SHADENET

How to Choose Percentage Shadenet

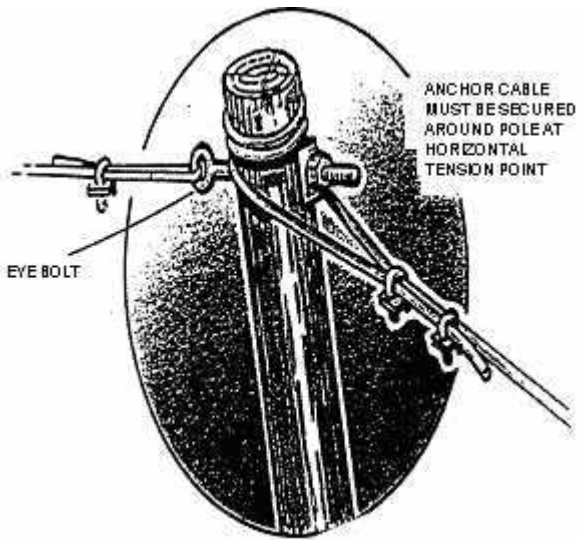
Due to differences in climate between various areas, it is difficult to make a definite recommendation, but the following can serve as a general guide:

Shadenet	Suitable For
6 - 10 % Shade - White (Hail Net)	Vineyards and Soft Fruits
12% Shade - 40% Construction, White 18% Shade - 50% Construction, White	Vegetable Crops, such as Tomatoes, Peppers, Cucumbers and Beans. Fruit Crops, such as Granadillas, Kiwi fruit and Melon (Namely plants that like a considerable amount of sunlight)
25% Shade – 40% Grey (Black/ White)	Paprika, Chillies, Mixed Vegetables, Tomatoes and Peppers in warmer areas
30% Shade - Black	Strawberries, Cape gooseberries, Cucumbers, Fruit producing plants, Chrysanthemums, Carnations, Roses, etc.
40% Shade – Black and Green	Leafy Vegetables, like Lettuce, Cauliflower, Sprouts, certain Orchid varieties, vegetable and flower seedlings, etc. (Namely plants that like a reasonable amount of sunlight). Can be used as a wind buffer (25% wind reduction)
50% Shade - Green	General nursery supplies, pot plants, certain Orchid varieties, Caladiums, Geraniums, Gloxinias, Irises, etc. (Namely plants that like partial shade). This material is especially recommended for wind buffers. (50% Wind reduction when only monofilament material is being used).
70% Shade - Black 80% Shade - Green 85% Shade - Black	Ferns, Palms, Violets, house plants, etc. (Namely plants that prefer dense shade). Also ideal for carports, caravan covers, screens, shade for livestock, etc.

The Basic Principles of a Shade House

Anchors

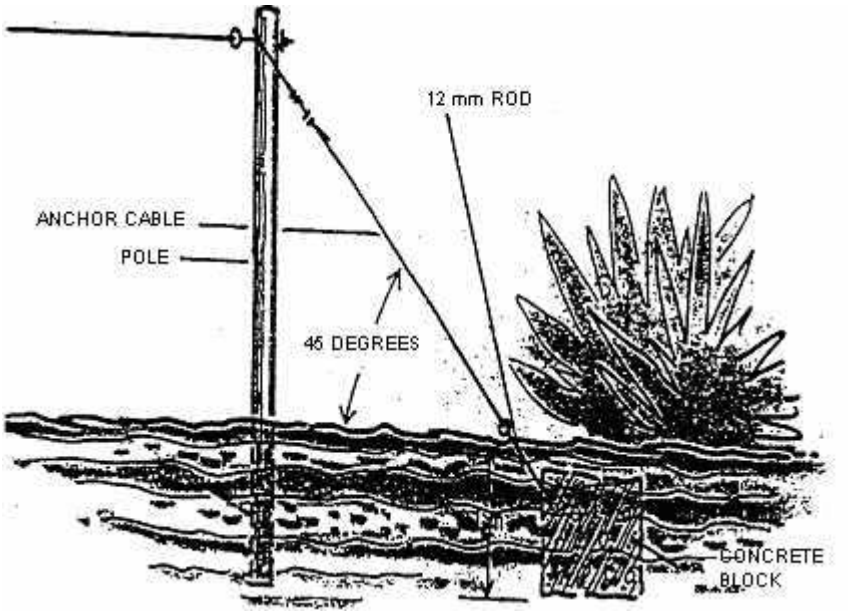
- This is the most important part of a shadenet structure.
- Steel and anchor cables must be of the highest quality and must be specified correctly, as they need to be secured tightly to poles and anchors.
- It is recommended that galvanised anchor cables are being used (instead of steel cables), as they do not stretch that much and constant retensioning is therefore being eliminated.
- The anchor cable must be secured around the pole and over the point where the horizontal wires and cables are attached. (It is the wires and cables that support the net).

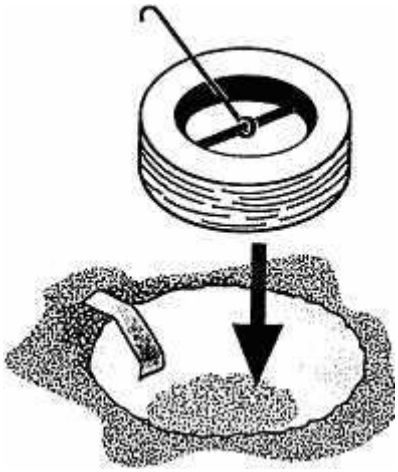


- If the cables can be adjusted, it makes tasks such as maintenance, expansion and narrowing easier.
- A rattle spanner and plaster is the most economical and practical way to adjust or tighten anchor cables. Heavy duty eye bolts or screws can also be used.
- Never place the cables underneath the soil

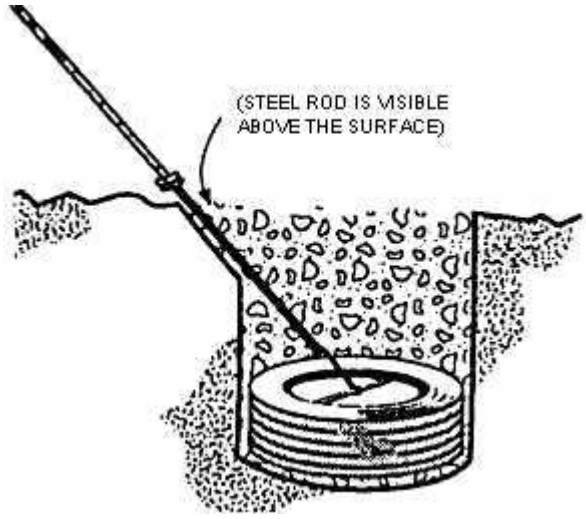
when they are being attached to the anchor. Rather use a rod with a minimum diameter of 12 mm, that has been painted with anti-rust asphalt or paint, to attach the anchor to. The rod must be projected above the ground.

- The anchor itself must be planted away from the basis of the pole at a distance that is at least the height of the anchor pole. The optimal angle for the anchor cable is 45 degrees. The closer the anchor to the pole, the harder it will be to transfer the horizontal force of the pole to the anchor.
- Anchor cables can be made more visible by wrapping material around them, or by painting them yellow so that tractors, people and livestock won't drive or trip over them.
- Ensure that the anchor poles are the correct strength and that they have been treated. The poles must be planted at least 900 mm into the ground.
- The outer poles must form an angle of 90 degrees with the anchors (whether tyres or concrete blocks), so that the anchor cable has a slope of 45 degrees.
- In sandy or ploughed soil, the carrying capacity of the anchor can be improved by placing metal or concrete panels in front of the tyres.





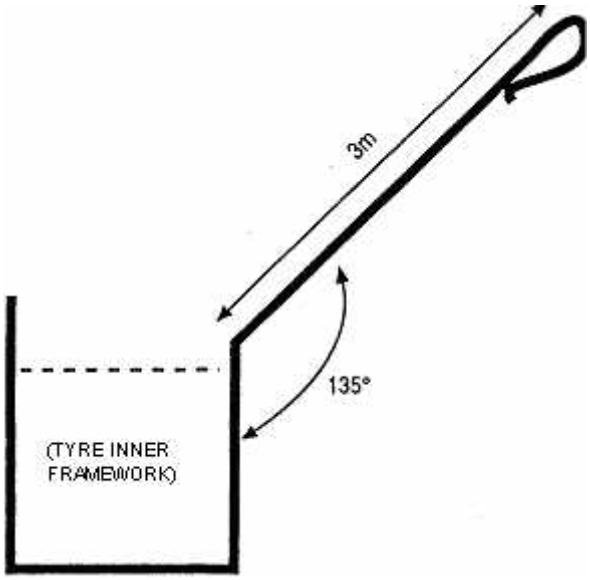
Used tyres are the best. If you are using a bakkie tyre, it should be at least 194 x 14. The tyre is buried in a hole 1 m x 1 m x 1 m deep. A bar is placed in the tyre and attached to a 12 mm rod with an eye or hook that fits around the cable. Ensure that the steel has a good undercoat and that it has been painted with the correct paint for underground use.

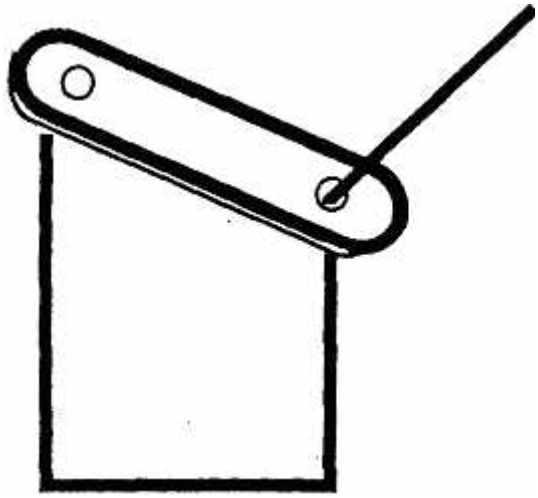


When the tyres and the anchor rod for the cable are in place, fill the hole and the tyre with soil, a little bit at a time, and compact the soil well. Ensure that the soil that is inside the tyre and the hole, is compacted thoroughly.

