conservation management

'Variety is in Our Nature'

The Biodiversity and Wine Initiative

The Biodiversity & Wine Initiative (BWI) is a partnership between the South African wine industry and the conservation sector with the aim of minimising further loss of threatened natural habitat while contributing to sustainable wine production through the adoption of biodiversity guidelines. The BWI has, within the space of just under three years, acquired 101 members and six of those have been awarded champion status for demonstrating exceptional conservation land management: over 60% of the total current vineyard footprint of the Cape winelands has now been conserved – 63 262ha in all.

Paul Cluver of the De Rust estate comments that the Wines of South Africa marketing drive related to the BWI, with its highly appropriate slogan 'Variety is in Our Nature', is one of the reasons the initiative has been so successful. He points out that the variety of natural flora in the Cape Floral Kingdom is a result of the vast variety of habitat and this means that there is a vast diversity of growing 'terroir' for grapes in the area of this extraordinary floral kingdom, where many plants are endemic to restricted areas. There are so many different micro-climates and soils and this allows for the production of many fine wines that are distinctive from one another. Cluver emphasises that the wine industry has refocussed and the future of SA wines is not the mass market but is about wines that reflect their origin – a particular taste arising from a particular area.

Since its inception in 2004, the BWI initiative has received funding from the Green Trust, the Critical Ecosystems Partnership Fund, Cape Action for People and the Environment, the Botanical Society of SA, Winetech, Wines of SA and the SA Wine Industry Council. A series of Biodiversity Guidelines, serving to reduce negative impacts of farming practices on biodiversity, were adopted into the industry's Integrated Production of Wine (IPW) guidelines in August 2004, as part of the BWI initiative. Initially, the wine farm or wine co-operative joins as a "member" and thereafter the choice is made to apply for "champion" status where more stringent compliance is required, including a stewardship agreement setting aside at least 10% of the property for conservation, and a biennial audit with the possibility of IPW personnel doing random spot checks.

EM *visited four of the wine farms that have joined the BWI, as far apart as Tygerberg and Hermanus, and was introduced to some innovative thinking. It was early September when many species in the fynbos and renosterveld are in flower.*

A new champion

Backsberg Estate, which has recently achieved champion status, is on the slopes of the Simonsberg Mountains an equal distance away from Paarl, Stellenbosch and Franschhoek. The feature of the farm, in the realm of biodiversity, is a 30ha conserved area of the critically endangered veld type Swartland Alluvium Fynbos. This vegetation, which is rich in species, with many being endemic to the veld type (found nowhere else in the world), is associated with the highly desirable agricultural soils of the lowlands, hence its endangered status. Ten percent of Backsberg's land, a BWI requirement for the attainment of champion status, has been set aside for the conservation of natural ecosystems.

The application for BWI champion status involved the drafting of an Action Plan with targets for conservation management and the ability to demonstrate capacity to follow this plan. The plan was drawn up by Backsberg's environmental manager/horticulturist Meg Pittaway, who was employed as the dedicated staff member to carry out the plan, and was based on the farm's Environmental Management Plan (EMP) which was drafted by consultant Dean Ferreira of the Nature Conservation Corporation, prior to Backsberg's commitment to the BWI. BWI extension officer Joan Isham visited Backsberg to advise on the implementation of the Action Plan.

The Action Plan includes such commitments as a species checklist of the natural flora, which was initially done by Ismail Ebrahim of Custodians of Rare and Endangered Wildflowers (CREW) and is to be updated annually. Areas in which there are Red Data species, such as *Hesperantha radiata* and *Xiphotheca lanceolata*, are to be monitored regularly. Strips of natural vegetation between the vineyards are being maintained to serve as corridors between the conservation sites on the estate; and seed is to be harvested during the appropriate season for use in areas being rehabilitated to renosterveld and fynbos on the farm. It is Backsberg's intention to grow herbaceous species, such as Pelargoniums and Helichrysums from their own seed source, and trees for their alien invasive replacement programme, and support is being given by the Millennium Seedbank Project at Kirstenbosch in training staff in the wider spectrum of propagation techniques. Unidentified plant species found on site are sent to Kirstenbosch or CapeNature to ensure correct identification.

