Haygrove

TOTAL VENT

FROM THE
ADVANTAGE RANGE

WWW.HAYGROVE.COM

FOR GROWERS, BY GROWERS

Born of the berry growing industry over 30 years ago, Haygrove now supply growing systems to the best growers of over 30 crops in more than 50 countries around the world.

As commercial growers ourselves, Haygrove understand the complex challenges presented by climate, geography, crop sensitivities, labour resourcing, market demands and the ongoing development of technology that will reshape the horticultural industry.

Haygrove's engineers work with growers to innovate solutions that are functional, sustainable and profitable. Haygrove polytunnels, substrate systems and associated technologies are developed and tested rigorously on Haygrove's own farms to optimise the natural environment for maximum productivity and quality of crop.

As a business Haygrove are working strategically to create employment, provide healthy food sources for the world's growing population, and consistently improve environmental standards for the future of our planet.

With an expansive range of products and expertise, Haygrove work collaboratively with each customer to cultivate their potential, for the long term.

Scan the QR code to learn more about Haygrove.

Haygrove

TOTAL VENT

THE ULTIMATE IN VENTING FLEXIBILITY

Haygrove's Total Vent polytunnels are uniquely designed to mechanically roll the polythene to the apex of the tunnel, creating precise climate control and mitigating the effects of extreme weather events.

(Pending International Patent Application PCT/GB2022/050212)

SUPERIOR TUNNELS FOR OPTIMUM RETURN ON INVESTMENT

At Haygrove we develop commercial solutions for a huge range of customers, from small-scale growers to international horticultural specialists. Total Vent is part of our premium Advantage range, designed and used by us in our farms around the world.

Our versatile Advantage range has been specifically engineered with tomorrow in mind. Strength, ease of management and a superior agronomic environment allow growers to reduce labour requirements, extend cropping seasons, optimise yield and quality, and adapt to changing conditions.

The ability to fully open and fully close the tunnel gives growers the agility to manipulate the climate to maximum effect.

Yield and crop quality have the potential to excel with seamless tunnel management. Total Vent can promote overall plant health, facilitate the management of pests and diseases, and improve pollination. For further climate control, Haygrove tunnels can be integrated with retractable shade nets. When used together with Total Vent, the growing environment can be effectively managed at a far lower cost than using alternative climate control mechanisms.

FOR THE LONG TERM

Being growers ourselves, Haygrove are always asking: how can we best anticpate the challenges of changing climates, complex and demanding markets, and a rapidly evolving industry?

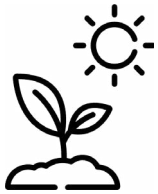
Total Vent's innovative strength and function safeguards both the valuable crop and the tunnel structure investment from increasingly frequent extreme weather events. Total Vent allows growers to adapt quickly to the ever-changing challenges of horticulture. Growers can be versatile today, and over the 25 year lifespan of the Total Vent investment.

WHAT'S THE ADVANTAGE?

Total Vent is part of our premium Advantage series which has been specifically engineered with tomorrow in mind. Strength, ease of management and a superior agronomic environment allow growers to reduce labour requirements, extend cropping seasons, optimise yield and quality and adapt to changing conditions.

Climate Control
Total Vent allows for better temperature and humidity control, as the roof or sides of the tunnel can be opened in hot weather. The vents on Total Vent are in the most effective position to allow hot air to escape as it rises vertically.

Ventilation
Adequate ventilation is crucial for preventing the build-up of humidity and controlling temperature fluctuations. Total Vent enables improved air circulation, reducing the risk of diseases and promoting healthy plant growth.



Natural Light
Fully retracting the polythene on the Total Vent will increase the UV light exposure, giving growers a potential increase in both plant health and rates of photosynthesis.

Energy Efficiency
By utilising natural ventilation and sunlight, Total Vent can reduce the need for artificial heating, cooling and lighting. This can result in energy savings and lower operating costs.

