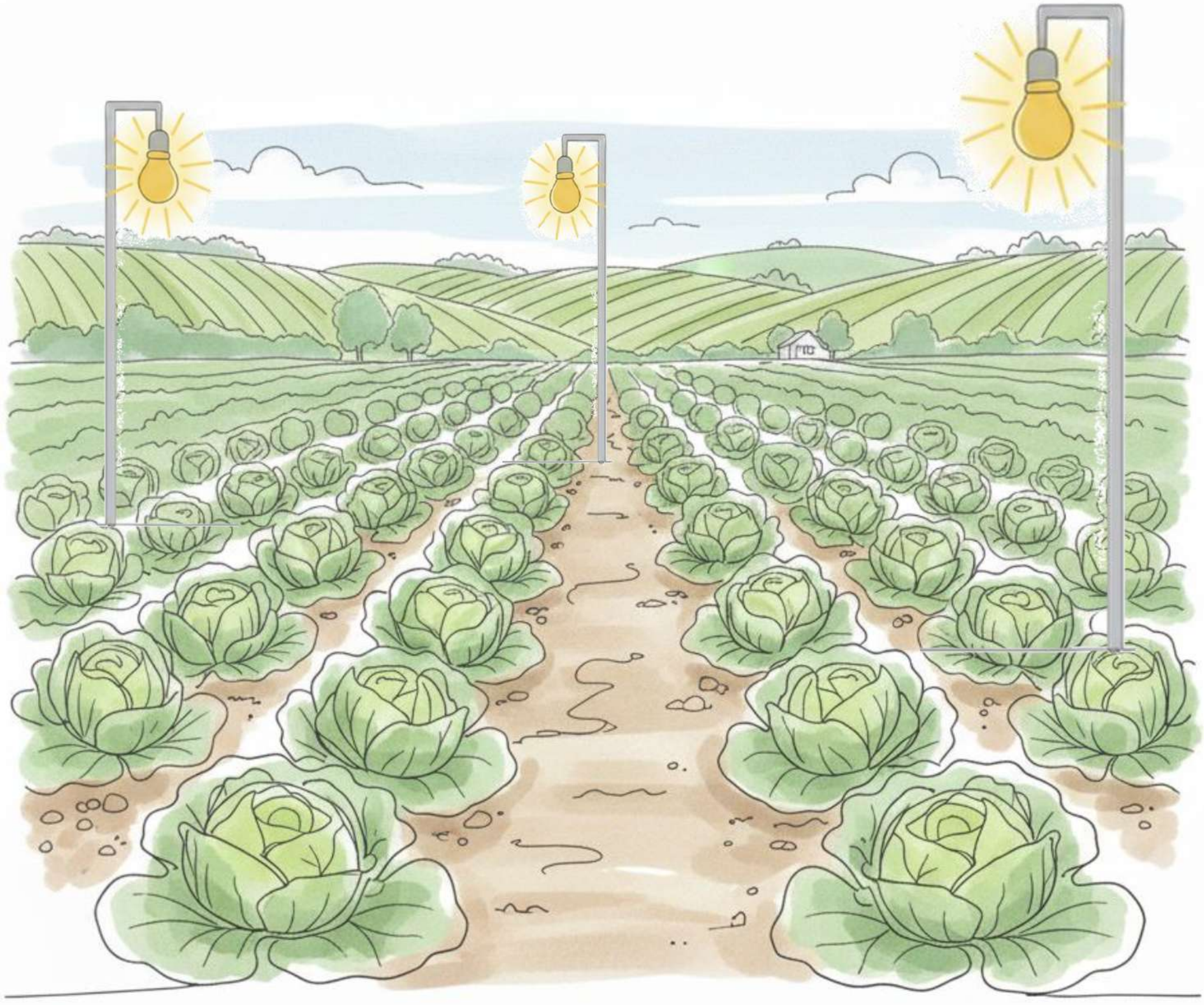
Guide on using special yellow colour LED moth repellent bulbs in Cabbage Farming:



The Project for Promotion of Safe and Appropriate Use of Pesticides and Fertilizers in Sri Lanka (SAFE)