A faunal inventory is being developed for the site on fish and smaller fauna with input from CapeNature. An inventory of bird species done by the Tygerberg Bird Club is being updated annually. When an unidentifiable insect is caught, help is sought from the South African Museum or the University of Stellenbosch. Cape Nature is notified when alien species such as feral pigs are sighted on the farm.

An alien plant clearing programme is part of the Action Plan and lightly infested areas are being tackled prior to the more heavily invaded areas, with sensitive areas such as river banks and wetlands being prioritised. The woody cut material is being chipped for use as mulch on the gardens and as a fuel supply for the 'donkey geyser' which heats water for the cellars. Discussions on the removal of invasives are in progress with neighbouring farmers, as this would allow for more cost effective clearing and prevention of the spread of invasives across boundaries. Backsberg's aim is to maintain a 30m buffer zone between pristine natural areas and vineyards and other areas disturbed by agricultural activity, where there is potential nutrient runoff into the veld.

In the EMP, the property was divided into fire management zones and Ferreira advocated that the large conserved area comprising mainly Swartland Alluvium Fynbos, which has accumulated woody biomass over the years, needed to be burnt to optimise biodiversity returns in this fire adapted natural vegetation.

Ecologically important wetland areas are being demarcated and a buffer of indigenous vegetation (between 25-75m), cleared of invasive vegetation, is to be maintained around existing dams and water courses. The value of keeping riparian zones intact and rehabilitated is acknowledged in the Action Plan, as riverine vegetation not only stabilises the banks but filters pollutants and serves to maintain natural water temperature, along with contributing organic matter to support aquatic life. The need to ensure that there is enough water for a river ecosystem to function adequately – the so called "ecological reserve" – and to minimise water use through 'best practices' such as drip irrigation of crops are ongoing targets of the plan. There is a suggestion that more water should be collected and stored in winter, rather than resorting to a high level of abstraction in summer which decreases flow, concentrates pollutants and increases water temperature, affecting river health.

Another aim cited in the Action Plan is to introduce a brochure for visitors, as an aspect of a proposed information centre, with the objective of highlighting the natural, historic and scenic features of the estate. Investigation is also being done into the creation of an "eco-alert" page on Backsberg's existing website. An environmental walk for visitors focusing on the environmental efforts being made on the farm will be introduced as a function of the information centre.

Recycling of glass and plastic is ongoing on the farm and this practice includes education to minimise waste generation. Organic waste is composted and an organic vegetable garden is being established. Another innovation being investigated by Backsberg is the making

LEFT: The historical farmhouse on the Backsberg Estate.

ABOVE: *Babiana purpurea* in the conserved Swartland Alluvium Fynbos on the estate.

ABOVE CENTRE and RIGHT: *Adenandra uniflora* in a conservation area on Backsberg, with streaking on the backs of the delicate white flowers. *Adenandra* species are commonly called China Flowers because of their porcelain-like appearance.

of brickettes from grape pips as an alternative energy source. Old wine barrels are converted into furniture.

Fixed-point photography is done seasonally in the core conservation areas as a monitoring procedure. Re-evaluating of conformance to IPW requirements is done annually and re-evaluation of management targets is scheduled to be done bi-annually.

The farm's outreach programme involves the neighbouring Klapmuts community and tree planting in the community has been done in conjunction with Food and Trees for Africa (FTFA) – 850 trees were supplied and these were planted by the community. Pittaway comments that at least three quarters of the trees are showing adequate growth after five months. The NGO FTFA drives the Carbon Standard offset programme in South Africa and tree planting is one of Backsberg's carbon sequestration solutions (*see article in March/April 2007* EM, *page 9*).

Carbon Neutral status

Harmke Immink of Prothemium was brought in as a consultant to assess Backsberg Estate's carbon footprint and the assessment was done across the board from the fermentation process in the winery to air travel. She did the project management while Doctoral student Tony Knowles did the biophysical assessment. The carbon standard applied at Backsberg follows the Kyoto Protocol on Greenhouse Gas emissions.

