NEDERBURG SUSTAINABILITY.

Before the notion of climate change entered mainstream public consciousness, we had begun to make sustainability a priority, accepting for ourselves this would be a journey with no conclusion.

We understand that the more we learn, the more there will be to know and to do. Our goal is to lighten our impact on the planet; to enhance the health, wellbeing, and social cohesion of Nederburg's people and communities; and to remain a viable, dynamic enterprise that brings responsible pleasure to more wine lovers while contributing to our economy.

Watch the YouTube videos on Nederburg Sustainability here:

Trailer: https://youtu.be/WE2drH8qsZM
Full video: https://youtu.be/sCFjEcouTow

Back in the day

Ahead of the launch in 1998 of South Africa's fully traceable production integrity programme known as the Integrated Production of Wine (IPW), Nederburg served as the pilot farm to kickstart the concept. Sustainability has been top of mind for us ever since. Our goal is to enhance every step in the production process, from soil to cellar, right through to packing and distribution. As we go, we keep on looking at ways to improve.

And now

Nederburg is ISO14000 certified for **responsible environmental management**.

In 2020 we were granted **WWF Conservation Champion** status for our **water stewardship**. We follow the principles set out by the internationally recognised Alliance for Water Stewardship. That means always looking for additional ways at Nederburg to improve water quality, balance, access, and use.

At Nederburg we plant **cover crops** between the vine rows to enhance biodiversity, soil life and water retention capacity. We farm with drought-resistant rootstocks. We have precision tools to better manage irrigation, where it is needed. Many of these measures have been in place for more than a decade but since we started actively measuring ourselves in 2011, we have achieved water savings of as much as 40%.

We have cleared streams of alien vegetation. We continue to re-establish indigenous habitat on the farm. We harvest rainwater. In the cellar, we use recycled water for cooling tanks and follow rigorous water-wise cleaning regimes. We treat winery wastewater aerobically, anaerobically, use ultra-filtration and reverse osmosis and this way we can keep our extensive gardens healthy, green, and flourishing.

We use **solar energy** to power a major part of our winery operations. We **recycle** bottles via our parent company Distell and its Bottle Recovery programme. We also support Distell's GreenUp in a range of local townships where environmental assistants clear solid waste and earn income by returning bottles and other packaging materials for **re-use**. It is estimated

that across a variety of such programmes in South Africa, environmental assistants each collect a daily average of 200 kg of recyclables that would otherwise find their way into landfills. The waste - glass and PET bottles, paper, metals, plastics - comes from households, taverns, streets, and informal dumps.

When you are a member of the Nederburg team

Our **talent drives** are an essential part of identifying, nurturing, and building management and leadership potential across the business.
Our workshops for farm and cellar staff focus on ethical awareness, values and leadership to build future front-runners and mentors.

Via brand owner Distell, in 2002 we became a founder member of the Wine and Agricultural Ethical Trade Association (WIETA) that promotes fair working conditions within South Africa's wine industry. WIETA represents the interests of trade unions, civil society groups, wine brands and their producers. Its **Ethical Code of Conduct** serves as a rigorous framework through which members and their supply chain are monitored via globally certified audits.

We partner with Procare, specialists in **employee psycho-social wellness,** to support the Nederburg team and our families. Appropriate counselling is extended when people want help in navigating personal, domestic, and work pressures.

As part of Paarl's community, we also partner with local, neighbourhood community safety, stability and upliftment projects.

We have also been a regular donor to the Pebbles Project that works to enhance the lives of Western Cape agricultural communities beyond our own. Its priority is education of pre-schoolers, school-going and tertiary students, but Pebbles also provides health and nutritional support while its work extends into community cohesion and safety.

Responsible drinking

We train all staff, including brand-home hospitality staff, and we offer training to retailers and on-consumption outlets to promote safe consumption. The in-person, online, gamification and edutainment tools we use, highlight what it means to consume wine responsibly and what to do when people run the risk of endangering themselves or others.

Via Distell we work with a variety of national, provincial and community organisations such as the SA National Council on Alcoholism and Drug Dependence (SANA), the Department of Social Development, SA Police Services, as well as provincial and community policing authorities. We also work closely with behavioural science specialists and community safety bodies. Throughout the country, targeting areas with patterns of high-frequency alcohol use, we engage with off- and on-consumption traders to foster compliance with licensing and other regulations. We also go into high-risk communities to offer behavioural modification strategies to address under-age drinking, binge drinking and risks for foetal alcohol spectrum disorders and gender-based violence. We promote dialogue with and counselling for high school learners, tertiary students, and taverns. We are also involved in projects to promote road safety habits amongst drivers and pedestrians.