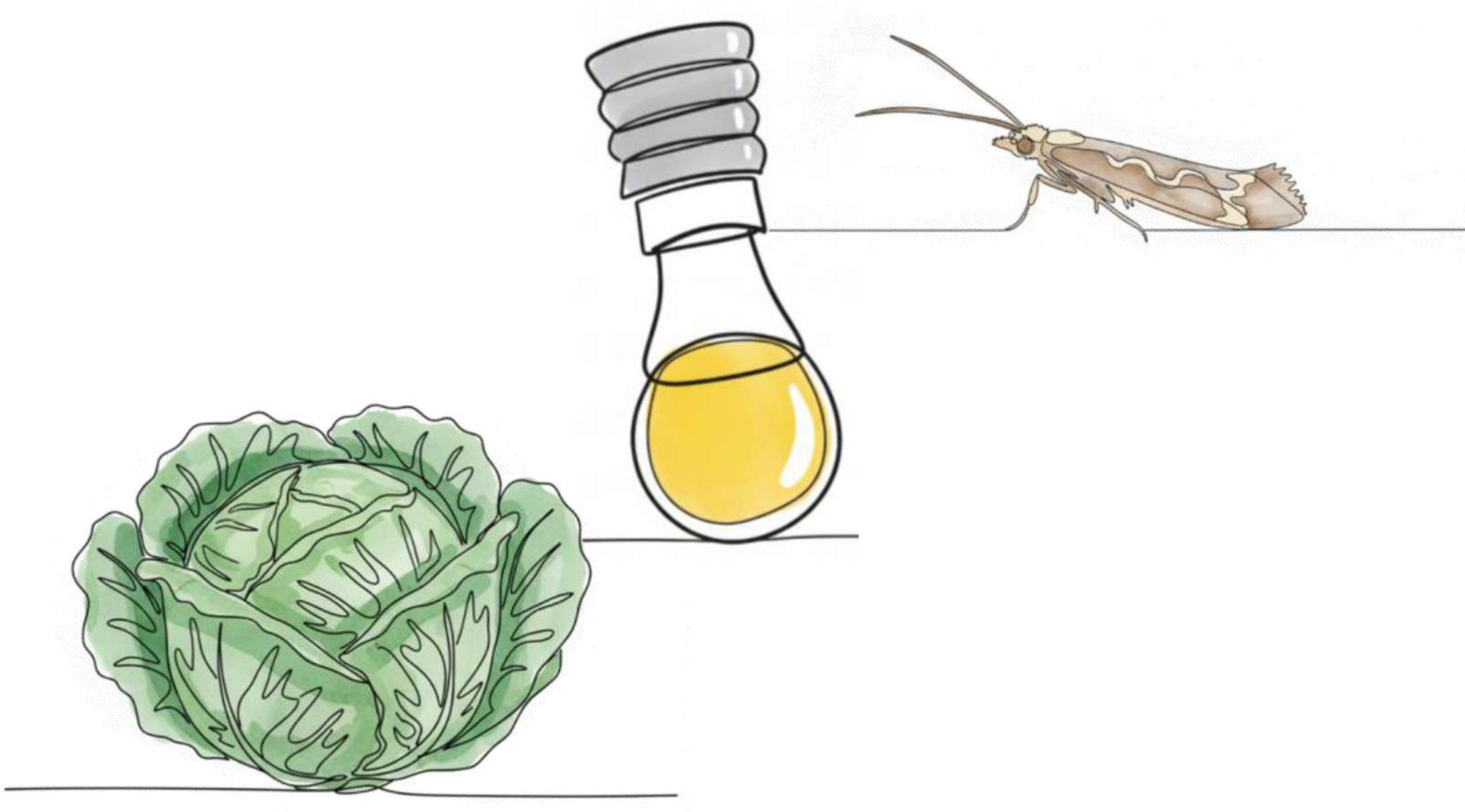
Introduction:

This manual introduces an eco-friendly pest management strategy using yellow LED moth repellent bulbs to promote the sustainable and productive Cabbage farming.

Cabbage cultivation in Sri Lanka, particularly in the districts such as Nuwara Eliya, Badulla, Kandy. Matale and Puttalam faces severe challenges from Cabbage Caterpillar Complex (*Spodoptera litura*, Diamondback Moth, and Semi-looper) infestations.

Due to the higher frequency and severity of the pest damage, significant control efforts have been required, and it is widely known that farmers tend to overuse pesticides to protect their cabbage crop from the pests.

It has been identified that the blinking yellow LED lights can repel night moths (*Spodoptera litura*, Diamondback Moth, and Semi-looper), suppressing their behavior effectively, even in small open-field areas.



Pest Control Technology Using Yellow LED Moth Repellent Bulbs:

Minimum Illuminance Requirements

Scientific trials have demonstrated that a **minimum illuminance of 277 lux** from yellow LED lights effectively suppresses night time moth activity.

Number of Bulbs

Use **9 bulbs per 1,000 m²** for optimal coverage.