BWI project co-ordinator Inge Kotze said that Backsberg was being used as a case study for the wine industry, which was in the process of evolving practical strategies for the assessment of carbon footprints and measures to reduce these footprints to be included in the IPW guidelines. She said that there was a need to ensure that the correct activities were recommended and auditing procedures were in place, so that the industry could not be accused of attempted 'greenwashing'. She commended Backsberg's owner Michael Back for his proactive attitude towards the achievement of carbon neutrality.

Calculations were done to assess carbon emissions on the estate in the following areas. An analysis was done of the carbon stored in biomass pools, under different land use types on the estate. Travel and transport were assessed under flight destinations associated with marketing, distances travelled by vehicles owned by Backsberg, and outsourced vehicles used for delivering goods and the transport of staff were calculated.

TOP: The original Cluver family farmhouse was built in 1740 and now serves as a weekend getaway cottage.
ABOVE: One of a series of small wastewater treatment dams planted with reeds and other wetland species deals with effluent from the production process.
RIGHT: Looking across the vineyards toward the historical farmhouse on the De Rust Estate, home of Paul Cluver Wines. Wine farming on the estate started in 1989.
FAR RIGHT: In the foreground is *Protea coronata*, the Green Sugarbush, which grows only on Bokkeveld Shale soils on south facing aspects and is found in a small area of De Rust. It is an indicator of that particular 'terroir'.

The diesel consumption of all farm vehicles and machinery was calculated and the source of the diesel assessed. Twenty percent of the farm's diesel usage is from a biodiesel source which is largely obtained from chicken fat and used cooking oil from abattoirs and restaurants.

The fermentation of grapes from vineyards not accounted for in the Backsberg vineyard carbon pool was evaluated. Fertiliser induced emissions of N_2O and NO were found to amount to 0,9% and 0,7% respectively, in terms of applied nitrogen. Emissions associated with energy from Eskom were taken into account, as were paper consumption and paper sources. Quantities and types of waste going to landfill were determined, along with transport distances between the estate and landfill sites. Other energy sources such as the burning of biomass waste or coal were included in the analysis.

Pittaway related how the estate was looking into a methane digestor to be sourced from one of the European companies to deal with grape waste and the many kilograms of grape prunings which lie in bundles on the farm giving off CO_2. The farm's fertiliser regime is being evaluated to reduce CO_2 production. The estate will continue to find ways to reduce its carbon footprint in order to maintain its Carbon Neutral status.

Unique wines relate to biodiversity

Dr Paul Cluver of Paul Cluver Wines, which are produced on Cluver's De Rust Estate in the Elgin area, commented that the common assumption that there is a huge current expansion of vineyards at the expense of natural vegetation was not correct. He said that there was little movement into fynbos with the possible exception of along the Agulhas Plain, as the wine industry was moving away from mass production and traditional farming methods. He pointed out that it was more difficult to sell diversity than a single mass-produced wine and maintained that the focus of the Wines of South Africa marketing drive on variety relating to biodiversity would call attention to the many different fine wines of the Cape.

Paul Cluver Wines has put in an application for champion status and this process will come to fruition next year.

The estate which extends up into the Groenlandberg has an extensive area of lowland, transitional and montane fynbos and more than half of the farm, just over 1 000ha, has been put under stewardship to ensure the conservation of these vegetation types. Cluver commented that only 300ha of his 2 000ha property would be put under cultivation and that he would not go above that predetermined extent. The estate falls into the Kogelberg Biosphere Reserve which was proclaimed in 1999 and is managed in accordance with internationally accepted biosphere standards. The aim of the reserve is to link conservation and development under the guiding principle of sustainable utilisation.

Cluver explained the importance of the terroir study done on the estate to the production of wines with subtle differences, explaining that the production of fine, distinctive, branded wines was reliant on the choice of terroir (where the grapes are grown). The study involved the identification of different aspects, the steepness of slopes and the curvatures of the land, along with the hours of sunlight and the soil types on different parts of the estate. He said that De Rust had slopes that ranged from warm to slightly cooler, to cool. With the information provided by the terroir study, decisions were made where to plant and what cultivars to plant. He explained, for example, that a Botrytis Riesling needed specific climate conditions with low cloud cover and even a slight drizzle in the summer, so that the botrytis mould would develop on the grapes. This occurrence of the mould causes water loss resulting in concentration of flavour in the grapes and a higher sugar content.

