



**Elite Scientific Instruments Sdn. Bhd.,**  
A-LG-03, Block A , Section 1, Serdang Perdana Selatan  
43300 Seri Kembangan,  
Selangor Darul Ehsan  
Tel : ( 603 ) 8945 6100 Fax : ( 603 ) 8945 7100

Course Title	: <b>Portable Photosynthesis System, LI-6400XT</b>	Course Duration	: <b>2 day (s)</b>
Course Code	: <b>LI64</b>	Course Venue	: <b>TBA</b>
Course Category:	<b>Plant Physiology Program</b>		
Course Level	: <b>Refresher</b>	Course Fee	: <b>RM500 per person</b>

### ➤ **Objective of Training**

At the end of the course, the participants will be able:

- 1) Conduct discussion and overview on the technical matter related to photosynthesis processes.
- 2) Deliberate and share information on integrated analyses of gas exchange and chlorophyll fluorescence

### ➤ **Background facilities**

The workshop training is classified into two sessions, Theory Session on Day 1 and Practical Session on Day 2 to ensure all the participants will be able to understand thoroughly about the course content. The venue for the course training will be announced **one month** before the scheduled date of workshop training.

### ➤ **Background of Speaker**

This course will be given by our Plant Science Consultant, **Dr Muhammad Nazmin bin Yaapar** who has a wide knowledge and experience in general plant physiology and rice science research. Dr Muhammad Nazmin Yaapar is affiliated to the Department of Crop Science, Universiti Putra Malaysia, where he is currently working as a Senior Lecturer. He has experience in teaching various plant science subjects at university level including agriculture botany, weed science, crop nutrition, rice production and crop physiology. He has authored and co-authored several national and international publications and also working as a reviewer for reputed professional journals. Moreover, he is having an active association with a photosynthesis research team in the United Kingdom. He has been regularly recognised by the local media as the reference scientist particularly in rice cultivation and crop improvement.

### ➤ **Introduction**

Without a doubt LI-6400XT has been widely used and proven to be essential in the study of plant physiology, particularly related to gas exchange measurements. For this reason, understanding the mechanism of the LI-6400XT itself is of utmost importance to ensure correct measurements are made thus leading to accurate data obtained. The understanding of the machine will go hand in hand with the understanding of the plant physiology to ensure proper preparations of the plants that will eventually result in confidence in the data taken. Depending on the nature of the project and hypotheses to be addressed, all these will determine how the measurements are being made and parameters interpretation post-measurements.

➤ **Target Group**

This training is designed especially for students, technicians and researchers in the field of plant physiology and crop improvement particularly dealing with photosynthesis and stress response in plants.

➤ **Course Outline**

**Slot 1: The Basic of Photosynthesis**

- The Light-Dependent reaction
- Electromagnetic Spectrum and Visible Light
- Cyclic and noncyclic photophosphorylation in photosystems
- Light-Independent reaction
- Carbon Fixation, Triose-P production, RuBP regeneration
- Photorespiration

**Slot 2: Introduction to LI-6400XT: Equipment and Materials**

- The LED light source and CO<sub>2</sub> mixer
- CO<sub>2</sub> cartridges
- *Drierite* – a desiccant
- Soda lime for CO<sub>2</sub> scrub
- O-rings and gasket foams
- Warming up equipment and
- Handling and maintenance of equipment

**Slot 3: Making Fundamental Measurements using LI-6400XT**

- Survey measurements
- Measurements to produce response curves
- The concept of Light and CO<sub>2</sub> response curves

-

**Slot 5: Field Data Measurements**

- Warming-up equipment
- Prepping the plants before measurements
- Making survey and response curve measurements using broad and narrow leaves

**Slot 6: Data Interpretation and Analysis of Result**

- Data output and networking
- OPEN Instrument Software



Elite Scientific Instruments Sdn. Bhd.,  
 A-LG-03, Block A , Section 1, Serdang Perdana Selatan  
 43300 Seri Kembangan,  
 Selangor Darul Ehsan  
 Tel : ( 603 ) 8945 6100 Fax : ( 603 ) 8945 7100

➤ Tentative program

Date & Time	Activities	Venue
<b><u>Day 1</u></b>		
8:00 AM	Registration	TBA
9:00 AM	<b>Slot 1: The Basic of Photosynthesis</b>	
10:30 AM	Break	
11:00 AM	<b>Slot 2: Introduction to LI-6400XT: Equipment and Materials</b>	
1:00 PM	Lunch break	
2:30 PM	<b>Slot 3: Making Fundamental Measurements using LI-6400XT</b>	
5:00 PM	Dismiss	
<b><u>Day 2</u></b>		
7:30 AM	<b>Slot 5: Field Data Measurement</b> Break	TBA
10:00 AM	<b>Slot 6: Data interpretation and analysis of the result</b>	
12:00 PM	Closing ceremony / Photo session/ Lunch break/ Dismiss	