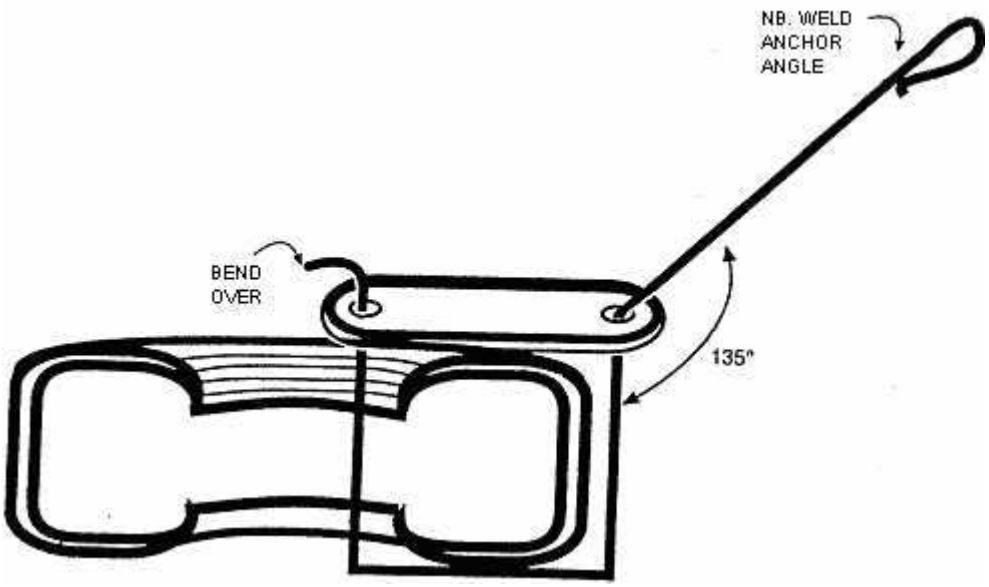
- The steel bar that has been placed inside the tyres, sometimes tend to pull out. A much safer and even easier framework can be made as follows:

Bend a soft round m10 or m12 steel bar to fit into the tyre, and, with a 3 m stay as anchor, weld the hook around the anchor staywire. Treat with an undercoat and anti-rust paint.



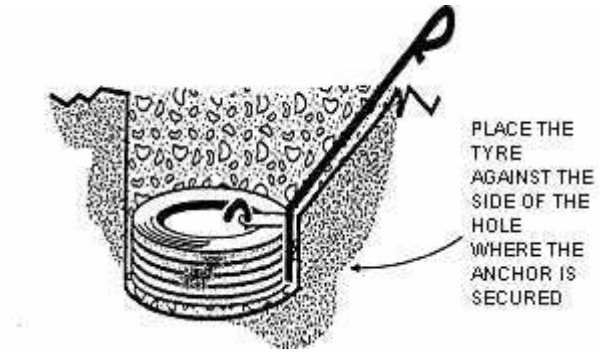


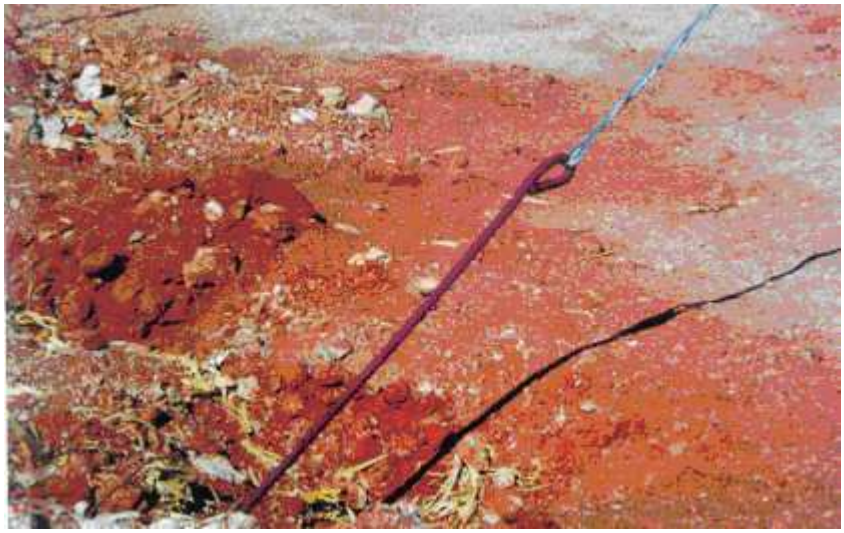
Take a 5 x 40 mm flat bar and cut it to fit over the tyre. Drill 2 holes big enough to fit on the round bar framework. Treat with an undercoat and anti-rust paint.
Place one end on the framework.



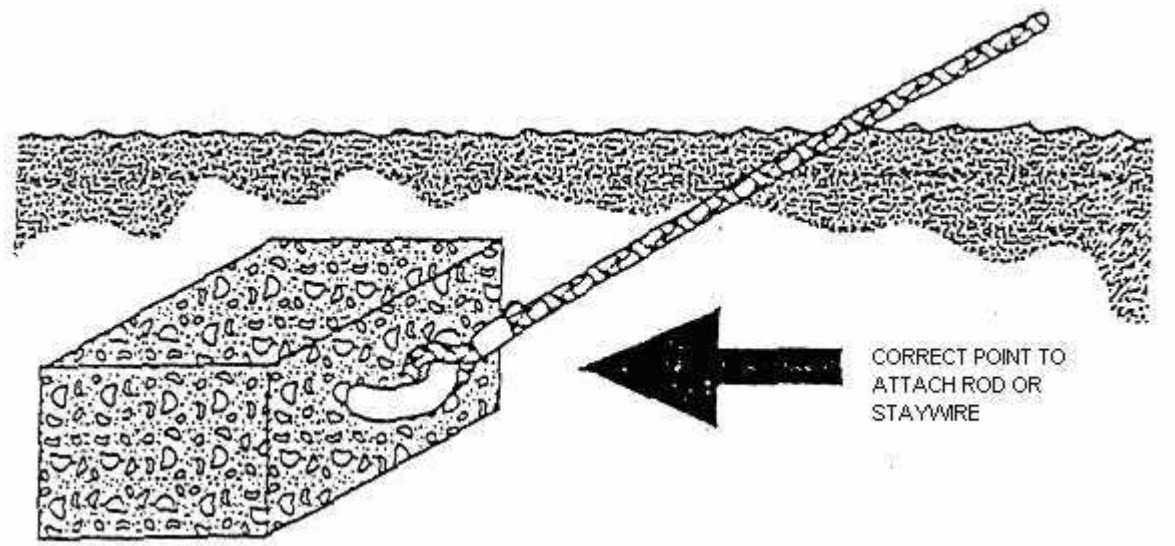
Fit tyre in framework. Fit the flat bar over the other end of the framework and bend the bar over the flat bar to keep it in position.

Place the tyre with framework into the hole.
NB: The tyre and framework must lie upright against the side of the hole out of which the anchor comes. Fill the hole and tyre with soil and compact well.





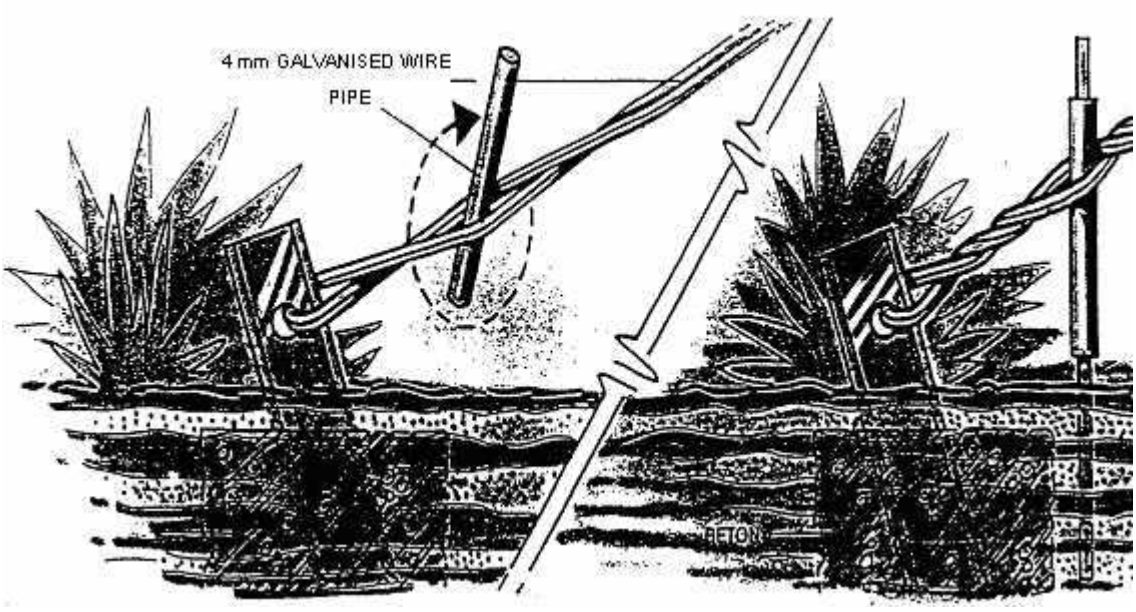
Anchors above the slope will carry a heavier burden and need additional reinforcement with poles and supports. Additional anchors are also needed at the correct angles to prevent the main anchor from moving sidewards. A steel plate, 50 cm x 50 cm, or a concrete block, 50 cm x 50 cm x 15 cm, must be placed underneath this plate, as the forces to which it is exposed, will force it further into the ground.