"A particular spot on a farm will give you something uniquely different by world standards," commented Cluver. "The Cape Floral Kingdom with its rich floral diversity is the same area in which South African wines are produced and the varied soil and microclimates provide for enormous variation and uniqueness in the Cape wines."

To illustrate how the natural floral species are limited to particular soils and microclimates, Cluver used the example of *Protea coronata* (Green Sugarbush) which is only found in a specific small area on De Rust, as it only grows on Bokkeveld Shale, with its heavy clay soils, and then only on south facing aspects and it needs high rainfall. He remarked that *Protea coronata* served as an indicator of that particular terroir.

The estate is following the guidelines set up for attaining BWI champion status and an interesting example of compliance with these lies in the treatment of wastewater from the cellars. The water used in the production process in summer is piped from the cellars and runs through a series of small dams surrounded by natural reedbeds and other wetland vegetation which serves to remove the nutrient load. The water is pumped through nozzles for aeration purposes and is finally used to irrigate, through a series of sprinklers, a pasture which feeds small herds of antelope and ostriches. The antelope are all species indigenous to the area such as Bontebok, Eland, Zebra and Springbok.

Birds are problematic in vineyards when the grapes ripen and Cluver has discovered an ecologically friendly method of dealing with the problem. The hybrid cover crop between the rows of vines is a cross between wheat and rye, known as 'rog' or 'korog' and on De Rust this vigorous grower is flattened onto the ground to form a mulch. The seed of the rog attracts striped field mice and these in turn attract Steppe Buzzards. The latter scare off the fruit-eating birds.

Invasive species such as gums, pines (*Pinus pinaster*), Black Wattle (*Acacia mearnsii*) and Blackwood (*Acacia melanoxylon*) are being removed, the gums more gradually than the rest, and some of the wood has been used to make tables and counter tops and other furniture for the offices and tasting areas, including a remarkable wall of cut and varnished logs of invader species. A gum forest has been partially felled to create the estate's unique amphitheatre, with the sawn off trunks used as seating and tables, where Cluver's ever popular summer evening concerts are held, featuring South African singers and musicians.

Discovery of critically endangered bulb species

De Grendel on the western slopes of the Tygerberg Hills was one of the first wine farms to join the BWI – member 17, in 2005. During the vegetation survey required of BWI members, botanist

Rupert Koopman of CapeNature found a population of the critcally endangered *Lachenalia liliflora* with its delicate flower. At the time of his discovery the plant was thought to be extinct in the wild (*see article in Jan/Feb 2006* EM, *on page 8*). De Grendel's owner Sir David Graaff commented: "When we joined the initiative, we never thought it would lead to the discovery of this rare *Viooltjie* on the farm. It's an extraordinary find and has proved how vital it is to conserve the renosterveld on De Grendel for future generations."

The farm comprises 700ha, 104ha of which is under vines and 150ha is conserved Swartland Shale Renosterveld, 60ha of which has been totally cleared of the invasive alien Rooikrans (Acacia cyclops – *see article in Jul/Aug 2007* EM *page 28*). This renosterveld vegetation type is also critically endangered. De Grendel has entered into a formal Stewardship agreement with CapeNature to preserve this 150ha area in perpetuity. The area is part of the Tygerberg Hills key conservation habitat identified as the largest fragment of remaining Swartland Shale Renosterveld – 91% of this vegetation type has been lost to urban and agricultural development and only 0,5% of the original extent of Swartland Renosterveld is formally conserved.

Another critically endangered species found on De Grendel is a small succulent shrub, *Antimima aristulata*, also known from only one other locality. Another very rare species found on the farm is a small creeping plant of the pea family, *Lotononis prostrata*. Renosterveld is endemic to South Africa and is a highly endangered vegetation type, rich in bulb species, found on the fertile clay soils of the Western and Eastern Cape.

De Grendel's viticulturist Granville Klerk explained that the invasions of Rooikrans in the renosterveld were tackled by cutting the acacia to ground level and painting the cut trunks with a systemic herbicide. The areas that were less severely invaded were tackled first. CapeNature's alien clearing team did the initial clearing, as a benefit of the Stewardship contract. The De Grendel clearing team was given training by the power tool manufacturing company Stihl, while CapeNature continues to provide support in the form of clearing equipment and herbicides. *Pinus radiata* was another invader in the renosterveld but only over an area of 0,75ha and these trees have been cut down to stumps 15cm in height and painted with a systemic herbicide.