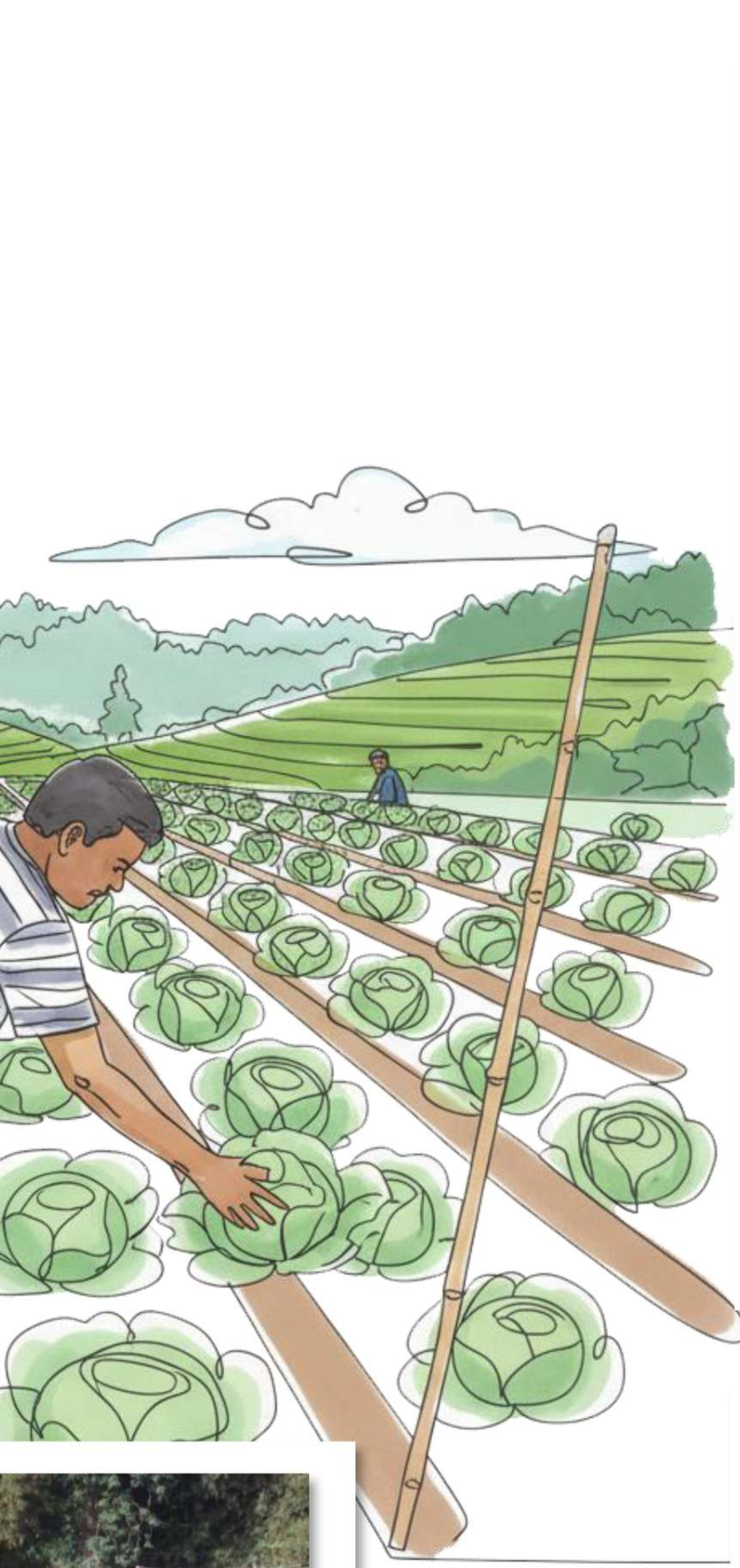
Spacing

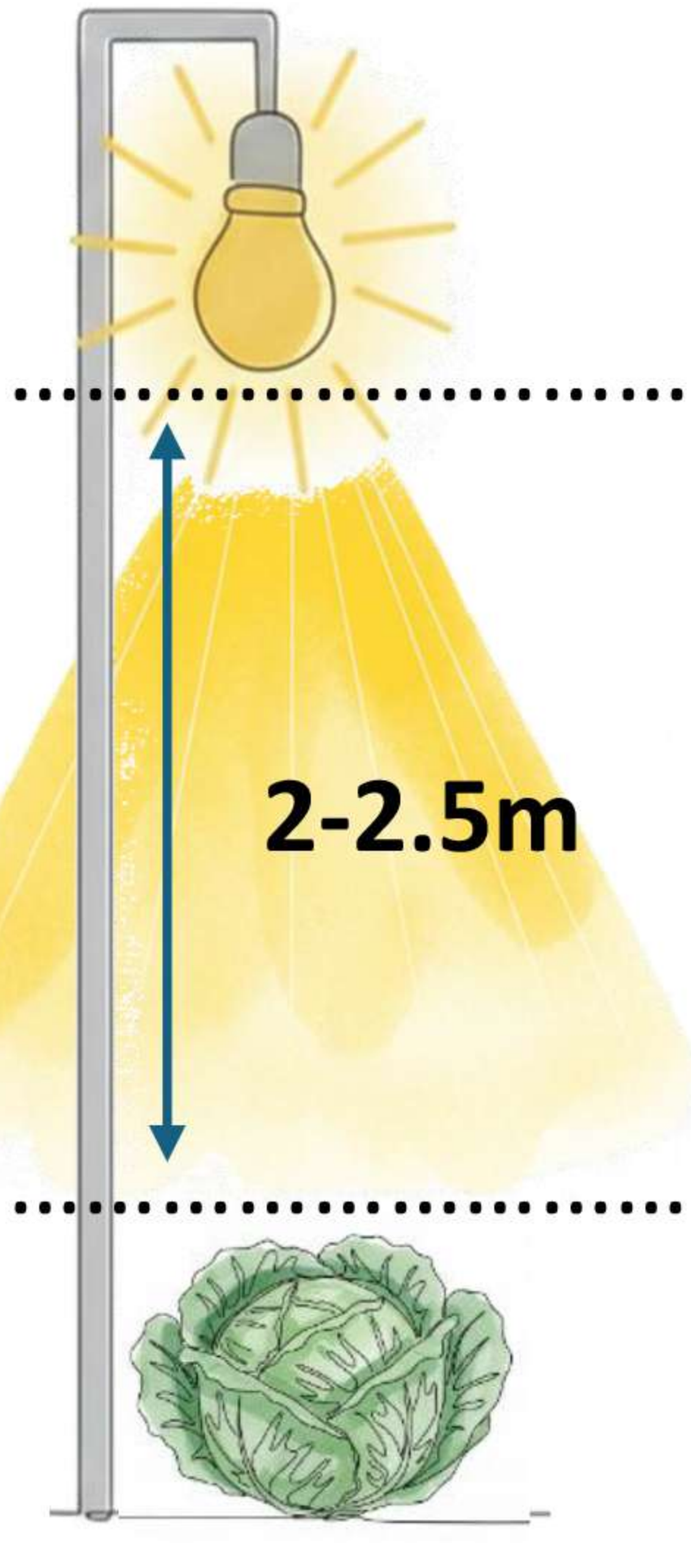
Install the bulbs **7-10 meters apart.**

Supplementary Measures:

Surround the field with 1-2 meterss height 40-mesh insect-proof net to enhance the effectiveness of the bulbs and protect against other pests.

The initial setup cost of this technology is approximately **1 Lakh Rs. per 1,000 m², with a lifesp**





Height

Position the bulbs **2-2.5 meters above the crop canopy.**

pan of 5 years.

Activating the system

This particular blinking LED bulb system needs to activate around 6.30 pm each day and de-activate (switch off) around 6.30 am next day. Without any disruptions, the bulb system needs to be continuously operated to get the maximum result.

The appropriate use of pesticides:

In case of severe infestations of caterpillar complex, limited applications of recommended pesticide applications can be done appropriately.

In addition to the effect of yellow light application, the biocontrol agent *Cotesia plutellae* (parasitoid) reduces the Diamond Back moth population. Due to appropriate use of pesticides, the population of *Cotesia plutellae increases.*

Demonstration summary:

Field demonstrations across multiple regions validated the efficacy of yellow LED moth repellent bulbs in cabbage cultivation from 2018 to 2023 and also approved by the department of at the Technology Releasing committee meeting as DoA recommended technology in 2022.

The trials showed significant reductions in pest-related damage, with crop losses decreasing from 50% to 10% on average.

As well, the frequency of chemical pesticide applications was reduced by over 80% (from 10 sprays to 2 sprays per season), contributing to cost savings and environmental benefits.

Points to note when using the manual

- During the early stages of planting, ensure that the yellow LED bulbs are installed and operational before transplanting the seedlings.
- This timing is critical to prevent early infestations and ensure optimal pest control.

Prepared by the project for the promotion of safe and appropriate use of pesticides and fertilizers in Sri Lanka, implemented by the Department of Agriculture and the Japan International Cooperation Agency (JICA).

November 2025