Concrete blocks of a cubic metre, are buried in a cubic metre hole. Ensure that the point where the anchor rod is attached, is in the correct position, as illustrated.

The pulling point should coincide with the average resistance point to prevent tilting.

- Corner anchors must also be reinforced.
- Steel bars or the rods that are being used on the anchor and that are in contact with the ground, should not be thinner than 12 mm and should be galvanised.
- When a 4 mm diameter wire are being wind up for supports, the final turn should be locked permanently, so that the tension is being kept.

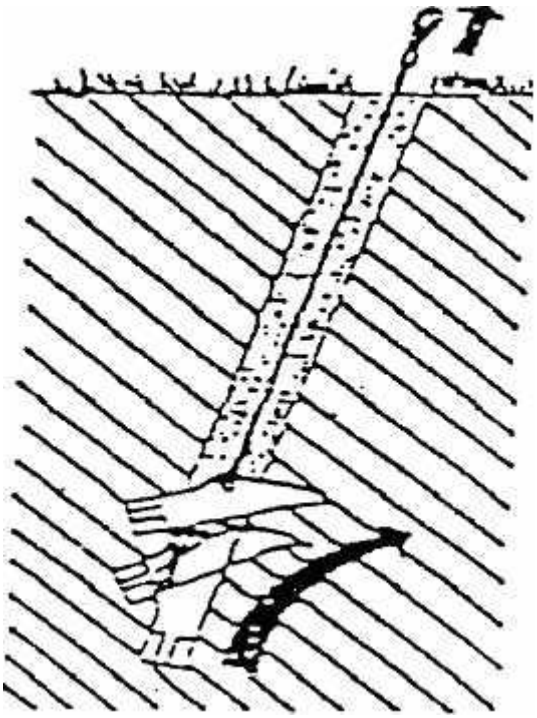


'Duckbill' Anchor

A very effective, and yet easy anchor, is the ***"duckbill"***.

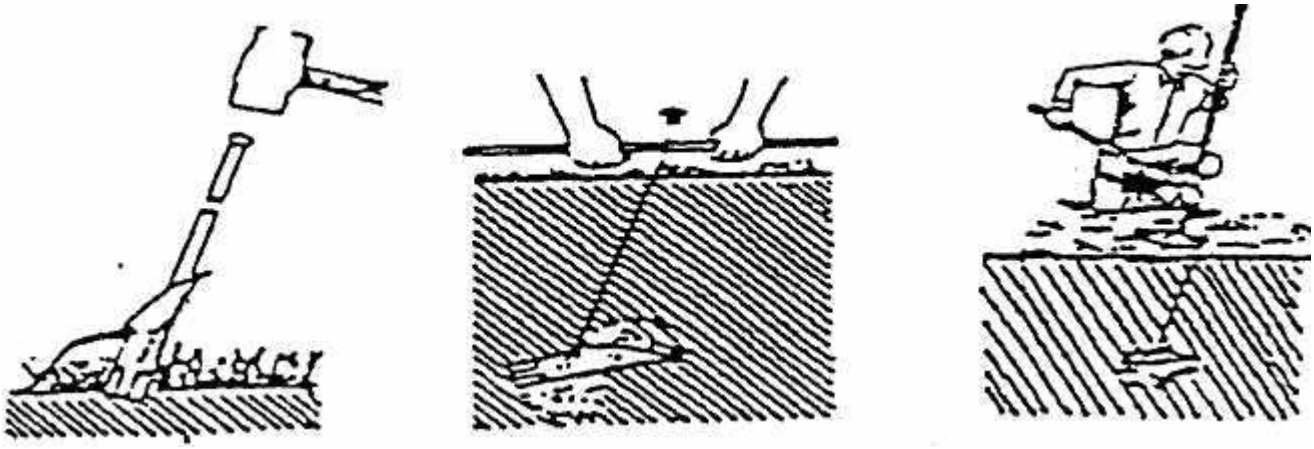
How the 'Duckbill' Works

The 'duckbill' anchor is being driven into the soil with a hammer and a driving rod. As the anchor is being tightened, the soil around the anchor is being compacted. The driving rod is removed, as soon as the anchor has been driven in the desired depth. An upward pull on the cable will rotate the anchor in a load lock position. The anchor cuts in and compacts the undisturbed soil. This method is far better than the conventional anchors which disturb the soil during installation.



Installation

- Use a heavy hammer and a driving rod. Drive the anchor into the soil at the desired angle until the top half of the cable loop shows above the surface (One driving rod drives numerous anchors).
- Remove the rod, and pull the cable upwards. It rotates the anchor in the load lock position. Smaller models can by installed manually. Larger models require a jack or other apparatus. Tie the rope or cable to the loop/ eye and direct it towards the object that is being anchored.



Tacking of Shadecloth

Tacking, as recommended, is also essential for the total stability of the structure and for the life duration of the shadecloth itself. ALNET shadecloth is manufactured with a row of reinforced lace holes at each side of the cloth and a double row in the middle. Correct tacking ensures maximum cloth support and saves on erection time in the short term and on maintenance in the long term. Most of the work is carried out on the ground and you would start as follows:

- Unroll the cloth on the ground on an open area close to the structure.
- Cut two lengths of galvanised, high tension steel wire (e.g. 2.2 mm diameter, Yskor 1000) according to the length of the structure that must be covered, but allow a few extra metres to wind around the end poles.
- Do the layout of the wires behind the cloth where the tacking is going to start. Remember to leave about 1 m untacked at each end - which will be attached to the cross wires at the ends. Start tacking the wire on both sides.

Coupling in the Length

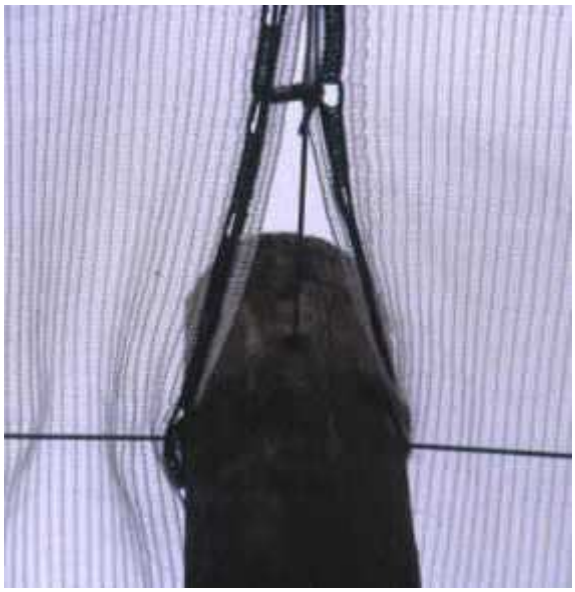
After the cloth has been tacked and the wires have been attached and tensioned to the various poles (as will be indicated in the separate explanation for each structure), the cloth will be compacted like curtain material on the tightened side wires.

Now proceed as follows:

- Sew one end of the material to the cross wire at the end, and pull the cloth open to the other end. Remove all pleads and sew this end to the cross wire.
- When all panel ends have been sewn to the cross wires, the tension in the cloth causes the side wires to pull inwards, which will in turn cause gaps between the panels. These are covered by binding adjacent side wires

together with the baling twine with intervals of about 1 metre.

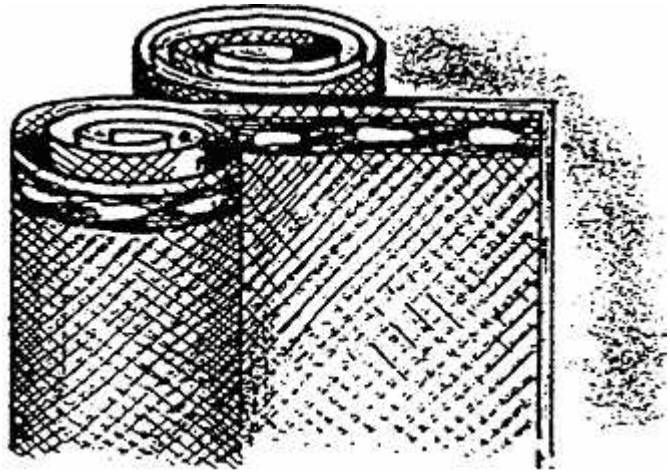
- Please note that poles must be visible for ca. 20 cm above the ends of the roof to ensure firm attachment and to prevent the net from being lifted over the poles by the wind.
- Use staples to attach the side wire to the inner poles.



