

VINE NETS AUSTRALIA

Bird Netting Specialists

Specifications and User Information



Everything you need
to know about
Bird Netting

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Why have a manual on bird netting?

Vine Nets Australia is a privately owned company, distributing throughout Australia, and specialises in providing the highest possible standard of netting and service to the viticulture industry. With many years experience with netting and meeting customer's needs, the management has become increasingly concerned over the lack of information in the marketplace and the vulnerability of some people who place their trust in netting suppliers to guide them in recommending the product most suitable to their requirements.

Netting has many confusing characteristics that are not easily measured or understood, and it is apparent that some growers and some suppliers can have difficulty in understanding these characteristics.

Consequently, to assist growers in purchasing vine nets, and to ensure they receive the correct product for their needs, Vine Nets Australia has produced this manual to help answer some of the most common questions.

From estimating, purchasing and installation to storage, this manual endeavors to answer those questions. If you have experience with netting, there will be old ground revisited and if you are new to the netting game, it will give you some of the knowledge required to assist in making the important choices.

Bird netting is an important investment, which may yield great returns if correct decisions are made initially.

We hope you find this manual beneficial and will appreciate any feedback you may wish to offer.

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If you require further assistance please call one of our friendly staff on 1800 677 757 or email sales@vinenets.com.au

Yours sincerely,

Brent Ettridge

Managing Director

Chapter 1

Specifications of netting

Why choose netting over other bird protection devices?

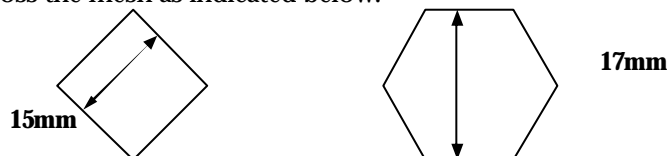
There have been many bird scaring devices developed over the years. From audible scarers, rotating mirrors to gas guns. All of these can be effective in some circumstances, but general opinion seems to be that the physical barrier of netting is the surest way to keep birds off valuable crops.

How is bird netting measured?

The common specifications used to describe vine netting are mesh size (hole size), weight (grams per sq mtr), length and width.

What mesh size is most suitable?

Bird netting is available with diamond or hexagonal shaped meshes (or holes). For diamond shape netting, the “mesh size” is measured along the length of one side of the diamond and expressed in millimetres when fully expanded. Hexagonal mesh is measured across the mesh as indicated below.



Experience has shown that a 15mm x 15mm diamond mesh, or 17mm hexagonal mesh is small enough to prevent silvereyes and all other birds from getting into the vines. While nets with larger meshes are generally cheaper and will be effective on starlings, parrots or crows, smaller birds may be able to push through. Any smaller than 15mm will be of very limited benefit.

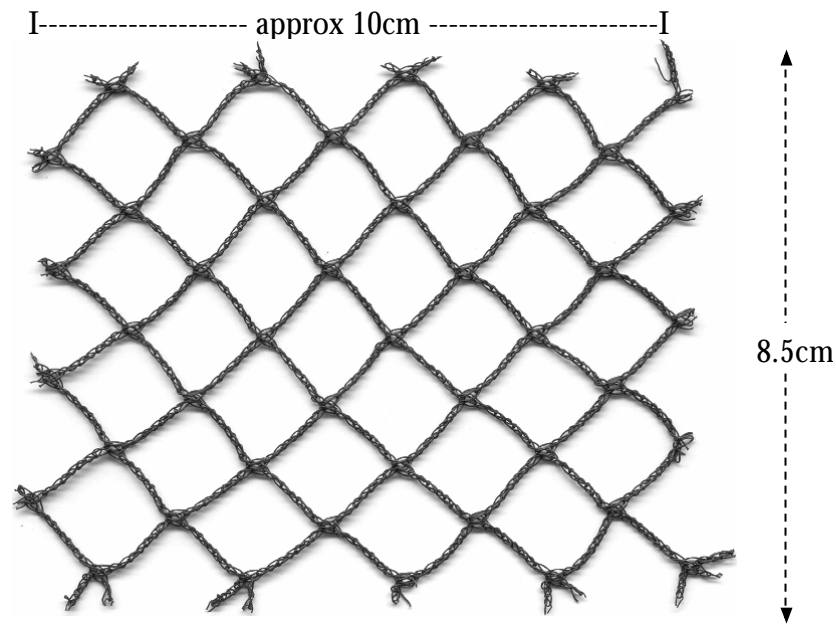
What does “weight of the net” mean?