Labour Efficiency
Total Vent's automated venting minimises the amount of man-hours and the labour cost required to effectively manage the internal growing environment and is cost-effective for operation on a field scale.

Pest Control
Improved ventilation and the ability to expose plants to outdoor conditions can help reduce the risk of pest infestations. Natural predators can also be introduced to the greenhouse more easily.

Reduced Disease Risk
Unintentional water on crops increases disease pressure. Proper ventilation and sunlight exposure help prevent the build-up of humidity, and therefore prevent the spread of fungal and bacterial diseases.

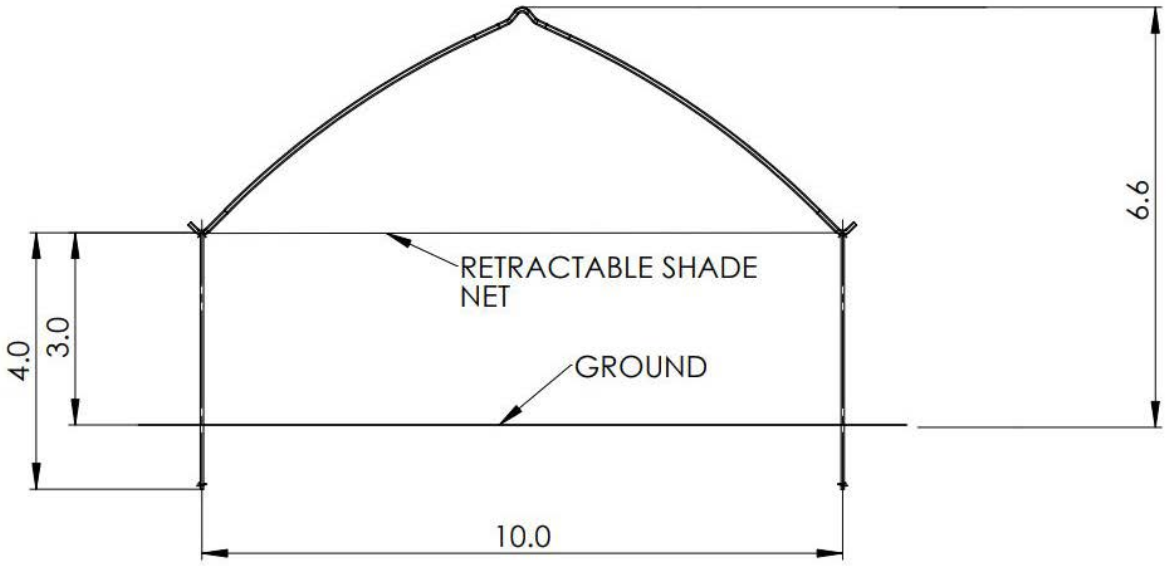
Pollination
Rolling up the polythene allows beneficial pollinators better access through the crop, improving pollination efficiency. Managing humidity and temperature are key to optimising pollination rates.

Customisation
Total Vent can be customised to fit specific needs, sizes and crops. Total Vent is available in bay widths up to 10 metres wide with multiple configuration options to suit the grower's requirements.

Improved Plant Quality
The controlled environment offered by Total Vent can lead to healthier and more robust plants, ultimately improving the quality of your crops and their ability to perform better.

A STRONG AND SMART DESIGN

Innovations in Haygrove's Advantage range reduce set-up and running costs, including for skinning and venting, climate control and picking. Intelligent, cost-effective automation reduces the labour requirement — mitigating the rising cost and scarcity of quality labour. Through combining versatile infrastructure with a reduced payroll to optimise tunnel management, profit can be maximised while preparing for a robotics-centric future.



Total Vent is available in bay widths up to 10 metres wide. This is comparable to those of a glasshouse, rather than those of traditional polytunnels. Haygrove can confidently offer wider bay widths due to the use of strong HSO steel. HSO steel is our High Strength Oval Steel and its proven itself to be the smart choice for growers worldwide.