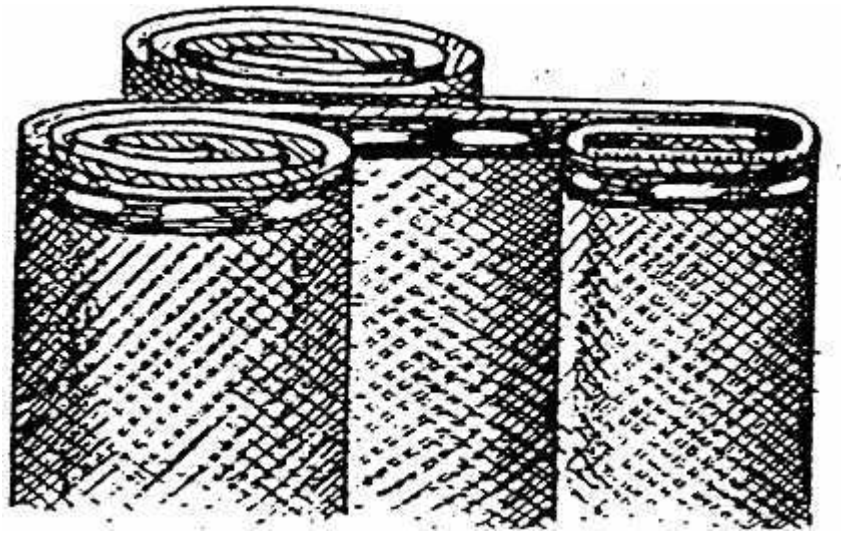
Coupling in the Breadth

If you require the shadenet to be in lengths that are longer than the standard 50 metre rolls in which they are being provided, a simple and efficient coupling can be made across the breadth, as shown in the following diagrams:

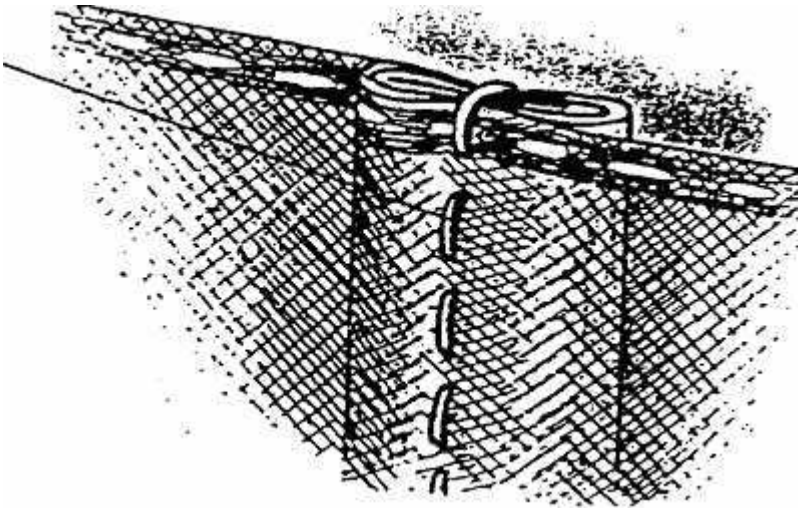
Put two rolls vertical and side-by-side along each other and fold the ends of each roll together.



Fold them over double at least twice.



Use 22 mm polyethylene tacking string to tack the ends together with a simple tacking stitch and tie off. The coupling is now complete.

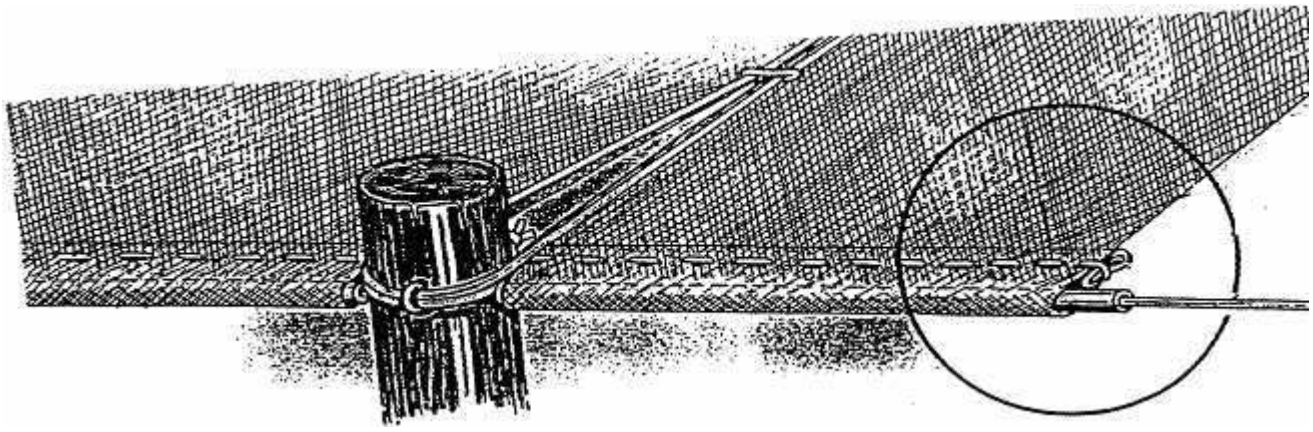


Tacking of Cut Edges to Cross Wires

Although not essential, you may cover the cross wires with old plastic water pipe that has been cut in the length, if preferred. This allows movement of the shadecloth in windy conditions and can prevent scraping and damage to the cloth to a certain degree.

Next, the method to tack the cut edges to the cross wire:

- Tighten the net around and underneath the cross wire and fold the end double.
- Stitch with tacking string through the double fold.



- For protection against wind, all four sides can be shut off with net at an angle of 45 degrees with the anchor cables to support the net. It is recommended that the net that is being used on the sides is no more than 50%, as to ensure that

it does not cause a too strong wind buffer. The 45 degree slope will assist in deflecting the wind.

- To prevent the net from fluttering in the wind, which can cause it to tear or to decay, it can be attached to the cross cables every 1 m or 1.5 m with cable ties. Do not tension the wires over the net to prevent it from fluttering.
- Erect the net early in the day before it gets too hot. Contrary to popular belief, polyethylene shadenet will shrink slightly in hot weather. If the net is erected in the morning while it is still cool, it is easier to work with it and it will tighten during the day.

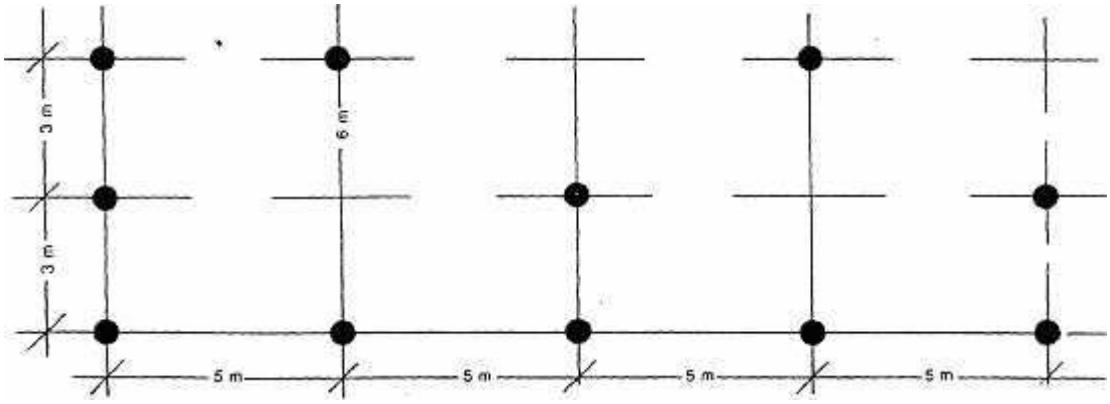
Structures

Flat Roof Structure

After the surface has been prepared on the area where the structure will be erected, planning can follow:

Measuring of Poles

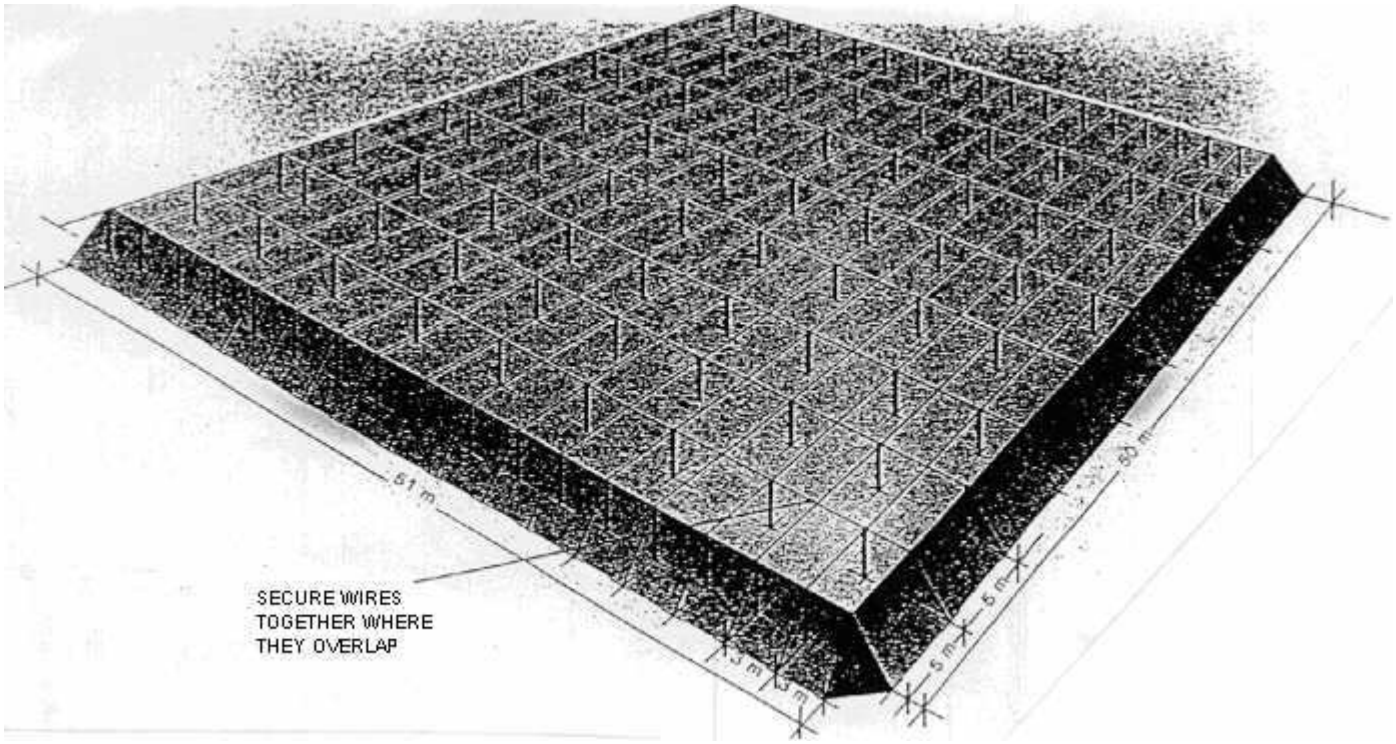
- Measure the area that will be covered. Areas that do not exceed 100 m x 100 m, are easier to maintain and to work in.
- Inner blocks may vary from 3 m x 6 m to 6 m x 6 m. If there is a possibility of hail storms, it is recommended that you work with smaller blocks.
- To determine the lengths of the poles, you need to take into consideration at what depth the poles need to be planted and whether workers and tractors will work underneath the net.
- The poles should be planted at a depth of at least 0.5 m, although a depth of 0.6 m to 0.9 m is preferred, depending on the condition of the soil.
- Anchor and circumference poles should be at least 100 mm / 125 mm treated eucalyptus poles.
- Be careful of creosote poles, as they tend to damage shadenet; tantalite poles are recommended (CCA).
- String high tension 2,25 mm cross wire through pre-drilled upper ends of each row of poles, as shown.