Areas on the farm which were previously pasture grass for cattle have been lying fallow for six years and the renosterveld pioneers such as *Chrysanthemoides monilifera* (Bietou) and *Eriocephalus africanus* (Kapokbossie) are coming back en masse of their own accord. Klerk said there was very little erosion in these areas and no rehabilitation had been necessary.

Klerk spoke about the intention of landowners in the area to form a conservancy spearheaded by Friends of Tygerberg Hills and Tygerberg Conservation. He regularly attends these community meetings and said De Grendel's conservation efforts meant that the farm was being viewed as a role model from a pragmatic standpoint. Klerk said the vision was to connect lengthy corridors of land linking to the Blouberg conservancy and from there to the West Coast Biosphere. As he explained, land owners could share resources and they could all learn from one another, resulting in the formation of highly effective conservation corridors. He said the wine industry, being a seasonal industry, could train up teams, through the BWI, to work at alien removal or erosion control in out of season periods right across the envisaged conservancy on a contractual basis.

Klerk explained that his first duty as a BWI member had been to educate his workers about the purposes of alien clearing and how they should be on the lookout for returning seedlings of invasive plants. He also had to explain to them that no indigenous plants should be disturbed, which meant putting a stop to the harvesting of wild garlic in the renosterveld.

Sustainable production on this relatively new wine farm follows IPW guidelines. Spraying of pesticides against fungal infection and mildew is done taking weather conditions into account to avoid over-spray, and the IPW guidelines introduce best herbicide practices from the very latest research. Klerk says there is a movement towards biological control and towards the provision of areas of natural vegetation as corridors between vineyards to encourage natural enemies. He tells the story of the mutually beneficial relationship between the Witluis (Mealy Bug) and an ant species, and how the answer is to rid the vines of ants and control the Witluis in that way. He says spraying to keep the ants away is done on the lower stems of the vines only. He also educates his workers not to leave the plastic bags in the soil when the new rootstock is being planted as these create nesting areas for the ants.

Klerk chanced upon an ecologically friendly device called an Eagle Eye and this is used at De Grendel to chase birds away from the ripening grapes. He com-

ABOVE: The homestead on De Grendel with the backdrop of Swartland Shale Renosterveld.

TOP LEFT: View across the area of conserved Swartland Shale Renosterveld on De Grendel to the plain below.

LEFT: *Sparaxis villosa* in flower in the Swartland Shale Renosterveld on De Grendel is a common sight in September, but there are several critically endangered plant species on the farm.

LEFT BELOW: A worker in one of the vineyard blocks on De Grenville – the cover crop is rye (rog) or a cross between wheat and rye (korog) and serves to guard against erosion.

ments that the harvest can be decimated by birds within a week. The device which needs to be placed high up in a strategic position and is driven in a circle by the wind gives a periodic flash like that produced by the sun reflecting in the eye of a bird of prey. Klerk says it keeps birds, such as Starlings, completely away from the harvest and this has worked for two consecutive seasons.

Effluent water provided by the municipality is used for irrigation of the vines, which are under a computerised drip system. The change was made from potable municipal to effluent – but in the 2005 and 2006 seasons no irrigation was needed at De Grendel because of the plentiful rainfall and the high water table on the farm.

