Eco Junction Co. has been working on development of LED light bulbs for agricultural business since 2008. We repeatedly tested our products with agricultural producers to improve your business productivity and management by saving energy.

In terms of new agricultural productive style with LED lights.

The stable indoor crop production which is not influenced by weather conditions has attracted attention for over 20 years. The main crops are vegetables, flowers, fruits, mushrooms, chickens and their eggs which are sold at relatively high prices.
Water, fertilizer, soil, and light are necessary for indoor productions. In terms of light, incandescent light bulbs and fluorescent lights have been used until today.
These days, LED products attract attention and are used for following reasons:

① the global warming has been a worldwide issue since the last half of 1990s, and electricity and CO2 reductions are essential to prevent it;

② the electricity costs has been rising due to the increasing demand for electricity; farmers are burdened with it;

③ you can produce crops in stable condition without influence of wind, flood, fluctuation of temperature etc;

④ it is easy to make a production schedule;

⑤ you can improve the quality of crops to sell them expensively;

LED products had been expensive until around 2005, therefore, it would take 10 to 15 years to pay them off by saving electricity costs with them. This is why LED products were not really popular, however now, agricultural colleges and expert organizations test them in practical ways, and collect a lot of data and good results.

As of 2011, LED products' prices fell considerably, and it will take less than 1 year to pay off the cost of installing the LED products by substantially saving electricity costs with them, depending on the situation. Therefore, a lot of agricultural producers tend to consider installing them these days.
Each crop data is below.

Ⓐ Vegetable plants (LED light bar)

<Crops>

Lettuce, Korean lettuce, green leaf, Italian parsley, watercress, coriander, basil, peppermint, arugula, water dropwort, endive, etc.

*Expensive kinds of seeds are mainly cultivated.

<Suitable LED light bars>

The arrangement: [red, blue, white, blue, red]

*Four to six 20W LED light bars are needed.

<Others>

*Fertilized water and soil are necessary for raising vegetables.

*Equipments such as air shower and air conditioner is necessary for middle and large scale vegetable plants to cultivate crops, therefore, initial costs must be expensive. We repeatedly experimented at universities, research institutions and trading companies.

Ⓑ Flowers (LED light bulb)

<Crops>

Chrysanthemum

<Suitable LED light bulbs>

The arrangement: [red, blue, red, blue, red] with 5W LED light bulbs.

<Others>

A comparison test between LED light bulb and incandescent light bulb is in progress in Okinawa.

We repeatedly experimented at universities and research institutions.

<Process>

A little lack of quantity of light?

Ⓒ Fruits

<Crops>

Strawberry

<Suitable LED light bars>

The arrangement: [red, blue, white, blue, red]

*A test with three 20W LED light bars is in progress in Takamatsu.

<Others>

A comparison test between LED light bar and fluorescent light is in progress under the same management condition of soil, water and temperature.

<Process>

A considerable lack of quantity of light?

Ⓓ Mushrooms (LED light bar)

<Crops>

Siitake mushroom, shimeji mushroom, enoki mushroom, eringi mushroom, etc.

<Suitable LED light bars>

① Blue ┐
② White ├ 7 to 10W LED light bar each
③ Blue + white ┘

<Others>

・We installed more than 30,000 units for national major mushroom producers.
・Each producer has their own production know-how.

Ⓔ Chicken raising (egg)(LED light bulb)

<Uses>

Raising chickens including chicks.

<Suitable LED light bulbs>

LED light bulbs (the standard light bulb color, red color and amber color)
*Amber color makes chickens relaxed mentally.

<Others>

We had installed 900 units (the standard light bulb color) and 120 units (red color) for major chicken farmers by February 2012.

Today, incandescent light bulb is still generally used, however, its life is very short (1,000h).

Therefore, LED light bulb is the optimal option in terms of operating cost (electricity cost, light bulb changing cost), and moreover, yield of eggs will increase by 2.5% to 3% by installing the amber color LED light bulb which can reduce loss of egg production by about 10%.

When you install LED light bulbs for your agricultural business,....

・Choose the most efficient LED light bulb;
・You don't need to change all light bulbs at once; let's install them in stages;
・You can pay by installments (you could pay monthly payment with money saved by reducing electricity costs with LED light bulbs);
・Can you get subsidy from city or prefecture in which you live?

About LED light bulb...

① The electricity cost: 1/8 times as much as incandescent light bulb.
1/2.5 times as much as fluorescent light.

② The life: 30 times as long as light bulb (1,000h → 30,000h).
5 times as long as fluorescent light (8,000h → 40,000h).

Its performance, brightness and illuminating angle surprisingly improved.
(Our products Ecopika Lamp and Eco Farm Pro Lamp are bright in all directions.)
Its price is also inexpensive today.

<Attention>

- Choose a professional LED light bulb which has built-in safety circuits such as overcurrent protection IC.
- LED light bulb is semiconductor.
- LED light bulb is not proof against shock and water. Please handle it with care.

LED Lamp's Profitability Chart

◎Very good ○ Good △ Need to study ▲ Bad

	A) Vegetable	B) Flower	C) Fruit	D) Mushroom	E) Chicken raising
Installation cost	△	○	▲	◎	◎
Payoff period	△	○	▲	◎	◎
Study progress	○	○	○	◎	◎

Installation progress	Gradually on going.	Installed more than 30,000 units in the country.	Installation began.

*Paying in installments is recommended.
You can install LED lamps without any costs practically by setting both the amount of monthly saving electricity costs and the amount of monthly payments for the LED lamps equal.
Moreover, you can install them without costs practically (in 3-year installments) in combination with a solar power generation system. Big profits are expected by saving electricity costs after full payment.
Please consider our plans.

April, 2012

ECO JUNCTION Co.