How to Erect a Flat Roof Structure

Layout of Poles

Use 3 metre poles. Plant them at a minimum depth of 600 mm and at centre to centre intervals, as shown in the diagram. This will allow a comfortable working height of 2.4 metre. Now string and anchor all the outer poles. Use any of the methods illustrated - whichever you prefer. Keep in mind the importance of sturdy anchors to ensure the overall stability of the structure.



Attachment of the Shadecloth

Tack the shadecloth to the side wires, as described earlier, and lift each threaded roll into position. Let it rest on top of the cross wires. Now attach and string the side wires to the end poles. Next, sew one end of the shadecloth to the cross wire, or nail it in position if wooden crossbeams have been used. Stretch the shadecloth tightly, as described earlier, before the other end is being sewn and the side wires are being connected.

Tie the side wires and cross wires together where they overlap.

To protect the structure, as well as the products underneath it, it is recommended that all four sides be shut off with shadecloth (maximum 55% shadenet) in windy areas.

How to Erect a Pinnacle Roof Structure

Layout of Poles

Use poles of 4.20 m and 2.60 m respectively. Plant them alternatively to a maximum depth of 600 mm and one centre to centre interval of 2.60 m.

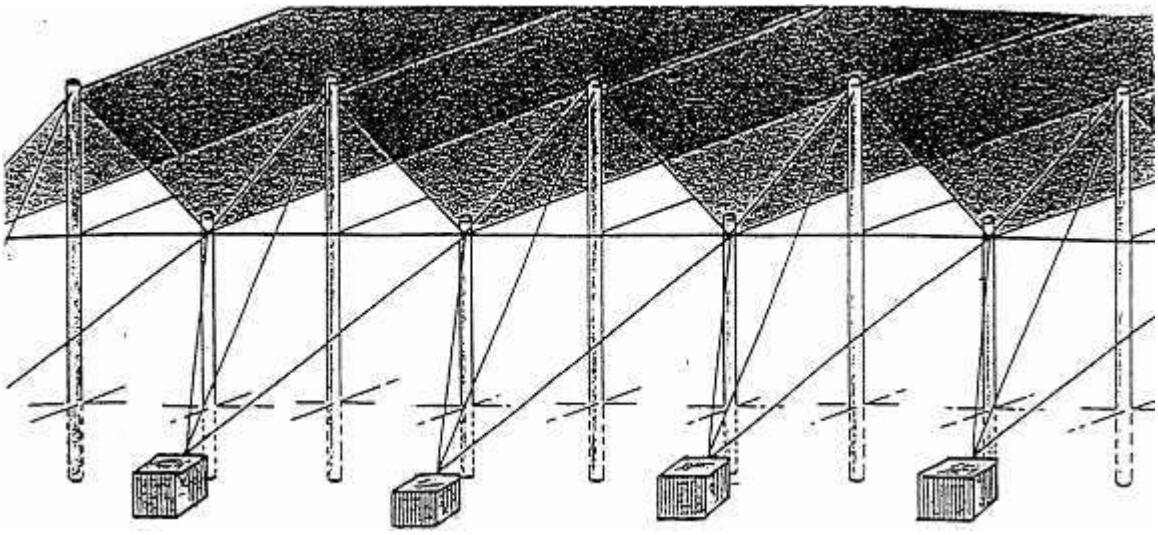
The shorter poles are only being used on the outside.

Spacing of the longer poles (4.2 m) in the length is determined by the weight (due to percentage) of the shadecloth that is going to be used.

If lighter, low percentage shadecloth will be used, the poles can be spaced up to 12 m from each other.

For heavier, high percentage shadecloth the spacing should not exceed 5 m.

Anchor and tension all outer border poles. Fasten and tension all top, valley, slope support and valley support wires as illustrated.



Attachment of the Shadecloth

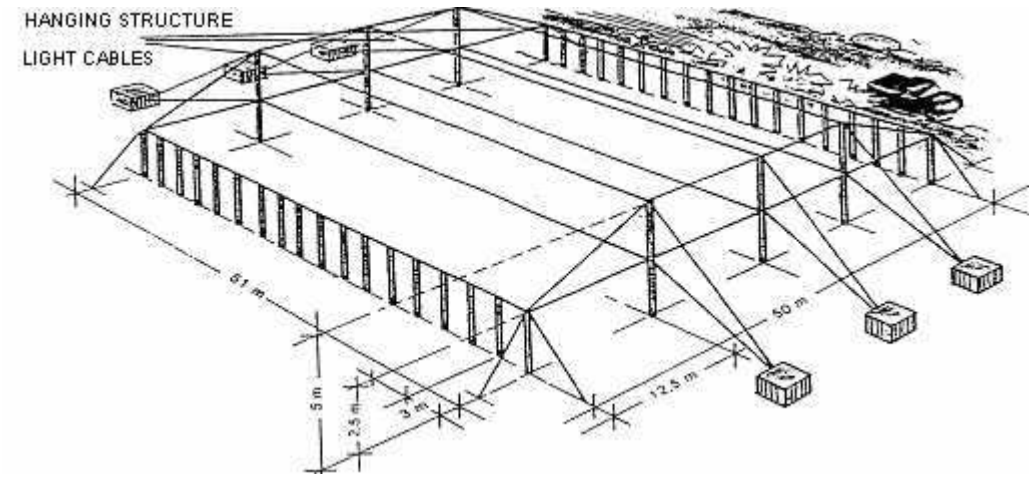
After the shadecloth has been tacked with side wires as described already, each roll is lifted into position and the side wires are attached to the end poles. Fasten the one end of the cloth to the support wire, stretch the shadecloth and sew the over end.

On a pinnacle roof structure, the side wires are not tied tightly together, but they are coupled by 100 mm gutter forming clips (made from 2.25 mm high tension wire). This gutter will allow hail, in particular, and other debris to fall through the roof before their weight can damage the shadecloth. Tie the side wires and valley support wires together where they overlap.

How to Erect a Hanging Type Structure

Layout of Poles

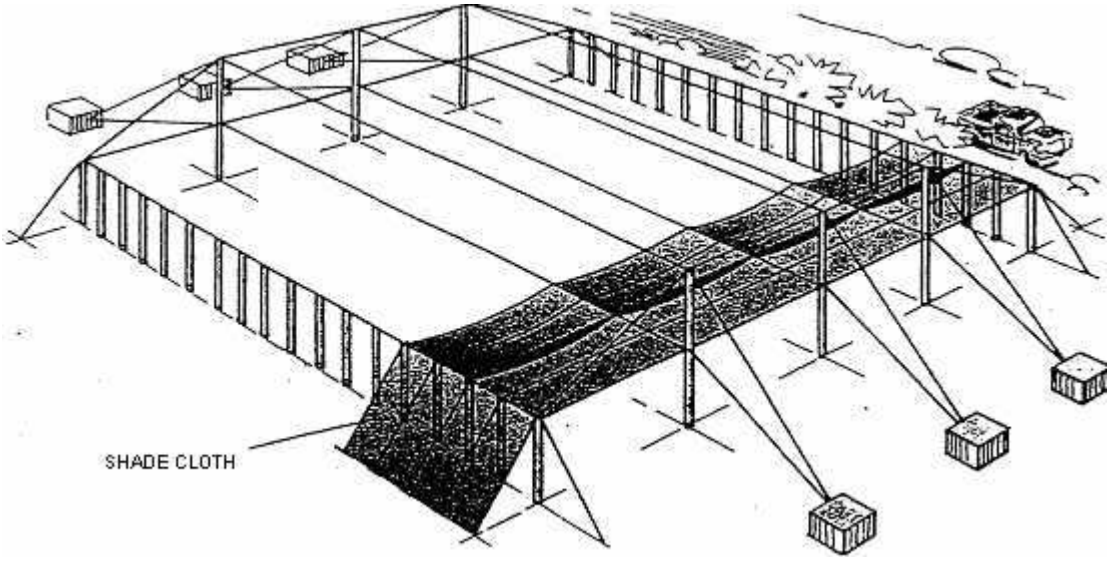
Use 3.2 metre poles, planted to a depth of 60 mm. Plant two rows of poles, 50 metre from each other. Each row consists of 18 poles at centre to centre intervals of 3 metre. Now prepare 6 x 6 m poles by attaching 12 mm pulling bolts through holes that have been drilled at positions which will be 5 m and 2.5 m above the ground surface. Plant these poles - three at each side of the square area - to a maximum depth of 1 m and at centre to centre intervals of 12.5 m. Tension and anchor these 6 m poles very sturdy with two supports each, which have been tied around the poles just above each of the pulling bolts. Now string 5 mm wire rope between the pulling bolts against the 2.5 mm level and, preferably, stronger cable (6 mm) between the pulling bolts at the top (5 m) level.