Weight of net is normally expressed in “grams per square metre” when **expanded**, see diagram page 3. It is now widely accepted that the weight of netting is directly related to the strength and durability. Consequently, a heavier stronger net is generally more expensive than lighter varieties.

Net material is quite different to any other material in that the square meterage varies greatly when stretched in different directions. The diagrams overleaf represent the same piece of netting shown in the expanded and stretched configurations.

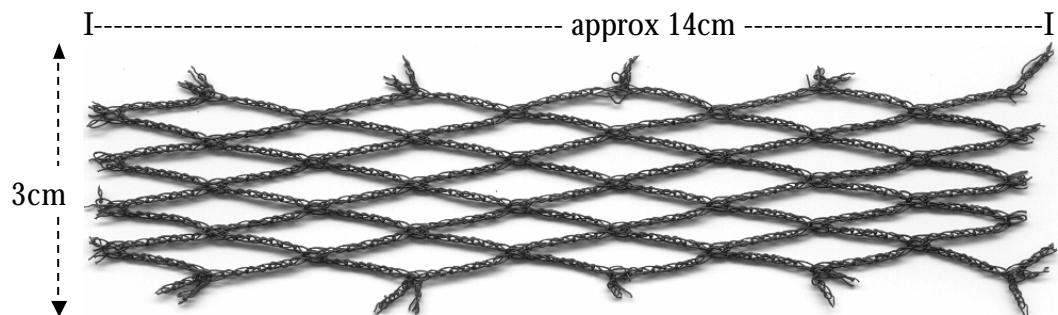
Expanded configuration

This is the configuration of the net when opened out to its quoted width. When prices or weights are quoted in cents, or grams per square metre, they should refer to the area of the net when **expanded** as per the diagram below. This sample is approx 10cm wide x 8.5cm deep, i.e. **85 sq cm**



Stretched Configuration (same piece)

This is generally the shape of the netting after production, when packed in compressed bales. Also, netting wound onto spindles or spools under tension by a net application machine will take this shape. While the length in this configuration is approx 40% longer than when expanded, the width is much narrower. Stretched, the sample above is approx 14cm wide x 3cm deep, i.e. **42 sq cm** (approx half the area as expanded).



Using the sample in the diagrams on the previous page, it can be demonstrated how two different weights may be quoted for the same piece of net in either expanded or stretched configuration:

If this sample weighs 4.5 grams:-

Expanded, divide 4.5 grams by 8.5 sq cm = **.529 grams per sq cm**

Stretched, divide 4.5 grams by 4.2 sq cm = **1.07 grams per sq cm**

From this example, it can be seen that it would be possible to quote the heavier weight to make the product appear stronger. Consequently, growers should ensure that any measurements quoted for price or weight is calculated in the **expanded** form. Failure to do so could result in either paying too much, or receiving a net far lighter than anticipated.

Recommendation

To ensure you receive the correct weight of netting, we recommend you ask for the following information to be included in all quotations and labeling of vine nets:

- **Width (metres) expanded**
- **Length (metres) after net is expanded to quoted width**
- **Weight (kg) per bale or roll**

Example:

13m x 100m Net size

60kg Bale weight

From this information you can calculate the **true weight** of the netting, in *grams per square metre* as follows:

1. **Multiply the width x length to calculate the square metres.**
2. **Divide the bale or roll weight by the square metres (for kg per square metre)**
3. **Multiply the result x 1000 (for the grams per square metre)**

Example:

1. **13m x 100m = 1300 square mtrs**
2. **60kg divided by 1300 = .0462kg**
3. **.0462kg x 1000 = 46.2 grams per square metre**

Calculating the weight of your netting:

The following is included to assist you in calculating the true weight of your netting.