Private fynbos reserve since 1994

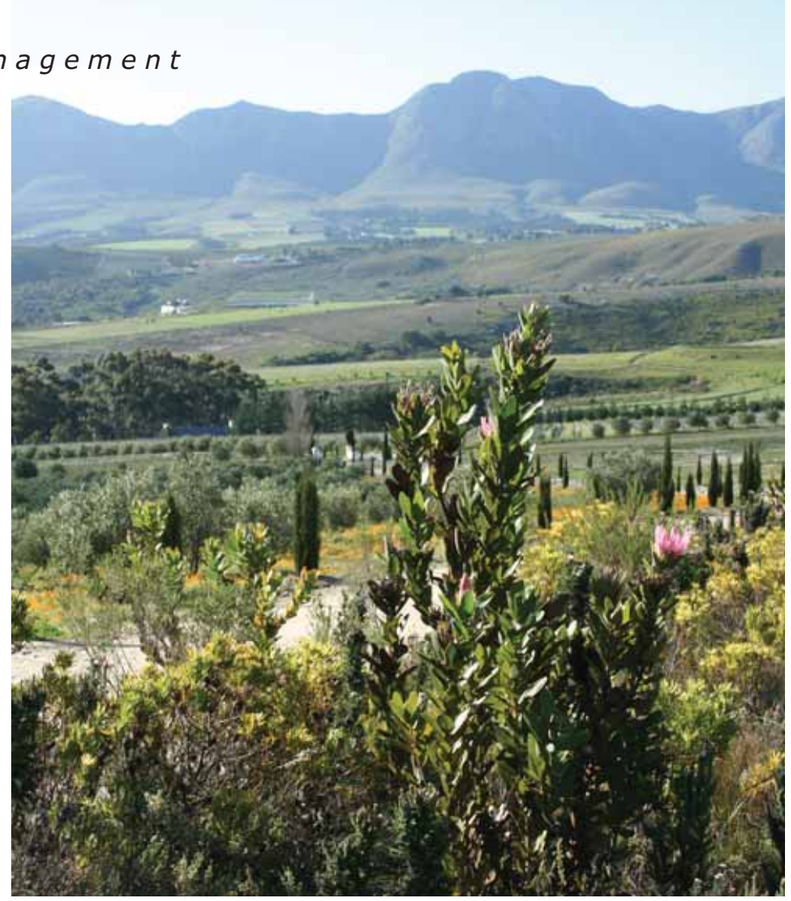
The Hamilton Russell Vineyards, a BWI member in the Hemel-en-Aarde Valley, are on a property 283ha in extent and since 1994 a portion of 38,7ha has been set aside as a private fynbos reserve. This reserve is considered to have some of the best conserved, privately owned Cape Mountain Fynbos in the area and it borders on the Fernkloof Reserve overlooking Hermanus with extensive views of Walker Bay.

With the purchase of the neighbouring property, now called Ashbourne, the Hamilton Russell reserve has been extended to include another approximately 80ha of fynbos. The original fynbos reserve has been successfully cleared of invasive species such as Australian Myrtle (*Leptospermum laevigatum*), Mediterranean Pine, Long-leaved Wattle (Acacia longifolia *see page 32*) and Port Jackson (*Acacia saligna*) and has been close to 100% invader free for a period of ten years. With concentrated and extensive alien clearing, the new tract of the reserve has already almost been raised in standard to that of the original reserve. On the properties, two wetlands are conserved, one on the Eintjies River on the northern boundary of Ashbourne and an 11,26ha wetland along the Onrus River on the northern boundary of the Hamilton Russell Vineyards. A recent inclusion in the conservation area has been a 4ha project to re-establish a Boekenhout (*Rapanea melanophloeos*) forest in a kloof on Ashbourne that has been cleared of a serious invasion of Port Jackson.

Wildlife species conserved on the properties include, amongst others, four species of antelope, three species of tortoise, the Bat-eared Fox, Caracal, Mongoose, Otter and Porcupine, with a Caracal spotted as recently as 3 September this year. To date almost 100 species of bird have been spotted. From the proceeds of the sales of Southern Right Wines, currently produced on Ashbourne, a contribution is made to the conservation of Southern Right Whales in Walker Bay. In 2006, the farm made a contribution to the upgrading of the renowned Cliff Path in Hermanus to encourage whale watching from the path and thereby discourage invasive boat-based whale watching. This upgrade included the training of staff for alien vegetation clearing along the path.

Vineyard manager at Hamilton Russell, Johan Montgomery, commented that the farm lay on the clay rich Bokkeveld Shale derived soils and the light structured, free draining Table Mountain Sandstone derived soils. He said there were 24 different soil types on the property and literally thousands of terroir pockets but only 60ha of the 283ha of the original farm were cultivated to vines and olives.

