

## **DUROXO AGRITUBE LED Striplight**

### **Lighting Designed for poultry houses**



EPA Products Ltd has actively been involved with the development and control of LED lighting for the poultry industry for over 8 years. The LED lighting industry technology is very fast moving, unfortunately a lot of LED lighting products offered are not designed for the harsh environment of a poultry shed, and prove very unreliable and therefore not cost effective for the industry.

A large number of customers asked EPA Products to supply a LED strip light as an alternative to their ageing existing fluorescent lights.

#### **There were numerous problems when finding an ideal replacement.....**

1. Most customers had achieved over 10 years useful life from their existing fluorescent lights and expected the same from a LED alternative. This was not possible despite claims from manufacturers, a useful LED light life within a poultry shed application is three years.
2. There was no industry standard to the installation or control for the LED strip lights offered, making future replacements impossible when maintaining the system.
3. A lot of LED strip lights trialled at EPA Products did not offer the same light spread as the fluorescent, therefore the customer would require more LED lights to be installed, again not a cost effective solution.
4. The LED strip lights offered to the poultry industry are not suitable, simply because they were not designed to be robust enough to be used within in a poultry shed. Another major problem the manufacture had was no understanding of the negative effects and responses of poultry due to the incorrect colour spectrum. The systems offered were better suited to offices and schools.

#### **The answer to our problems arrived in 2016**

The Duroxo Agritube is a high quality LED dimmable strip light designed and engineered for the poultry industry.

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*Why is Duroxo Agritube so good.....?*

1. The Duroxo is designed for the poultry industry, and to accept the harsh environment. Pressure washer proof to 150 bar high pressure cleaning even with hot water and steam. Ammonia proof IP69k Gas Tight rated by means of potted, corrosion –proof, end caps on robust chemically resistant clear tube made of impact resistant Acrylic (PMMA). Chemical proof against most common cleaning disinfecting agents.
2. Quality components used within the manufacture of the lighting system, Samsung LEDs and BAG LED driver provide a service life in excess of 100,000 hrs when operated at 100% output. The effective life in a poultry shed of 15 years.
3. Manufacture of the Duroxo Agritube is European. The lighting manufacturer is Trilux the fourth largest in Europe, with the head office and R&D in Germany.
4. **Warranty is a market leading 7 years.**
5. The industry required lighting levels can be achieved with a single row of lights on buildings up to 24 meters wide.

<b>PRODUCT</b>	Duroxo Agritube MXB 5500 – 840 ETDD PMMA. 38 Watt	Duroxo Agritube MXB 7500 – 840 ETDD PMMA. 54 Watt	Duroxo Agritube MXB 5500 – 840 ETDD PMMA. 38 Watt
<b>FEATURES</b>	5500lm, Maximum Wide Beam, DALI	7500lm, Maximum Wide Beam, DALI	5500lm, Maximum Wide Beam, DALI
<b>COLOUR</b>	Neutral White 4000k	Neutral White 4000k	Neutral White 3000k
<b>HOUSE TYPE</b>	Broiler	Broiler	Breeder
<b>DESIGN GUIDE</b>	Single row, up to 18.3m wide poultry house at 3.5m mount- ing height	Single row, up to 24m wide poultry house at 4m+ mounting height	Layers – double row, up to 18.3m wide poultry house@ 2.1m+ mounting height. Rearers – single row, up to 18.3m wide poultry hose @3.5m+ mounting height

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## DEVELOPED FOR POULTRY

### Spectral Response

Domestic fowl are quad-chromants. Like humans, fowl developed a peak sensitivity to green at 550 nm. But they also have enhanced sensitivity to reds, blues, and ultraviolet (UV) light. This is thought to be due to their origins. The tropical jungles of South Asia have a filtering effect on the light due to the green leaves in the tree canopies. Thus, fowl developed enhanced sensitivity to blue and red with peaks at 450 nm (12x human sensitivity) and 640 nm (4x human sensitivity).

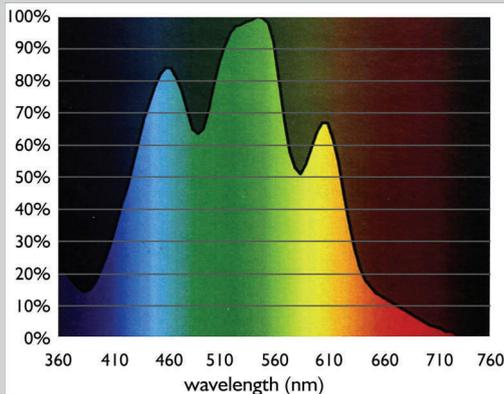


Figure 1. Domestic fowl photopic spectral response.