Increasing tunnel bay width has agronomic, operational and economic advantages. The wider bay widths allow a higher planting density as less area is used for the tunnel structure. The increased number of plants increases the intensity of production by increasing yield, resulting in quicker payback.

HSO 80

The wider the tunnel, the less fruit exposed to weather at the leg row. Even if protected from the wind and the rain, the leg rows are generally cooler than the centre rows, less leg rows create a more consistent growing climate in the tunnel and therefore more reliable fruit timing.

With the addition of mechanical venting, it is practical to increase the leg to 3m to the gutter height, as manually venting from the ground is no longer necessary. The higher leg increases air volume within the tunnel which buffers temperature changes, creating a more stable internal climate.

RAINWATER GUTTERS

Water availability is becoming an increasing concern, therefore it is a valuable asset to be able to collect and store water for crop irrigation.

The benefits of mechanised venting go beyond improving yield, quality, and season extension. The combination of Total Vent fitted with Haygrove's rainwater gutters optimises rainwater collection. The harvested rainwater can be collected and stored for irrigation, mitigating the risk of crop failure due to drought.

Total Vent allows for the the vents to be closed quickly when rain is forecasted which both protects the crop and increases the water catchment area to include the entire covered area. When rainwater gutters are fitted to manually vented tunnels, it is often not practical or possible to the close the vents when it starts raining. This jeopardises the quality of the leg row fruit and significantly decreases the catchment area, therefore reducing the rainwater harvesting potential.

Haygrove's rainwater gutters are manufactured from pre-galvanised steel which, as an additional benefit, considerably improve tunnel strength.

RETRACTABLE SHADE NET

A Retractable Shade Net option offers an additional climate management tool to maximise the potential of the crop. The shade net can be deployed strategically throughout the day to balance UV light exposure and VPD management for optimal growing conditions.

With a 3m gutter height, a retractable shade net can be installed without restricting access. The mechanised system, which operates over an area of up to one hectare at a time, pulls the shade nets on and off. The system can be used with a wide spectrum of netting types and even thermal screens to suit the growing requirements.

ROLLER DOORS AND SIDES

Roller doors (at the ends of the tunnels) and sides can be strategically operated to regulate temperature, humidity and airflow. These can be either operated manually or mechanised depending on the preference of the grower.

The ability to open the ends and sides also provides access for people and machinery. When closed, the roller doors and sides provide a good seal to offer internal wind protection and extend the growing season

SURVIVING THE SPIKES

Protecting crops from pests and adverse weather, Haygrove's Advantage range optimises climate conditions for specific environments and needs. Minimising wastage and maximising yield potential, Haygrove's industry-leading growing systems also enable forecasting with greater accuracy, and therefore help to build strong relationships with customers who can rely on performance. Confidence in a consistent supply of quality products will lead to the access of premium markets and the opportunity to increase profit margins.

A fundamental advantage to growing in Total Vent tunnels is the functionality of venting at optimal moments. The option to fully open and close the tunnel gives growers the flexibility to manage the growing climate both throughout the day and seasonally; buffering the changes and to help crops survive the spikes of extreme weather fluctuations.

The automated vents can be deployed not only at the required moments and with sufficient frequency to make a significant positive impact, but also without accumulating labour bills throughout the season. Total Vent eliminates the grower having to compromise the crop quality due to the expense or shortage of labour.

Total Vent is a particularly effective protective cropping solution when the weather conditions are hot and humidity levels are either too high or too low. Total Vent can be operated to mitigate plant stress by managing the internal Vapour Pressure Deficit (VPD) through regular, strategic venting throughout temperature peaks.