Tension and anchor the two rows with shorter poles by stringing a wire across the length of each row, over the top ends of the poles. Alternatively, you can also nail split poles over the top ends.

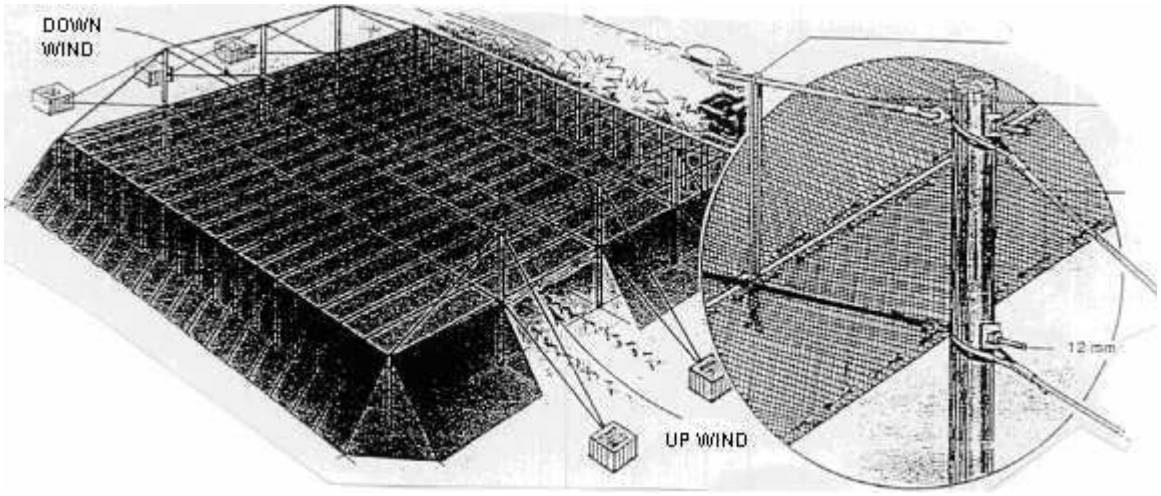
Attaching the Shadecloth

Tack the shadecloth with side wire as described earlier and lift each roll into position on the cross wire above the short poles. Fasten the side wires and sew the shadecloth on the one end. Now unroll the cloth over the lower cross wires between the high poles. Fasten and string the side wires, stretch the shadecloth and sew the opposite end as described for other structures. Attach baling twine to the upper cross wires, and let it hang down on both sides of the lower cross wires through the gaps between the shadecloth strips. Clip of tie the side wires together at intervals of about 500 mm.



Lifting and Stabilising the Roof

To get the desired 'dome' effect, start at the central point of the structure by lifting the centre of the roof with the vertical tension wires. Tie the roof into position, as shown in the illustration. Now lift the central points of the roof on both sides of the other two pairs of cross cables. Return to the centre cross wire and tighten the tension wires to the left and the right of the centre wire. Next, tighten the corresponding tension wires on the two outer cable pairs, and repeat the process until you reach the sides of the shadehouse and all the tension wires have been tightened.



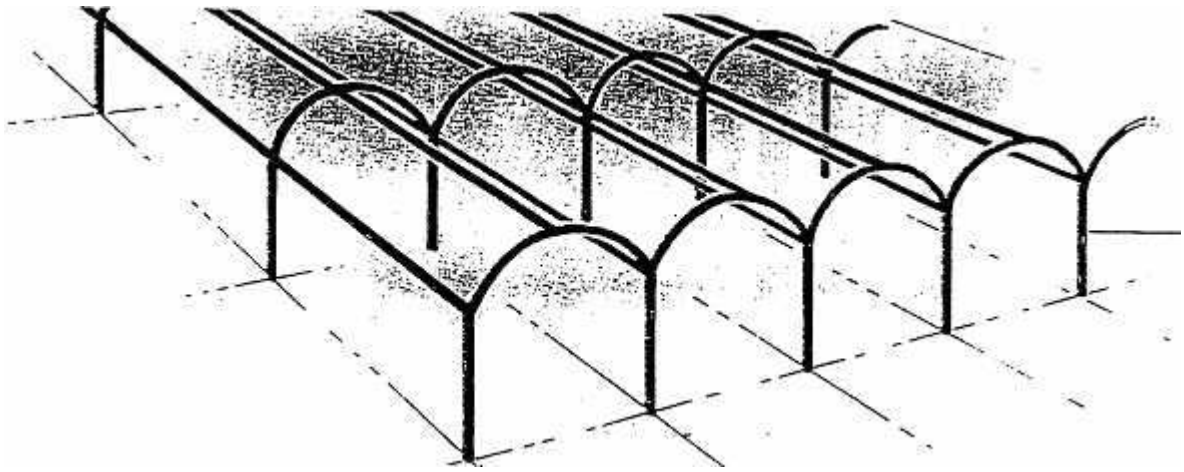
The upward deflection of the tension wires stabilises it against the upward force of the wind, while the tension in the upper lifting cable stabilises it against the downward force of the wind. As a general rule, when you erect hanging type structures that are smaller or larger than the one illustrated, you can work by assuming that the distance between the upper and lower lifting cables is 5% of the width of the tensioning width. In the illustration, the tensioning width is 51 m, and the distance between the upper and lower cables is 2.5 metre (= 5% ca.).

Ideally spoken, all four sides should be shut off - as described already.

Multispan Structures

As they are being manufactured from galvanised pipe, multispan structures are somewhat more expensive than the other structures that have been discussed so far. But they offer the advantages of long life and durability. Apart from that, they can be erected on virtually any surface. they do not need any anchoring and therefore take up less space. The semi round roof design with gaps between the tension widths, offer an effective hail run-off, and their modular design makes them easy to extend.

Multispan structures are manufactured mainly by specialist companies that supply their product in a DIY form, or they will secure a contract to do the complete job, which includes the supplying and erection of the structure and the network.



Wind Buffers

Why install a wind buffer?

Erecting wind buffers offers several advantages. The main goal is to reduce physical damage such as wind devastation, broken twigs and fruit and blossom loss to crops. Wind buffers also reduce evaporation, which aids more effective usage of water. It increases soil temperature, which means that yields ripen sooner. It also promotes pollination and increases the efficiency of micro sprayers and other forms of irrigation. In some cases, it can help maintaining sufficient moist levels to prevent overnight ripe.

Contrary to natural wind buffers, ALNET wind buffers are erected quickly, save potentially productive soil and do not compete with your crops for plant food and fertilisers. ALNET wind buffers do not host harmful insects or bacteria. They can also be

erected in any composition which will cause the least amount of inconvenience to the usage and movement of tractors and implements.

How to Erect a Wind Buffer

Position

The best results are obtained when a wind buffer is positioned as close as possible to a 90 degree angle to the direction of the current wind. Generally spoken, a wind buffer which has been placed in such position, will protect a horizontal area 10 - 15 times the height of the wind buffer. Remember to add a few metres on both ends of the wind buffer to make provision for quicker flow of air, or tilting, which usually occurs at the ends.

Tensioning

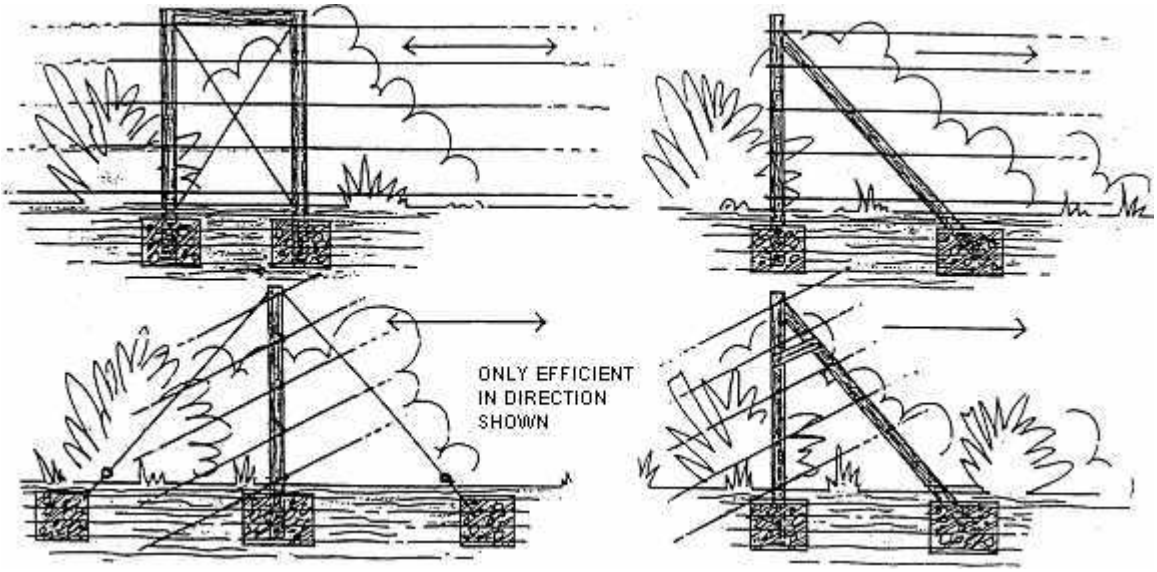
Different variables - topography, wind direction, nature of the soil, height of the wind buffer, work space required - will influence your choice of a tensioning system. The structural stability of the wind buffer is only as good as the tensioning that is being used and the higher the wind buffer, the more critical the strength of the tensioning. It does not matter how well you have planted the poles; they alone are not sufficient to control the considerable force of an average wind..