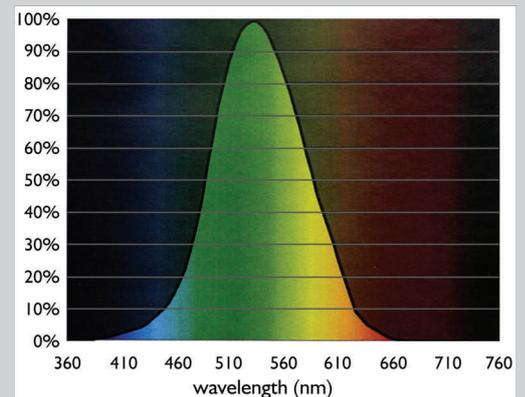


Figure 2. Human photopic spectral response (IE 1978).

### Agritube Cool White, dominant blue spectrum for Broilers

Each colour has a distinct effect on fowl physiology. Blue and green light significantly increases growth rate. Narrow-band blue light reduces locomotion. It also reduces cannibalism rate at late age (especially in broiler chickens raised for human consumption). Together, green and blue light promote muscle growth due to more effective stimulation of testosterone secretion. Overall, blue light has been shown to improve feed conversion by up to 4%, thereby reducing the cost per pound by up to 3% and increasing overall live weight by up to 5%.

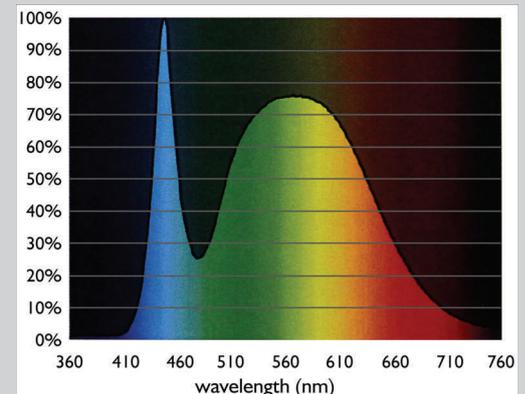


Figure 11. Spectrum of cool (5000K) LED light.

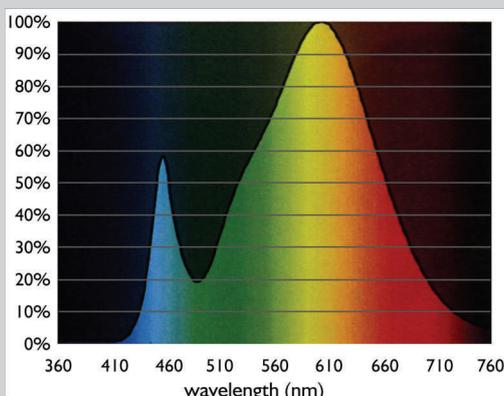


Figure 12. Spectrum of warm (2700K) LED light.

### Agritube Warm White, dominant red spectrum for Breeders

Red light stimulates and promotes sexual activity and increases growth rates for chickens and turkeys at the beginning of the rearing period. It also increases locomotion, thereby minimizing leg disorders at the end of the rearing period. Red light also reduces the amount of feed consumption per egg laid with no differences in egg size, shell weight, shell thickness, or yolk and albumin weights. Overall, red light has been shown to lengthen the peak production period and increase egg production by up to 38 eggs per hen, while potentially decreasing food consumption by up to 20%.

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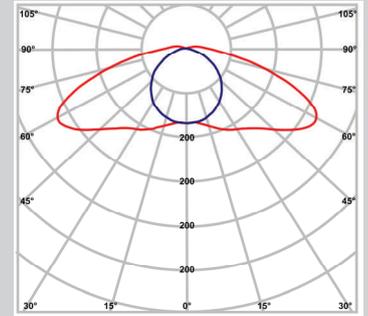


### Operating Frequency

Traditional low frequency fluorescents operate at 50Hz and are perceived by poultry to flicker which may cause stress for the flock. The Agritube operates at 500Hz meaning no flicker.

