

Getting To Know Our Professors

A/P He Jie



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is currently an Associate Professor with the Natural Sciences & Science Education (NSSE) Academic Group.

What research area(s) do you specialise in? How does it impact your work at NIE?

I am a plant physiologist. The research areas that I am currently working on are:

- 1) Photosynthesis (chlorophyll fluorescence, Rubisco protein and carbohydrate metabolism);
- 2) Shoot-root communication (Carbon partitioning, nutrient uptake and N metabolism);
- 3) Effects of root-zone temperature and root-zone CO₂ enrichment on temperate vegetable crops grown in the tropics;
- 4) Physiology of tropical orchids and orchid conservation in Singapore; and
- 5) Vertical farming systems for vegetable production.

My research areas are highly relevant to not only biological education in Singapore, but also food security and sustainable living in Singapore. The knowledge and new findings that my research generates form the basis of sustainable development of various teaching materials for effective teaching and learning, in the areas of food security and sustainable living.

How did your interest in the research areas come about?

My interest in these research areas can be traced back to my personal experience. I worked as a farmer after I finished my 10-year basic education during the Cultural Revolution in China in 1976. There, I witnessed the poverty of Chinese farmers during the two years I was staying with a very poor family. I chose biology as my university degree when I was 18 years old, as my ambition was to become a biology teacher or a researcher in plant sciences who could make contributions to overcome rural poverty.

Could you share with us some interesting facets of your research areas?

I was able to grow temperate vegetables in a tropical greenhouse all year round by cooling only their roots. I was also able to grow vegetables vertically indoors just by using LED lighting, without the need for sunlight.

Why is NIE a good place for you to do your work?

I appreciate the organisational support and recognition. I have worked in NIE for more than 20 years and I have always felt supported and valued.

What does NIE offer to higher degree students that is unique?

NIE is able to offer higher degree programmes by research and coursework in both academic subjects and professional development. The higher degree programmes offered by NIE is unique in its diversity and richness, allowing the students to plan their individual educational experience in accordance with their career aspirations.

What have you learned from your students?

I have benefitted from my students' curiosity and original thoughts. While anticipating and addressing students' challenging questions, I have put in a great amount of effort searching for new knowledge. Indirectly, I gain new knowledge through students' questions and interactions during or after my classes and laboratory work.

What advice would you give to those who would like to pursue a higher degree programme?

Determination is linked to intrinsic interest, and motivation is the key to success.