TEMPERATURE, HUMIDITY AND VPD MANAGEMENT

VPD is the relationship between temperature and humidity in growing environments. The measurement determines how much moisture the air can hold before it becomes saturated. It's a critical factor in plant growth and transpiration rates. Total Vent allows the grower to maintain optimal VPD conditions, offering several advantages:

Higher Quality Crops

Maintaining optimal VPD can lead to improved plant health, stronger root development, and higher quality crops, ultimately enhancing the market value of your produce.

Prevention of Disease

Fungal and bacterial diseases thrive in conditions of high humidity. With Total Vent, you can effectively manage VPD to create an inhospitable environment for pathogens.

Reduced Energy Costs

Harnessing efficient temperature control and humidity levels, potentially reduces the need for energy-intensive heating and cooling systems.

Enhanced Cooling and Temperature Control

Proper VPD management contributes to effective cooling of plant surfaces through transpiration. The regulation of opening and closing the roof and sides of Total Vent promotes airflow and transpiration, preventing overheating.

Reduced Stress and Improved Resilience

Plants experiencing stress due to high VPD levels or inadequate moisture uptake can exhibit reduced growth and susceptibility to environmental stresses. Optimum VPD control promotes healthier and more resilient plants that can better withstand climate fluctuations.

Optimal Photosynthesis

VPD affects the rate of photosynthesis as it influences the opening and closing of stomata (small pores on plant leaves). A balanced VPD helps ensure that stomata remain open for gas exchange, leading to improved plant growth.

Moisture Management

Effective transpiration management helps regulate the moisture content in the internal environment. Proper ventilation, combined with irrigation practices, ensures that plants receive adequate water without leading to excess moisture build-up that could contribute to disease.

Water Efficiency

Plants in an environment with balanced VPD are more efficient in their water usage. This can lead to reduced water consumption and better resource management, especially in regions with limited water availability.

Tailored to Plant Requirements

Different plant species have varying VPD preferences based on their natural habitats. With Total Vent, the VPD can be adjusted to the specific needs of the plants, creating a customised and optimal growing environment.

CLIMATE CONTROL

Our Advantage tunnels have been specifically designed to maintain optimum climate conditions outside of traditional cropping seasons, increasing yield-potential in both volume and flexible planting. Investment costs are absorbed over a longer period, enabling you to price competitively within the market, and achieve a greater return on investment.

Transpiration is a process by which water is absorbed by plant roots, transported through the plant, and then released into the atmosphere as water vapour through the stomata. Transpiration is a crucial physiological process that influences plant growth, nutrient uptake, and overall health. Managing plant transpiration is important for maintaining optimal moisture levels and promoting healthy plant development.

How does Total Vent benefit plant transpiration?

Humidity Control
Plant transpiration contributes to humidity levels within the greenhouse. As plants release water vapour through their leaves, the humidity in the surrounding air increases. With Total Vent, humidity can be controlled by adjusting ventilation and allowing excess moisture to escape when needed.

Temperature Regulation
Transpiration also plays a role in temperature regulation. As water is released from the leaves, it cools the plant and its immediate surroundings through evaporative cooling. This cooling effect can help moderate temperatures within the greenhouse, especially during hot periods.

Moisture Management
Effective transpiration management helps regulate the moisture content in the greenhouse environment. Proper ventilation, combined with irrigation practices, ensures that plants receive adequate water without leading to excess moisture buildup that could contribute to disease.

Nutrient Uptake
Transpiration is closely linked to nutrient uptake. Water absorbed by the roots carries essential nutrients throughout the plant. A well-regulated greenhouse environment ensures that plants can effectively transpire and absorb nutrients, leading to healthy growth.

Carbon Dioxide Exchange
Stomata, the tiny openings on leaves, also play a role in gas exchange. During transpiration, carbon dioxide (CO_2) is taken in by the plant for photosynthesis. Adequate ventilation and transpiration allow for a steady exchange of CO_2 and oxygen, promoting photosynthesis and growth.