Length x width - mtrs x mtrs = sq mtrs

Bale weight Kgs divided by sq mtrs = kgs

..... kg x 1000 = grams per square metre

Note:

Some suppliers may provide independent test results containing the grams per square metre weight of their products. As there is no specific "Australian Standard" in place relating to the testing of net material, we recommend that these results be treated with extreme caution and the method above be adopted to calculate **the true weight** of the vine nets.

How long should nets last?

Physical damage to nets is primarily caused through chafing, snagging and tearing. Chafing can occur on post tops or any other rough surface, which the net may contact. Movement by wind will increase the chance of chafing and this damage can be minimized by the use of post caps. These are available as a specially designed plastic cap that can be quite expensive, or may be substituted with simple alternatives such as cut-down aluminium cans, plastic bottles, or very small seedling pots.

Snagging will occur while the nets are on the vines and if these snags are not identified and released prior to removal of the nets, tearing may result. The degree of resistance to chafing, snagging and tearing increases with the weight of the net and should be carefully considered before purchasing lightweight nets.

UV protection

Ultra Violet could well be considered your nets' worst enemy. Most nets are produced from polyethylene and without being treated for UV, complete breakdown may occur in a matter of weeks. There are many UV additives available, all of which may be added to the production process at various percentages. The danger for growers is that it is almost impossible to determine the type and percentage of UV additives in netting, without scientific analysis. A net with very little, or a low grade UV additive can look identical to a net fully treated with the best available product, but would have a fraction of the life expectancy. The UV treatment forms a significant portion of the cost of production, so extreme caution should be exercised if unusually cheap nets are offered. Many growers will endorse the saying "you get exactly what you pay for."

Suppliers selling high quality products should offer a significant UV warranty. Dealing with reputable suppliers should ensure that the chances of a problem are extremely minimal.

Storage of nets is also important to maximize the life. This is covered in Chapter Six of this manual.

If nets are stored and treated with care, the life should range from five to more than fifteen years, depending on the grade of net.



What is the best colour net to use?

There is little documented evidence to suggest that the colour of the nets will affect the ripening period or quality of the grapes. Historically, mainly white nets have been used, as manufacturers were reluctant to produce black because of the soiling of the machinery during production, by the black pigment. Advancements in this area have resulted in black nets becoming more widely available. An added advantage is that the carbon black additive used is a natural UV inhibitor adding to the UV resistance of the nets. Demand for both black and white appear to be equal, where both are offered. Any preference is usually based on aesthetics. Black nets tend to blend in with the vines whereas white is quite conspicuous. This allows for the natural beauty of the vineyard to be retained whilst still allowing for bird protection. It is also worth considering that black will remain black and white may tend to soil over time.



Estimating net sizes

What width do I require?

The first consideration to determine the dimensions of your netting is to decide how many rows to cover with each net. There are basically three methods of netting your vineyard.

Single, multi-row coverage or continuous canopy cover

Single row coverage is generally achieved using netting between 5 and 7 metres wide. It is simply laid across the row, and drapes to the ground on each side, with sufficient excess to prevent birds burrowing under. In some cases the edges of the net are joined together under the canopy to completely wrap the vines. This method is relatively easy to apply with minimal labour cost, but results in using a considerably large amount of net per hectare. If birds do enter, they are restricted to one row.

Multi-row is when two or more rows are covered by one width of netting. The actual width of the net required depends on variables such as row width, canopy height and application method (manual or mechanical). A common combination is 13mtr wide netting over two rows spaced around three metres apart. The more rows covered, the less the cost of net per hectare but generally higher labour costs result, as it becomes difficult to expand the net to the required width. Also if birds get into the vines, they have access to a larger area of fruit. This is the same for the continuous canopy method below.

Continuous canopy cover is the term used when a large number of rows, or an entire block is covered by joining several widths of netting together as they are applied, then taking the net to the ground on all sides of the block. This requires the least amount of netting, but is quite labour intensive. The large flat area exposed to wind can lead to problems with lifting and movement, ultimately damaging the nets. As with multi-row cover, any birds that manage to get inside the canopy have access to the entire block.

So what size for me? There are other considerations when deciding on width:

- Wider net means the bales are heavier and manual handling can become a problem.
- Do the vines have a high canopy? The net will need to be wide enough to allow for growth of the canopy over the years.
- Having excess net on the ground also makes the nets more effective in stopping the birds getting under the nets.