Regenerative viticulture

We keep looking for nature-based solutions in building sustainability.

For us, soil is life. By pursing regenerative viticulture, we enrich the soil, aerate it, improve its structure, and promote its water-holding capacity. By planting cover crops we enhance biodiversity, help to fix nitrogen in the soil and aid carbon sequestration. As we plant insectary flora, we create our own little eco-systems where integrated pest management can be maintained in nature's way. In the process, we become more self-sufficient while growing better fruit with fewer inputs.

We generate biochar (charcoal we make from plant matter) on our farm and mix it with compost derived from grape skins, stems, pips, as well as other organic waste, and recycled water. The mix is then inoculated with nutrients and beneficial organisms. This is how we are working to advance soil life and health, while accelerating carbon sequestration.

What we learn, we impart to our supplier growers so that sustainability efforts can be extended as widely as possible.

Closing the loop

Via Distell's Agri+Gator empowerment initiative, we've teamed up with majority black-owned Mi-Crop Holdings SA in a climate-smart, multi-crop aquaponics venture to produce rainbow trout, herbs, and specialty vegetables. The closed-loop, pesticide-free farming project is supplying food for our restaurant, other eateries in Paarl and several specialty food chains. It's also building skills and growing rural employment in the greater Drakenstein area.

We use the same body of water to farm the fish and plants. Much of the fish waste is beneficial to the plants, but to avoid any potential ammonia uptake by the herbs and vegetables, the water is first purified with bacteria before it is fed to the plants in a recirculation process. (Aquaponics mimics the biological symbiosis that occurs in nature. Bacteria within the controlled production system break down the fish waste and turn it into a usable form of nutrients for the plants. Plant roots absorb the nutrients from the water while cleaning the living environment for the fish.)

Now in its first phase, the project cultivates miniature rosa tomatoes, thyme, basil, coriander, spinach, rocket, and exotic lettuces all year round. It will soon be expanded to three times its present size to reach 3 000 sq m.

Staff are being trained in the extremely detailed work of aquaponics, as well as in management, marketing, sales, and cold-chain distribution.

All the way

Without a reputation for quality, great taste, relevance, fair pricing, integrity, and reliability, we could not endure.

Quality is the starting point for everything at Nederburg. We work hard to maintain our reputation for excellence by benchmarking against the best, by investing in talented wine growers and wine makers and by keeping up to date with new thinking and technology.

To be a brand that people love takes hard work and a careful balance. We follow classical winemaking principles but grow our relevance and our abilities by experimenting with new style detailing, new varieties, and new wine-growing areas. That's how we aim for continued great taste and relevance.

We are proud to be known as an ethical, fair employer and trading partner, for our consistency and our reliability.

In the end, if we are to stay sustainable, we know you need to know you can always count on us.

Our promise is to never stop trying, to never become complacent and to keep on finding ways to better our best efforts.

WHY MICROBES MATTER TO NEDERBURG.

"I'm always surprised by those who see Mars as our next frontier for exploration. What about the ground beneath our feet? We're just beginning to learn how rich and diverse it is. It's literally crammed with information on which our survival as a planet depends. Shouldn't that be the quest we make our priority?" asks agricultural specialist for Distell, Henk van Graan.

His focus is on holistic, low-intervention farming in the pursuit of creating a more resilient terroir for Nederburg, where ultimately healthier vines will lead to even better wines and inputs such as chemical fertilizers, pesticides and herbicides can be curtailed, if not altogether eliminated.

"When I studied viticulture in the 1990s, soil wasn't given that much emphasis. In those days, it was considered more of a planting medium to be treated with appropriate interventions for optimal vine growth. It's only in recent years that awareness about intrinsic soil life and health has grown, and with it an awareness of the connection to climate resilience and food security.

"As we move towards more regenerative farming, where we start with the health of the soil, we are beginning to uncover the extent to which beneficial micro-organisms of the soil food web (bacteria, fungi, protozoa etc.) are linked to sustainability. Ironically, while this type of farming involves many ancient practices, in some ways it represents a whole new frontier for modern farmers. Especially as we deepen our knowledge of mycorrhizal networks,

where microorganisms in the root systems of plants connect individual plants together and transfer water, carbon, nitrogen, and other nutrients and minerals.