Preventing Water Stress
Monitoring and managing transpiration rates can help prevent water stress in plants. If transpiration exceeds the rate of water uptake, plants can experience wilting and other stress-related symptoms. Proper humidity control and irrigation practices in Total Vent help maintain a balance.

Disease Prevention
Excessive moisture can create a favourable environment for fungal and bacterial diseases. By managing transpiration and humidity levels, you can reduce the risk of disease outbreaks and create a healthier greenhouse environment.

Growth and Development
Transpiration influences the overall growth and development of plants. Adequate transpiration rates contribute to turgidity (cellular rigidity), nutrient transport, and hormone distribution, all of which are essential for optimal plant health.

POLLINATION

Total Vent offers several advantages when it comes to pollination, which is a critical process for the reproduction of many plant species.

Enhanced Crop Yield and Quality
Effective pollination leads to increased fruit set, larger yields, and improved fruit quality. By ensuring a controlled and suitable pollination environment, Total Vent can contribute to better overall crop productivity.

Pollinator Access
Total Vent helps to control of the movement of pollinators such as bees and other insects. By opening the vents during periods of pollinator activity, access to the plants is promoted for effective cross-pollination. Some polythenes have properties that disorientate pollinators, by removing the polythene the pollinators can be more efficient.

Protection from External Factors
Total Vent can provide a barrier against harsh weather conditions, strong winds, and pests that might interfere with natural pollination. This protection ensures a stable and suitable environment for both plants and pollinators.

Extended Growing Seasons
With Total Vent, the season can be extended by controlling temperatures and maintaining a favourable environment for both plants and pollinators. This extended availability of pollinators can lead to increased pollination and fruit set.

Pollination of Sensitive Plants
Some plants are sensitive to environmental changes and require consistent conditions for successful pollination. Total Vent allows the maintenance of these conditions, enhancing the likelihood of successful pollination.

Customised Environment
Total Vent allows for flexibility in creating an environment that caters to the specific needs of both plants and pollinators. By adjusting temperature, humidity, and other factors, conditions can be optimised to encourage pollinator activity and successful pollination.

NATURAL LIGHT

Total Vent has the ability to fully open and expose plants to natural sunlight when the weather is favourable, whilst still protecting the crop. This can enhance photosynthesis and overall plant health. When used in conjunction with Haygrove polythene and a retractable shade net, growers have a number of options to manage the light and climate variables to influence the crop.

Daily Light Integral (DLI) is a measurement of the total amount of photosynthetically active light received by plants over a 24-hour period. DLI is a critical factor in plant growth and development, as it directly influences photosynthesis, flowering, and overall plant health.

Total Vent allows growers to maintain an optimal DLI which offers several advantages:

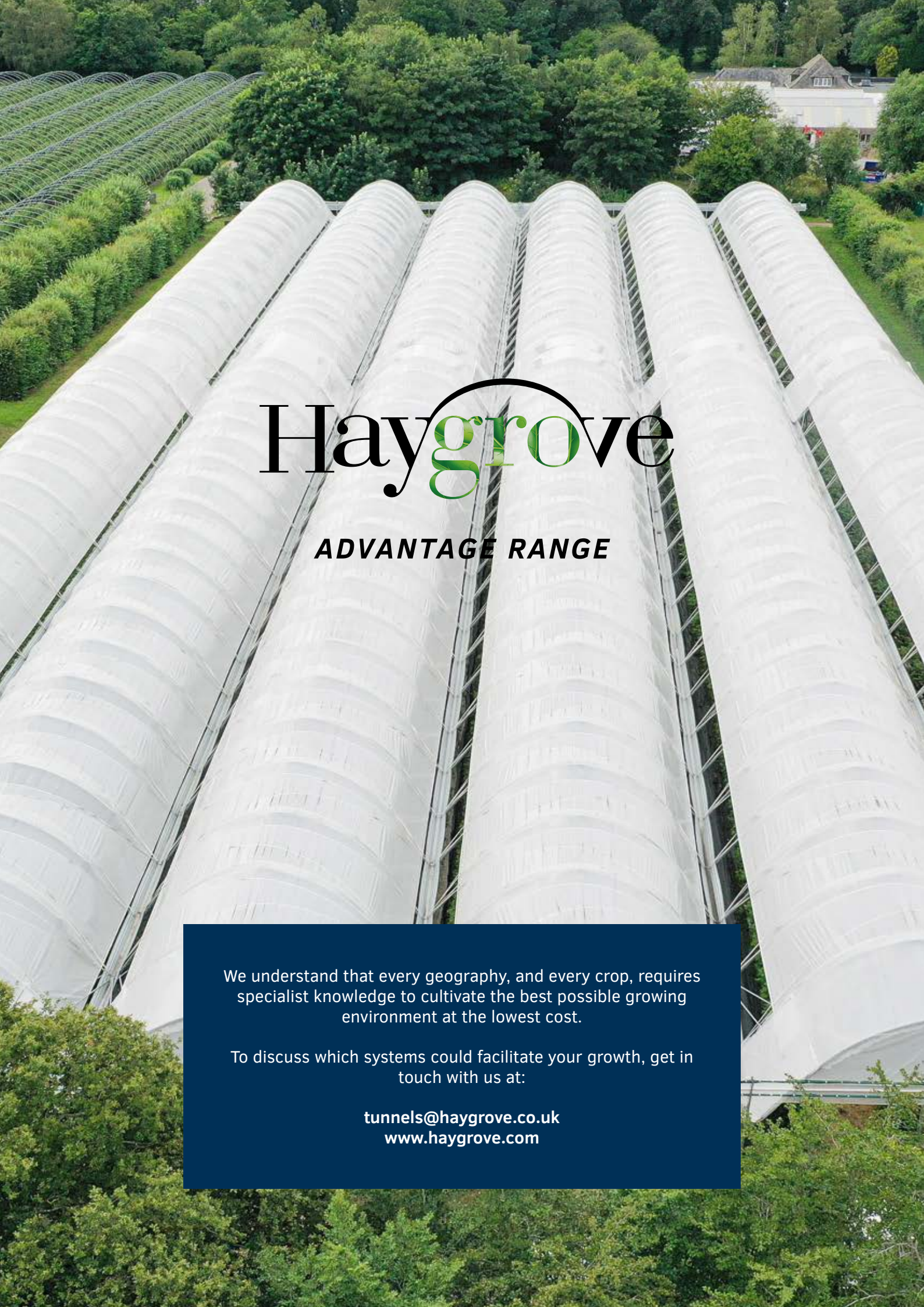
Enhanced Growth and Yield
Proper light management can maximize DLI. By adjusting the roof or sides to allow more sunlight to reach plants. This increased light exposure can lead to accelerated growth rates, improved crop yield, and faster flowering in many plant species.

Energy Efficiency
By utilising natural ventilation and sunlight, Total Vent can reduce the need for artificial heating, cooling, and lighting. This can result in energy savings and lower operating costs.

Tailored Light Conditions
Total Vent allows light conditions to be tailored to the specific needs of different plant species. For example, shade-loving plants can be placed in areas with reduced light exposure while sun-loving plants can be positioned to receive more direct sunlight.

Improved Photosynthesis
By controlling the DLI through retractable mechanisms, photosynthesis rates can be optimised to increase the production of sugars and other vital compounds for plant growth.

Better Resource Management
With precise control over light levels, resource allocation can be optimised including water and nutrient uptake. Plants that receive optimal light are more efficient in utilising these resources, leading to healthier and more productive plants.



Haygrove

ADVANTAGE RANGE

We understand that every geography, and every crop, requires specialist knowledge to cultivate the best possible growing environment at the lowest cost.

To discuss which systems could facilitate your growth, get in touch with us at:

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