Your vine nets supplier should be able to assist with deciding which would be the most suitable option for your vineyard.

13 metres versus 10 metre net over two rows.

As discussed previously, when bird protection netting is manufactured, packaged or wound on a net deployment machine under tension, it is stretched into a “lengthways” configuration. For example, a bale of 13mtr wide x 100mtr netting when unpacked, or unwound from a machine would be approx 140mtrs long by approx 4mtrs wide. As the netting is taken out to its specified width (eg, 13mtr), the length would reduce to 100mtrs. If only 10 metres of coverage is required from this 13mtr netting, then the length achieved should be around 120mtrs.

Where machinery is used, some difficulties may be experienced during application due to the machinery trying to stretch the net lengthways, resulting in insufficient width. For manual application, 10mtr wide netting has historically been used to cover two rows with a spacing up to 3.5mtrs, but it is now recognised that 13mtr wide netting is far more suitable. It was first thought that this was extravagant and costly, but history has proven quite the opposite. Growers are now finding that approx 25% extra length can be achieved from the same length of netting, using 13mtr. This is due to the fact that the 13mtr net does not have to be fully stretched in width to achieve the desired coverage.

Using 10mtr netting, the full width of the netting would need to be used to ensure adequate coverage to the ground. Obviously some length will be lost due to undulations along the canopy caused by a degree of slackness during application. Consequently, an effective coverage along the row of around 85 to 90mtrs could be expected from a 100-mtr bale. In the same example, 13mtr should achieve an effective coverage along the row, generally 105 to 110mtrs, some 25% more than 10mtr nets.

Obviously, every case will be different, depending on the row width, canopy height and degree of net slackness during deployment. Given all of these variables however, it is generally accepted that 13mtr wide netting in a two-row application results in the same cost per hectare as 10mtr. The application, however, is much quicker and easier using less labour and providing a far more “bird proof” coverage to the ground.

What length do I require?

While nets are normally sold in standard lengths, some suppliers will provide any length required.

It is generally recommended to use the same length throughout the vineyard to simplify application and storage. The alternative is to cut specific lengths for specific rows, however this can create problems if the net is applied under different tension in subsequent seasons.

By purchasing all lengths the same, you will be able to use any net on any row, joining the nets together by overlapping approximately two metres. The one disadvantage with this method is the need to allow an extra amount of net at each end to do a 'U' turn and go back down the next row as in the photo below. The extra required for these turns is determined by the row spacings. Your supplier will assist with this estimation. This is now, the most widely adopted method of application. While at first appearing to be wasteful, if the nets were cut, an allowance for extra length would need to be made to ensure adequate coverage during future applications.



The weight (or grade) of netting also tends to dictate the length of nets used. Generally speaking, the longer the better, as less joins and handling are involved. However, weight must be considered for handling and safety.

Chapter
3

Purchasing nets

How can I be sure I'll get what I pay for?

As previously mentioned there is no governing body or industry standard for suppliers of vine netting.

There are many reputable suppliers of vine nets, and a good indication of their reputation is word of mouth. Try to locate a supplier who specialises in vine nets and ask for contacts that could provide references for their product.

All good suppliers should make available the following information both before purchase and on delivery of the nets:

- **Width (metres) expanded**
- **Length (metres) after net is expanded to quoted width**
- **Weight (kg) per bale or roll**

Estimating cost of nets

Suppliers of vine nets generally offer a free estimation service. As there are many variables in each particular situation, it is difficult to accurately estimate quantities. For example, if it is estimated that 50bales x 100mtr are required, this could fall short by 250mtrs if just 5% length is lost due to incorrect application.

When comparing quotes to cover a particular area, be sure that the square metres of netting are the same in all quotes. Many quotes have been accepted based on total price for a particular area, only to discover that insufficient coverage has been allowed for by the cheapest quote. It is advisable to compare your quotes on the basis of price per square metre, and accept that there may be discrepancies in the estimation of the total amount of net required. Some suppliers will offer to accept the return of any unused product. This allows you the option of ensuring you order enough to complete the job.