Spacing of Poles

As a general rule, the maximum surface area of material between poles should not exceed 60 m^2 for 55% shadecloth. In very windy areas, or any place where a height of 6 m will be exceeded, the space between the poles must be reduced accordingly. It is worth the effort to remember that lower wind buffers are easier to erect and to maintain. They are therefore more practical despite the smaller spacing that are required between the wind buffers.

Anchors and Supports

The following illustrations show some of the anchors and supports that are used commonly:



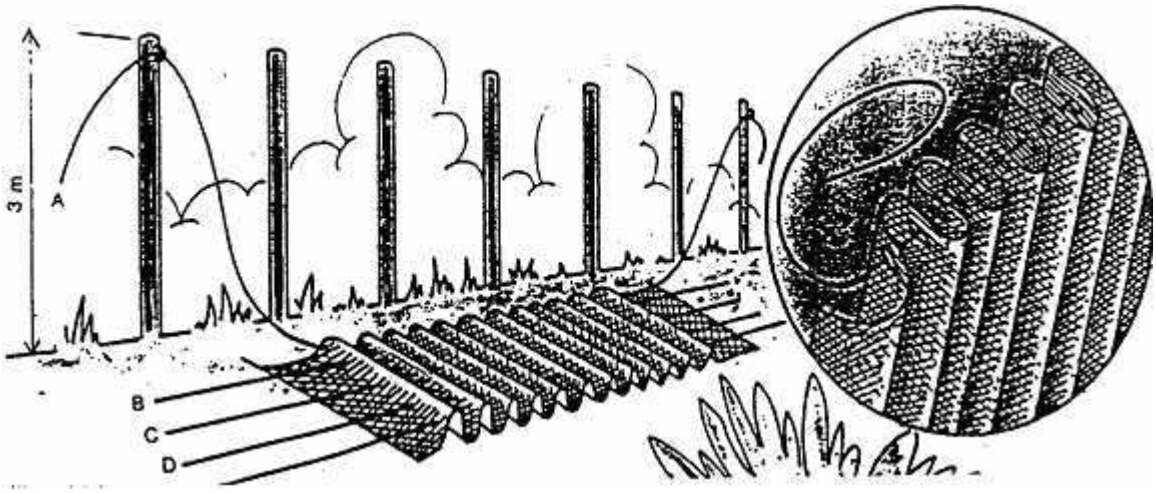
Erection of the Wind Buffer

Please note that the example that follows, is based on a wind buffer with a length of 30 m and a height of 3 m. The same basic method will nevertheless apply to higher structures.

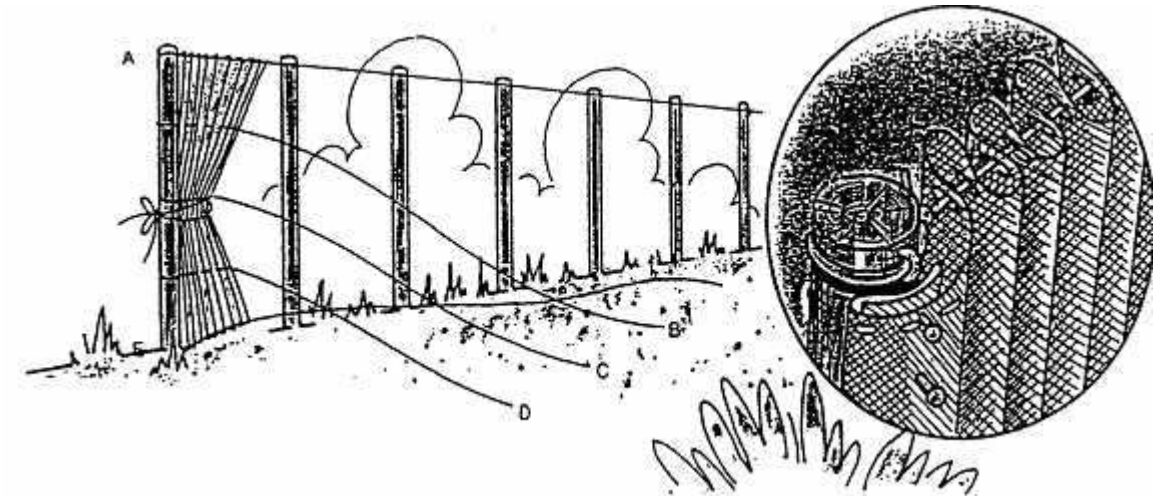
Before planting the poles, drill holes and cut notches to tighten the tension cables well. If the poles are extremely rough or treated with creosote, you should cover the sides of those that will get in contact with the shadecloth with narrow strips of old PVC water pipe. This will minimalise scraping or harmful chemical reactions. Now plant the poles and tighten them well.

The wind buffer material has rows of lace holes along its length. Five lengths of high tension steel wire are tacked through the lace holes along its length. Use only one of the two middle rows. In order to leave a piece of material available to attach to the first and the last poles, only start the tacking at the fifth lace hole and stop at the fifth hole from the end. When all five wires

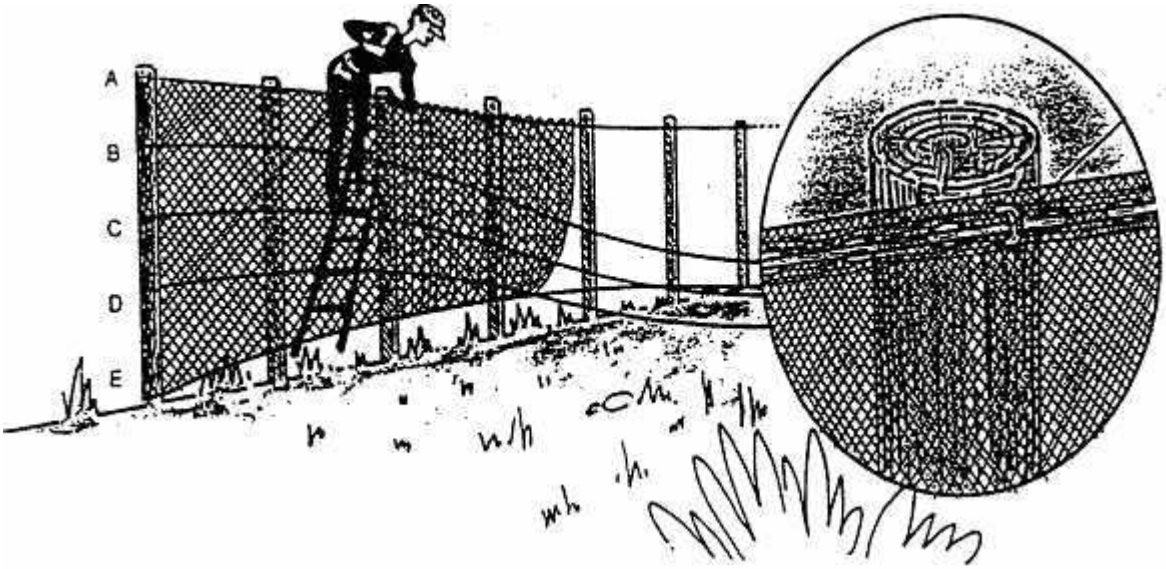
have been tacked, tie wire 'A' at the top end (93 m) of the first pole and attach the other end of this wire forcefully to the upper end of the last pole.



Now pull tight wire 'A", which will lift the material and cause it to hang like a curtain. Pull the material in and tie it loosely to the first pole to prevent it from shifting along the wire. Measure off 3 m from wire 'A' and attach wire "e" to the first pole, after which you may also attach wires 'B', 'C' and 'D' to the pole. Now fold the loose part of the untacked material a few times and nail it to the pole from top to bottom, by using an old PVC water pipe and nails with big heads. If steel poles are being used, wind it around the pole, fold the net double and sew it back on the pole.



Move your ladder to the upper end of the second pole and shift the material along wire 'A' until the upper end is tight. Place the wire position 3 m above ground level and staple the wire and material to the pole. Work over the upper end of the pole from the back for more comfort. Repeat it, pole after pole, and take in any slackness that may appear.

