on the height of current posts and the aim should be to achieve an overall height of 2.0m from the ground and an overlap on the existing posts of at least 1.0 metre.





The timber is attached to existing posts with nails or bolts or No. 7 tie wire. If existing posts are made of steel, steel top up posts can be welded or bolted to existing posts.

***Topped-Up Cattle Fence***

This fence is made by topping up an existing netting fence by using sawn timber and wire mesh (6/90/30).

The existing fence is 1.5 metres high and made with good quality wooden posts. New end assemblies will be required for the new fence. The bottom of the new mesh is run adjacent to the top of the existing fence wire and is joined to that with commercially available "C" clips. An outrigger electrified plain wire is used on each side of the fence and an electricity transfer wire is used above the fence. Timber posts are 10 metres apart.

*Figure 13: Topped cattle fence*

***Converted Cattle Fence***

This fence is a converted cattle fence. The original fence was 1.3 metres high and comprised 4 equally spaced barbed wires running through posts about 7 metres apart.

To convert this fence to one that effectively contains deer (Red and Rusa) in a low pressure extensive management system adaptations were made. They were:

- Single barbed wire was added at close to ground level
- Three plain electrified wires, one at 15cm, one at 45cm and one at 75 cm above the ground added
- A plain electrified wire 30cm above the existing fence was added.

In this fence the electrified wires are run through insulators attached to the fence posts. The new top wire is run on a piece of hard wood timber attached

to every third post. The new piece of timber is 1.8 metres long, has about 15cm of its length in the ground and 1.65m above ground.

The new timber is wired to existing posts and extends the overall height of the new fence to 1.65 metres.

Fence alterations do not require a new end assembly although a timber upright is needed to support the electrified wire at each strainer.

*Figure 14: Converted cattle fence*

***Plain Wire Fence***

This fence is an electrified plain wire and barbed wire fence. It is 1.6 metres high and the electrified plain wires pass through insulators placed within a hole in the posts.

This fence effectively controls Red and Rusa deer managed extensively in large paddocks. Post spacing is 7 meres. The end assembly used is that described as the second alternative in the section of this manual titled 'End Assemblies'.

*Figure 15: Plain wire deer fence*





***Electric Fencing***

*Preventing Post and Fence Damage*

If paddocks do not provide sufficient trees for the males to rub against during the rut, and some times even if they do, males will rub against fence posts and at times males in adjacent paddocks will attempt to fight through fences during the rut.

One method that is successful in stopping males rubbing on and fighting through fences is the use of electrified wires. Where the soil around the fence holds sufficient moisture to allow an animal to earth itself through the soil, a single plain electrified wire about 60cm up from the ground surface and 25cm out from the fence, will prevent both rubbing and fighting by males.

Electric outriggers on permanent fences are useful modifications that can reduce pressure on fences created by males that are in the rut. The outrigger also protects the netting from other stock that may be grazed in the deer paddocks.

If dry earth requires an extra earth wire to complete the circuit, it should be placed about 20cm below the live wire for control of males.

If female deer cause damage to fences they can be effectively controlled using the electrified fencing described above. However where an extra earth wire is required, it is ideally placed about 20cm above the live wire, not below it. Females tend to pressure fences higher above the ground level than males.

*Permanent Electric Fencing*

Outrigger wires on the outside of fences can help deter predators at fawning time. Permanent electric fencing has been used successfully as boundary fences for deer. A plain wire cattle fence boosted to 1.9 metres in height with 4 electrified wires and each alternative wire in the fence electrified will contain deer well.

*Temporary Electric Fencing*

Temporary electric fencing is often used to subdivide paddocks and control grazing of deer that can increase efficiency of pasture use while effectively controlling stock movements. Most people suggest that 'flat tape' wire is more effective than normal wire for electric fences because the deer can more easily see the tape than they can see the wire.

Temporary electric fences are unlikely to contain deer that are panicked and are not suitable for controlling breeding males in the rut. Temporary electric fences are not considered suitable for controlling animals that are fawning (young animals can easily escape) or for controlling animals in mating groups (aggressive sires will easily break through temporary fence).

To prevent excessive pressure on fences stock must be moved quietly in and out of electrically fenced areas.

Cost considerations should include costs of an energiser (power unit) or voltmeter. Posts are usually about 10 metres apart. The figure of 8 knot (see below) is particularly useful for joining electric fence wires as it provides five points of contact between each wire.

*Figure 16: Temporary electric fencing used for paddock subdivision*

**Tips and Hints**

***Insulators***

Cutting 12mm poly pipe into 7.5cm pieces can make cheap effective insulators. These 'insulators' can be attached to posts with 5cm staples.

***Crank Strainers***

In-line crank strainers can be added to single fence wires to allow easy tension adjustment. They are easy to use and provide a fast method of tension adjustment, however they can be expensive if a large number are required.

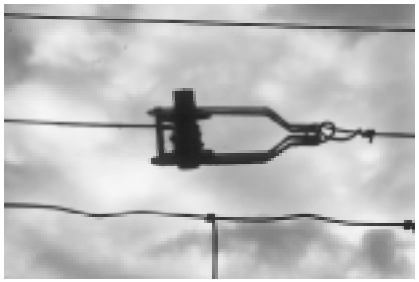


*Figure 17: Crank Strainer*





***Netting Straining***

A cheap mesh strainer can be made from two (2) pieces of hardwood timber (10cm x 5cm) that are 2.0 metres long. Six (6) holes equally spaced down the timber are drilled to easily take a 13mm bolt, (holes on each piece of timber obviously line up).