Suppliers should welcome the opportunity to estimate your requirements, but if you would like to attempt this yourself, use the guide below:

- Total length of rows to be covered in metres**
- Divide by the number of rows to be covered by each net**
- Add approx 15mtrs for each turn required**
-

Example for 4000mtrs vines using a two-row coverage with 9 turns:

4000 linear metres of vines divided by two-row coverage = 2000 mtrs

9 turns x 15 mtrs per turn 135 mtrs

Net required 2135 mtrs

The price of net is normally quoted in cents per square metre in the **expanded form**.

Therefore to calculate an **approximate cost** for your budgeting requirements simply calculate the length of netting x width required x cents per square metre.

An example would be 2135 metres of double row vines using 13 metre wide net.

$2135 \times 13 \times .32\text{cents} = \8881.60 plus gst. (Estimate).

NB This is an estimate only. Also 13 metre wide nets will generally cover 110 mtrs per 100mtr bale when used to cover two rows, resulting in approx 10% less net being required.

Delivery

As nets are quite bulky, delivery costs can be substantial. Make sure you clarify whether delivery is included in any quotes you receive.

As netting is seasonal, it is a good idea to forward plan your requirements and order early to avoid any stock shortages later in the year.

Specialist net suppliers hold considerable stocks of common sizes in reserve. If, however, you require unusual specifications, allow plenty of time for the nets to be produced, as most are made overseas. Check with your supplier as to whether they have good stocks available and can guarantee a delivery date of your choice.



Vine Nets Australia Warehouse No 2

Chapter

4

Application of vine nets

What is the best way to apply the nets?

Nets can be applied using a variety of methods. These can range from a simple hoop setup on the back of a tractor, to more sophisticated machinery available solely for net application and removal. Net deployment contractors are located in most areas.

As mentioned earlier, it is essential that the net be **fully expanded during application**. This is vital, as it impossible to expand the net to the required width after the entire length has been wound out over the vines.

Vine nets are available in either rolls or bales. The rolls may vary from 3 or 4 metres wide up to almost 10metres. These usually need to be unrolled and then either packed into bales or wound onto the spools of application machinery prior to the first application. Bales on the other hand can be applied directly from the packaging (see photo below) and can save considerable time and money. Consider these options carefully, particularly if numerous nets are involved.



When application is carried out using a net deployment machine for two-row application, the tractor simply proceeds between the rows, with a person on the outside of each row. The net rises to a spreader bar approximately five metres above the machine. Workers on the outside of the rows stretch the net to the required width as it descends, using lines on the net as a guide. A centerline is included on most nets, to assist in centralizing the net over the vines. However this can be difficult to see, particularly where the canopy is quite high. To overcome this problem, Vine Nets Australia recently introduced two extra lines, one each side of the net to correspond with the top edge of each row.

This has proven to be extremely helpful and timesaving in achieving the correct width of the net during application.

The photo on the next page highlights the sidelines.

Equipment on the market is specifically manufactured for the purpose of applying and removing the netting. Two of the products available on the market are the NetWizz and Netmaster. Both work in a similar way.

Netting is wound onto a simple spindle in a criss-cross pattern like a ball of string.

If the netting gets caught, a sensor automatically stops the spindle, preventing tearing. The sensor automatically adjusts the spindle and winding speed to maintain a constant incoming net tension.

During application, the spindle hydraulic drive is disengaged allowing the net to unroll. A brake prevents overrun of the netting.

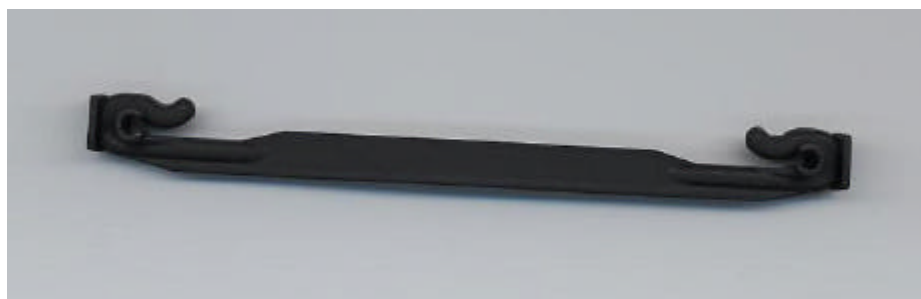
The top loop rotates and is self-locking in three positions. The mast, which is telescopic, is raised and lowered using a winch and incorporates a shear-pin system designed to break a small bolt, preventing the top loop and mast from damage.