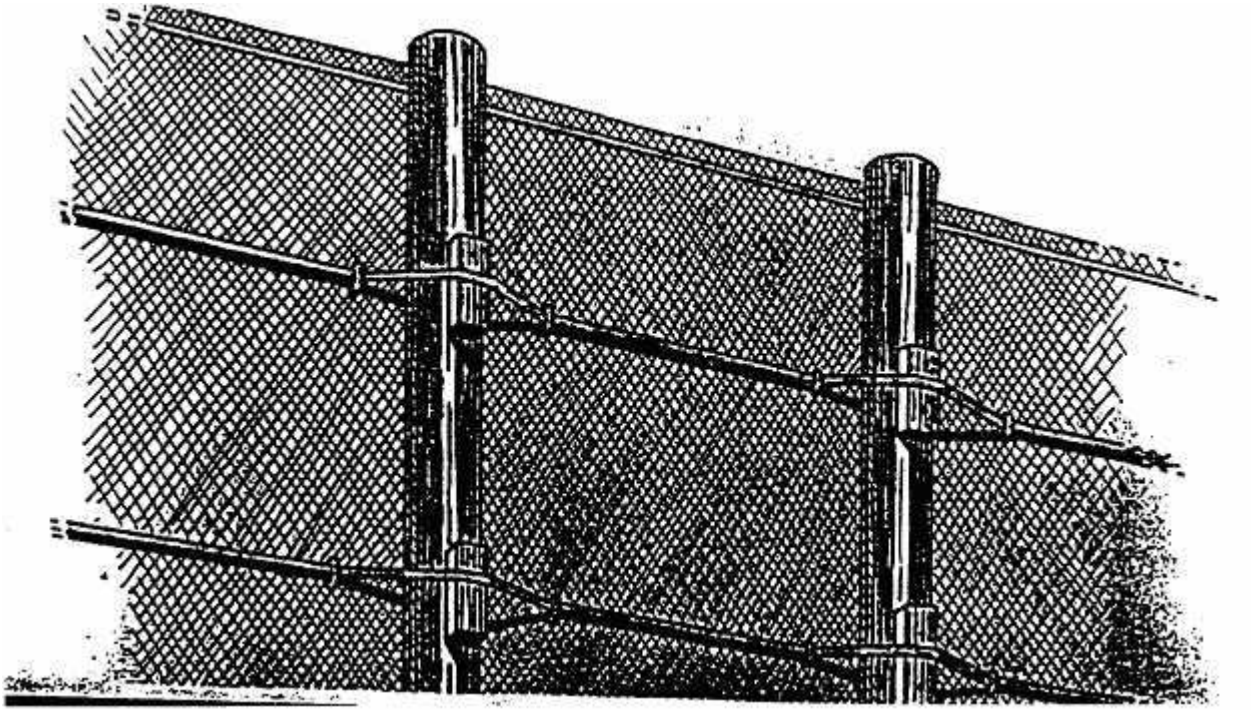


When wire 'A' has been attached completely, put wire 'E' through a sturdy force that has been nailed 3 m below wire 'A' on the last pole. Pull it tight, but do not attach. Wire 'E' will tend to bend upwards, as shown in the illustration. Move to the second pole and tighten the material while wire 'E' is being pulled to the side position 3 m below wire 'A'. Staple wire 'E' with the material to the pole and repeat the process, pole after pole. Take in the slackness that may appear every time when the arch is pulled down. Now tighten wires 'B', 'C' and 'D' and staple them alternately to each pole.

Fold the loose, untacked part of the material at the end of the roll around the last pole and nail or sew in place, as described earlier (depending on what poles - wooden or steel - are going to be used).

The basic wind buffer is now complete, except that, if the design needs tensioning on the side to which the material has been attached, it should be done now.

To prevent the material from moving forth and backwards in the wind - which will eventually cause the tacked wires to break where they have been attached to the poles - additional wires should be stringed parallel to wires 'B', 'C' and 'D', but in between the two sets of parallel wires. This space can be increased by nailing wooden blocks to the poles. Roughly divide the distance between the poles by three, and tie the parallel wires together at these points. This will stabilise the swelling effect.



Millennium Hailnet

"The best hailnet ever"

"From all the nets that have been evaluated so far, the Millennium net from Alnet offers undoubtedly the best protection for the tested hail grain diameters". This is the opinion of the Department of Agriculture and Food Engineering, University of Pretoria (September 2000).

An improved hailnet for the agricultural market, where the protection ability and test results were excellent during the evaluation by the University of Pretoria, has now been announced by Alnet. The new hailnet performed the best by allowing to pass the lowest percentage of hail grains, as well as the lowest percentage of hail grains with harmful consequences.

According to the University of Pretoria, 10% hail (for example) that causes damage and passes through the net, does not necessarily result in a 10% yield loss. The real damage could be less or even more and are determined by factors such as:

- At what stage of fruit forming the hailstorm takes place.
- How long the hailstorm lasts.
- How much the fruit have been damaged.
- How much extra protection the foliage offered.

Advantages

The new Alnet hailnet for agriculture has the following advantages:

- Protects fruit and vegetables.
- Prevents intrusion of certain birds and insects, due to newly designed bird flaps.
- Farmers who use this net, can negotiate lower insurance premiums.

TABLE 1
Summary results for all the different nets that have been tested for the percentage hail that passed through

Diameter of hail grains (mm)	Percentage hail allowed through net										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
3	63	51	48	49.5	44.5	38.5	66.5	49.5	64.5	74.5	34
4	60	49	42	45.5	36.5	33.5	62	43.5	63.5	72.5	28
5	52.5	41	34.5	37.5	38.5	25.5	52.5	30.5	52.5	68.5	17
6	45.5	21.5	12.5	21.5	12	10	36.5	13.5	36.5	65.5	3.5
8	14.5	0.5	1	0.5	0.5	0.5	1	0	3.5	57	0
Gem.	**47.1**	**32.6**	**27.6**	**30.9**	**26.4**	**21.6**	**43.7**	**27.4**	**44.1**	**67.6**	**16.5**

K = New Alnet hailnet

TABLE 2
Summary results for all the different nets that have been tested for the percentage hail that passed through with damaging results
(nets tightened)

Diameter of hail grains (mm)	Percentage hail allowed through net										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
3	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
4	14	13	10	12.5	7	4.5	24.5	4.5	17.5	21	7.5
5	16	20	19	15.5	18.5	11.5	26.5	11.5	25	30	8
8	23.5	9.5	6	9.5	8	5.5	20.5	5.5	19	23	2
8	9	0	0	0	0	0	0	0	1	39	0
Gem.	**12.7**	**8.6**	**7.1**	**7.6**	**6.8**	**4.4**	**14.4**	**4.4**	**12.6**	**22.7**	**3.6**

K = New Alnet hailnet

Description

The net has the following characteristics:

- **Raw material:** It is manufactured from high density polyethylene that prevents the net from rotting or absorbing water.
- **Construction:** It is knitted and specially sewn to prevent it from fraying.
- **Colour:** The net is white which will let more light through and the plant will therefore grow better. A crystal colour is also manufactured for certain grape varieties.
- **Width:** 3.5 m and 3.2 m (standard widths)
- **Length:** 50 m or according to specification.
- **Pulling cords:** The net has 2 pulling cords inside a specially reinforced tacking tunnel which speeds up the tacking of the support wire and therefore reduces time and costs.
- **Bird Flap:** It has 2 bird flaps (one on each side of the net) which is 150 mm wide each, measured from the pulling cord.
- **Consistency:** It has a fixed construction to ensure that the net stays consistent and shrink as little as possible.
- **Guarantee:** Reinforced strip in the middle of the net which prolongs the lifespan of the net by providing extra protection against friction on the support wire in case of strong wind. It has a minimum guarantee of 8 years against sun damage.

Millennium Hailnet is manufactured in 3.2 m and 3.5 m breadths, white or transparent material, with or without bird flaps on both sides of the tacking cord.

The net is manufactured with a centre reinforcement that rests on the upper cable (pitch).

The net is supplied with a channel on each side in which the pulling cord is placed. The pulling cord is used to pull the support

wires through the channel.

When ready to erect the net, lie it flat on the ground in a tube form at the end of the row.

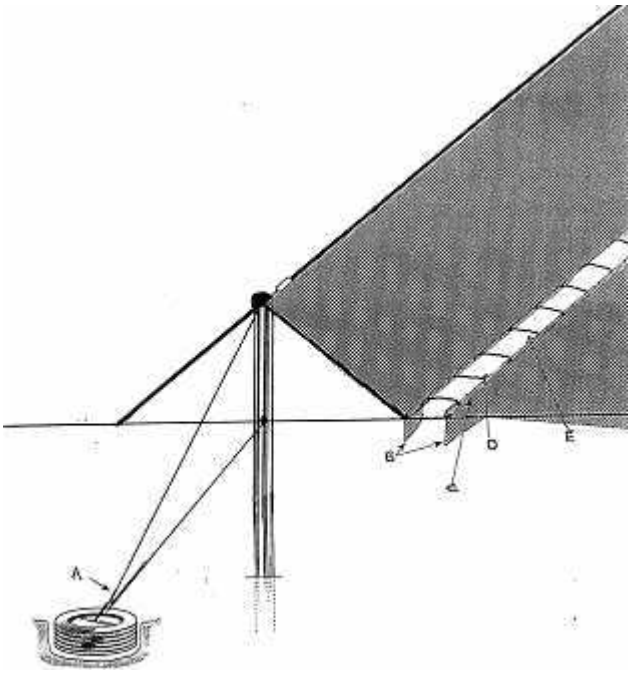
Now pull the net, which is still bundled over the middle poles, which has already been covered with a soft protection, e.g. shadenet. Long, thin poles can be used to conduct the net over the carrying cables until in position. Make sure that the long, thin poles that are used, as described above, are also covered with a soft protection on their ends.

Fasten a 2.25 mm steel wire to the pulling cord and pull it slowly through the little channel. This steel wire is now tied at the ends to a cable.

The net can now be tightened at each end. As soon as the net is fastened and tightened, the steel wires, which have been tacked through the little channel, can be attached to each other with wire hooks with + 20 kg breakforce. The wires are stapled to each other every metre. If the hail falls now, it will bend the hooks open so that the hail will fall through without causing damage to the construction.

Typical Example of Valley with Pulling Cord Attachment

A - Anchor cable
B - Bird flaps
C - Pulling cord channel with steel wire inside
D - 20 kg breakforce wire hook
E - Metre between hooks



Typical Example of a Construction: Orchard of Fruit Trees Covered with Hailnet

A - Carrying cable
B - Treated eucalyptus poles – Spacing between 3 and 3.5 m
C - Anchor cables
D - Cable
E - Cable
F - Plastic cap or shadenet cushion on top of pole
G - U bolt