To use the 'strainer', one of the timbers is placed on the ground with the bolts projecting through it. The wire mesh is placed evenly on the timber and the second timber is placed down over the bolts onto the first timber. Nuts are screwed down on the bolts to clamp the timber and wire together.

Equal length chains are attached to the timber about 50cm from each end. The chains are attached to the draw bar of the tractor and the tractor is moved to tension the wire. This 'strainer' is cheap and does not damage the mesh. Its disadvantage is that each strain is time consuming.

***Wire Joining***

*Gripples ® or Crimps ®*

Wire can be joined with 'Gripples ®'. With these joiners the wires to be joined are pushed into opposite sides of the 'Gripple ®'. As pulling pressure is applied to each wire the 'Gripple ®' clamps the wire to prevent it moving. As pulling pressure increases, 'Gripple ®' clamp pressure increases. This style of joiner should be used for joining wire than may need to be restrained after a period of time. These joiners are simple, fast and easy to use but can be expensive.

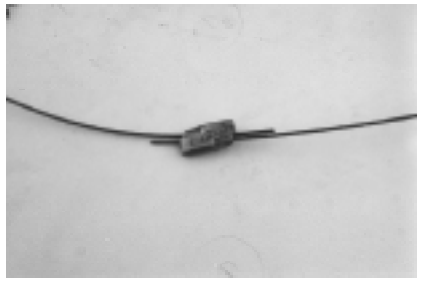


*Figure 18: Wire joined with a Gripple ®*

*Heyes Crimping Sleeves ®*

Heyes Crimping Sleeves ® are used to join wires by clamping a uniquely designed sleeve onto the ends of the wires to be joined. The sleeve is clamped

with specialised fencing pliers (Heyes Easy Pull Pliers ®) that are designed to crimp the sleeves onto the ends of the wire. The pliers are multipurpose pliers that can be used for other fencing operations. These joiners are relatively cheap and aresimple, fast and easy to use but they should not be used where wire they join will need to be restrained at a later date.

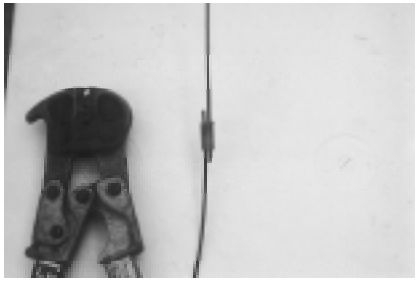


*Figure 19: Heyes Crimping Sleeves and pliers ®*

*Single Wire*

A common knot to join single, plain wires is the figure of 8 knot. It is simple to use and does not slip. This knot is particularly useful for joining electric fence wires as it provides five points of contact between each wire.

*Diagram 8: Stylised figure-8 knot*

*Mesh*

Some use gripples to join each wire in a mesh fence, but their cost must be considered. Mesh can be simply tied. Mesh on each side of a join is cut so that the length of wire from the last vertical wire is the greatest possible.





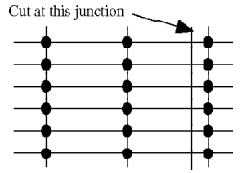



*Diagram 9: Cutting point for mesh*

The vertical wire from each side of the mesh is held close together and each horizontal wire is wound 4 times around both vertical wires and the ends are cut off.

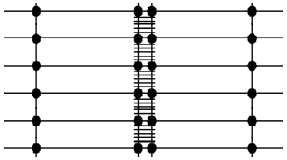


*Diagram 10: Joined mesh*

This join is difficult to detect in a well-made fence. The method of joining used depends on costs of labour, gripples and time available for construction.

***Gloves***

Gloves make working with wire easier, they protect operators' hands and they increase speed of fence construction. Some fencing contractors suggest that 'Rigger Gloves' are ideal for fencing.

***Wire Cutting***

Most deer wire is high tensile wire. Wire cutters should be made for high tensile wire otherwise cutting time is increased and the life of the wire cutters is reduced. Fencing contractors suggest that bolt cutters cut the wire more easily and last longer than common wire cutters. The small (10") size is considered ideal.

***Reducing Cash Costs***

If time is not critical and in situations of bad soil, using a contractor for all post work can reduce fencing costs. An owner can then position, strain and tie wire.

### *Water Points*

Watering points for deer, especially Red deer that like to wallow, should be designed to minimise the ability of deer to splash water onto the ground.

If they can, deer will splash water onto the ground with their front legs to make a wallow in the wet ground.

*Figure 20: A watering trough with cover to minimise splashing by deer*

### *Trees*

*Protection*

Trees in paddocks used for males need protection from damage that the males cause when they rub their antlers or antler buttons against the tree prior to and during the rut. This action by males can cause the death of the tree by ringbarking it.

Alternate methods of protecting trees include wrapping tree trunks with wire, nailing hard wood slats vertically around the trunk to take the brunt of rubbing or nailing iron sheets around the base of the tree. Some people provide sacrificial posts in the paddock for the males to rub against.

*Near fences*

Edible trees should be planted far enough from fence lines to ensure that no branches overhang the fence. Deer will lean on and climb fences to access the edible parts of the tree often causing significant fence damage.