“We’ve come to understand that around 70% of the earth’s microorganisms exist below the surface of the ground. That’s more diversity below than above ground. To consider this on a micro-scale, can you imagine that there can be more than 25 000 species of microorganisms in a single teaspoon of soil!

Microbes matter

“As we begin to appreciate the ecosystems of healthy soils, we are learning in more detail about how their microbial populations provide structural support for all types of plants. They help to fix nitrogen, aerate, moisturise and enrich the soil. Carbon compounds are released by plant roots into the soil to feed billions of organisms and cycle nutrients. As a result, aggregate habitat is created to play an important role in filtering, retaining, and draining water.”

Microbial communities also play an important role in carbon sequestration, using light energy converted into chemical energy (carbon compounds via root exudates) that is stored in the soil during photosynthesis.

Van Graan quotes soil scientist and conservation agronomist Ray Archuleta to explain: “The plant and soil are one”. In other words, without plants, we wouldn’t have microbes and without microbes, we couldn’t call it soil.

In South Africa, where the threat of drought is never far away, cover cropping in vineyards has long been an important way of promoting soil health and biodiversity, while reducing evaporation and regulating temperatures. The roots of cover crops feed and stimulate the populations of soil microorganisms that recycle plant material and enrich the soil with nutrients. In time, these nutrients will feed future cover crops and, of course, the vines themselves.

Under Van Graan, cover crops planted at Nederburg have included oats, lupins, fava beans and vetch. He is finding that healthier soils, leading to more abundant cover crops, bring more beneficial insects that act as natural insecticides and pesticides.

Biochar at Nederburg

While a long-time advocate of cover cropping, since 2017 Van Graan has been applying a new level of urgency to promoting soil health. He wants to accelerate carbon sequestration and advance soil life through microorganisms. One of the ways he is doing this is by generating biochar at Nederburg.

Although not new (it has been used in the Amazon for millennia) biochar is charcoal produced from plant matter (biomass). When used as a soil additive, it not only removes carbon dioxide from the atmosphere, but it creates an environment conducive to boosting microbial populations while building soil structure, reducing soil acidity, and generally decontaminating the soil. Because it is so porous, it absorbs, retains, and aggregates water

and increases organic soil life, ultimately lowering the need for inputs such as additional water and chemical fertilisers.

Biochar is made in a process called pyrolysis in which the plant material, usually agricultural biomass (plant and/or animal waste), together with staves or wood chips from no longer used wine barrels, is charred in a low oxygen environment at very high temperatures that exceed 400 degrees Celsius.

An important feature of biochar is that it is recognised as carbon negative. It remains in a highly stable form in the soil, indefinitely, storing carbon potentially for hundreds if not thousands of years. Biochar can be added to the soil to sequester carbon and reduce net greenhouse gas emissions.

Van Graan mixes the biochar produced at Nederburg with compost derived from grape skins, stems, pips, as well as other organic waste on the farm, together with recycled water. The mix is then inoculated with nutrients and beneficial organisms.

He is now also culturing indigenous microorganisms (IMOs) collected from Nederburg soils. Once prepared, they are re-introduced into the soil either directly or via IMO sprays to aid plant health and promote good growth. There is a symbiotic relationship that occurs between plants and beneficial IMOs. The microorganisms convert nutrients into a form that the plant can absorb. In turn, the plants provide food (carbon compounds) to these microorganisms through root exudates. This type of closed-loop farming system maximizes the use of on-farm resources.

Van Graan and his team have been addressing soil health very specifically since 2017. Since then, they have seen a double-digit decline in the use of insecticides. They are currently engaged with water monitoring specialists to give very precise readings on water consumption. “All this data is important for us as a business. As critically, the more data we have, the more empowered we are to bring our supplier growers on board. Many of them are already adopting some the same strategies as we are. That makes it a win-win all round.”

Asked if Nederburg considers itself an early adopter of such eco-conscious measures, Van Graan shrugs. “Environmental stewardship has always been a priority for us. In 2011, we were acknowledged for our efforts as a Biodiversity Champion by the WWF for our work to rehabilitate parts of our farmland to indigenous habitat with the re-establishment of local flora, and more recently, in 2020, we achieved WWF Conservation Champion status for water conservation. But it goes back much earlier. Nederburg was also involved in the piloting of the country’s Integration Production of Wine programme in 1998. Now followed by virtually all South African producers, it encompasses a set of eco-sustainability principles to which growers must adhere.

“It’s a way of life for us. We’ve been at it a long time, finding new ways as we go.”

Thank you.