The objective at Hamilton Russell is to



TOP LEFT: *Gladiolus debilis*, known as the Painted Lady, is a geophyte of rocky sandstone slopes and is pollinated by long-tongued flies – in flower in the Hamilton Russell fynbos reserve.

CENTRE LEFT: *Gladiolus hirsutus* in flower in the reserve of Cape Mountain Fynbos on the property of Hamilton Russell Vineyards. This 'Pypie' is pollinated by long-tongued bees.

LEFT and ABOVE: View across the Hamilton Russell property in the Hemel-en-Aarde Valley with *Protea compacta*, the tall Bot River Protea, in the foreground. The protea is endemic to both mountainous and flat areas between Kleinmond and Bredasdorp.

move rapidly to organic farming of the vineyard soils to improve fertility, using compost mulch made on the property to increase microbial activity in the soil and to minimise the need for herbicides. The acquisition of a chipper has facilitated the composting of cleared alien vegetation and chips are also used as mulch under the vines. Planting of new rootstock is done with compost in the holes to increase microbial activity and encourage earthworm activity. Organic fertilisers in pellet form are used in the vineyards and occasionally there might be the need for a kelp-based foliage spray. The cover crop 'korog' (Triticale) is slashed and left lying on the so called 'bankies' between the planting rows where it serves as mulch and no spraying of herbicides is done between the rows – even the weeds are slashed and put back onto the bankies. Some broadleaf herbicide is used for persistent weeds.

Montgomery commented that the farm team was very aware of the need to put carbon back into the soil for the sake of survival and that their awareness of climate change meant that new plantings were planned with rootstocks that were both more moisture and more drought tolerant in preparation for the possibility of climate change bringing conditions that were either too wet or too dry for the tolerance of existing rootstocks.

An invasive alien plant control programme drawn up in conjunction with CapeNature and the company EcoGuard controls each section of farm. Training of the workforce in invasive plant identification and control is done by the latter company and the predominant problem plants are: Long-leaved Wattle, Port Jackson, Australian Myrtle, Stink Bean (*Paraseriathes lophantha*), Bugweed (Solanum mauritianum – *see May/June 2007* EM *page 24*), Black Wattle (*Acacia mearnsii*) and pines. A permit has been obtained to maintain a demarcated areas of pines and gums on the property, under Category 2 of CARA. An indigenous planting programme on the farm includes Wild Olives (*Olea europaea* subsp *africana*) and Milkwoods (*Sideroxylon inerme*) along the small streams.

Bird protection netting

Physical damage done to the grapes by fruit eating birds and related problems such as botrytis brought on by juice leaking from the punctured grapes can cause losses of up to 50% of the crop. The problems are usually more intense in vineyard blocks near trees as these give the birds cover, and those bordering on wetlands, streams and water bodies. These problems are seasonal as the crop ripens between January and March and are particularly prevalent during dry years when the grapes might be the birds only food source.

Montgomery had, in the past, applied a number of measures to frighten off birds at the farm such as scarecrows, including fake birds of prey swinging from poles, digital sound devices, rotating mirrors, brightly coloured ribbons fastened to poles and people walking around the vineyards banging on tins. Some were more successful than others but he was determined to find a single, simple, cost effective method that would be effective 24/7, and the installation of bird netting between the foliage wire and the cordon wire seemed to fit this bill.

This decision was only made after he did numerous trials on three farm to determine the extent of netting needed, its positioning and weight, and the exact aperture size needed based on the beak size of the species of problem birds. He commented that if the apertures had been too small, this would encourage the development of botrytis and add to the expense and weight of the netting. He had to find a balance between the latter factors and the bird's ability to access the fruit – 10% bird damage, he said, was considered acceptable.

The decision was made that it would be most effective just to cover the bunch zone and to keep the net in place tied with hessian string until the morning of the harvest when it could be easily dismantled by cutting the biodegradable string. The net can then be stored for use over future seasons. There is a bow available at extra cost which will hold the netting away from the bunches for extra protection in areas where there are large numbers of problematic birds. The product is called Vinnet and Montgomery has a patent pending. ♦

Johan Montgomery

Vinnet bird protection netting covering the bunch zone: a simple, environmentally friendly method of protecting the crop against bird damage.

Report and photographs by Carol Knoll