Securing nets.

While starlings and crows tend to approach the vines from above, silvereyes and parrots tend to be more inventive and try to work their way under the edge of nets or through holes. To minimise this problem, it is preferable to have a generous excess of netting on the ground to ensure a bird proof seal. Without securing the net close to the ground, the net tends to move around in the breeze, exposing possible entry points for the birds. Once inside, they seem less concerned about leaving!

Nets can be fixed to trellis wires or drip wires using “trellis ties” or “vine ties”.



Some growers also install a wire close to the ground and feed the net under the wire to hold it in place, minimising movement caused by wind. Large surface areas of net can be severely affected by winds, so securing is important in areas subject to windy and stormy conditions.

A further option is to have excess net on the ground and overlap between the rows and either clip or just lay over each other as in the illustration below

This gives a totally bird proof seal as discussed previously.



Removal of netting

Removal of netting is the reverse of the application process. It can be done manually by reversing a tractor fitted with an elevated hoop along the rows. This can be quite arduous work, pulling the netting through the hoop and stuffing it into a wool pack. This method was quite common in the past, but has given way to the mechanised methods. The same machinery used for application is used for removal with minimal manual labour. Care needs to be taken to avoid snags and tearing and this is best achieved by having a worker on each side of the net, releasing any snags that may occur. The lighter the net, the easier it will tear so extra care needs to be taken.

Mending

Irrespective of the care taken, your nets will suffer damage from time to time. These may be mended using a small net repair needle and twine. As the size and shape of the damage will vary each time, it is impossible to describe in detail how to mend. Basically however, the main aim is to close up the hole, and providing large pieces of net are not missing, this can be achieved simply by lacing the hole. Start at one end, and thread the twine through the meshes alternating from one side of the tear to the other. It is advisable to tie the twine off after five or six meshes to prevent the hole from re-opening. Cut off any excess twine on completion.

Check if repair kits are part of the after-sales service of your supplier as they may be difficult to obtain.

Insurance

Recently, some growers have experienced significant losses of nets through severe windstorms and willy-willys. Check with your insurance brokers to see if your policy covers damage to netting (both weather and fire), as these losses can prove to be quite costly.

Storage

To guarantee the maximum life from your netting it is important to ensure that your nets are stored correctly when not in use. Unnecessary exposure to the sun, storing when wet or in areas where rats and mice may nest, will decrease the life of your nets dramatically.

Where possible follow these steps:

Ensure nets are dry before rolling up.

Store in a dry, ventilated area out of sunlight.

Store in a vermin proof area.

Many growers use second-hand sea containers to store their nets. These can be purchased in a range of conditions from a variety of suppliers, the majority of which can be found in the yellow pages.

Chapter
5

Quotation checklist

The following checklist may help you to compare the features of various brands of netting.

Supplier				
<i>Mesh Size</i>				
<i>Expanded Width</i>				
<i>Expanded Length</i>				
<i>Bale Weight</i>				
<i>Weight per sq mtr</i>				
<i>Warranty</i>				
<i>Delivery Cost</i>				
<i>Colour</i>				
<i>Rolls or Bales</i>				
<i>Centre Lines</i>				
<i>Side Lines</i>				
<i>Price per sq mtr</i>				
<i>Price per Bale</i>				

Calculating the weight of your Netting:

The following is included to assist you in calculating the true weight of your netting as explained on page 4.

Length x width - mtrs x mtrs = sq mtrs

Bale weight Kgs divided by sq mtrs = kgs

..... kg x 1000 = grams per square metre

Vine Nets Australia

Quality Bird Protection Netting

“Premium Plus & Premium Hex”

Featuring:

- Latest technology UV stabilisation
- Black white or green colour
- Prominent centre line
- Extra application lines on each side of the canopy
- Packaged to allow first application directly from the bale
- Wide variety of sizes in stock & made to order
- Lighter grade nets available
- Free delivery to most areas
- Complimentary net maintenance kit
- Free estimation and planning assistance

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Vine Nets Australia Premium Plus Black Nets

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