### Light Distribution

The Agritube has been designed with a patented wide beam optic that allows very efficient use by spreading the light evenly across the full width of a poultry house from a centrally mounted, single row of luminaires. This avoids the hotspots and dark areas typical of batten or pendant lighting and is likely to reduce litter usage.



### Dali Dimming and Dusk-to-Dawn Controllers

The Agritube LEDs are run by a digital "Dali" driver enabling smooth dimming over a range from 100% to 1%. Matched with a suitable lighting control unit this gives fully controllable Dusk-to-Dawn operation and very low light levels for catching.

## DESIGNED FOR BUSINESS

### Installation Efficiencies

The Agritube is installed as a single row down the centre or near-centre of the house. This allows for faster installations with fewer materials and lower labour costs than a multi-row system. In most instances, installation takes a day per house, minimising disturbance to operational planning, and meaning a complete farm installation can be completed between flocks.

### Energy Efficiency

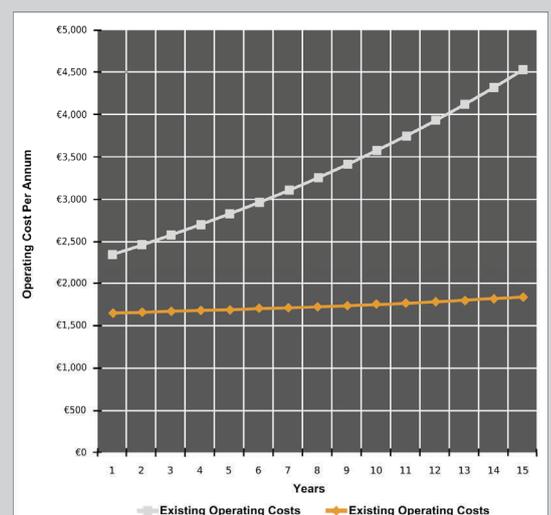
The leading edge technology used in the Agritube gives market leading efficiency with light output of 145 Lumens per Watt.

### Flock Mode

In most poultry houses the Agritube will be set to about 50% of maximum output to achieve the regulation light levels. Operating at this dimmed level reduces energy consumption

### Cleaning Mode

During the cleaning and maintenance cycle, light levels can be increased to 100% of output in order to provide a bright house and effective working environment.



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## BUILT TO LAST

### Rated Life

High quality Samsung LEDs and BAG LED driver provide a service life of in excess of 100,000 hrs when operated at 100% output. In poultry houses this means an effective life of more than 15 years.

### Ammonia Proof

IP69K "Gas Tight" rated by means of potted, corrosion-proof, end caps on robust and chemically resistant clear tube made of impact resistant Acrylic (PMMA) gives protection against ingress of harming substances, fluids and gases. This means the Agritube casing and electronic circuitry is protected against the degrading effects of Ammonia produced by poultry.

### Chemical Proof

Resistant against most common cleaning and disinfecting agents

### Pressure Wash Proof

Resistant against 150 bar high-pressure cleaning and hot-water/steam cleaning

### Warranty

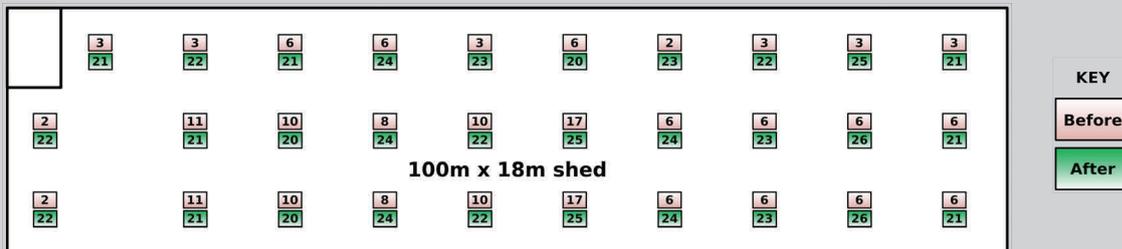
The Agritube comes with a market leading 7 year warranty

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## DESIGNED FOR BUSINESS

These Before and After light readings, recorded on-site, show the uniformity of the light distribution achieved with an Agritube installation over existing T12 4ft battens. The maximum of 26 lux and minimum of 21 lux showing a variation of only 5 lux across the house.



*N.B. The 'before' lux readings are below current 20 lux minimum regulations as, i) the lighting system was originally designed to a lower specification to meet the now superseded 10 lux regulation level and, ii) the units are now reaching end-of-life*

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