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Maize Photosynthetic Carbon Metabolism and Its Response to Light in Different Areas

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It was investigated that net photosynthetic rate (Pn) and photosynthate accumulation of maize Zhengdan 958 (ZD958) and their responses to light changes in three different areas of China, Qitai in Xinjiang, Yongning in Ningxia and Gongzhuling in Jilin province. The results as follows, A. With the increase of population density, Photo flux density (PFD) in canopy of ZD958 decreased at silking and grain filling stages, and the Pn of ear leaf also reduced correspondingly. B. Comparing the Pn of ear leaves of different areas with equal population density, it appears that maize Pn has the same trend as the PFD in different areas, that is, Qitai > Yinchuan > Gongzhuling, at silking and grain filling stages. C. The activities of sucrose phosphate synthase (SPS) in ear leaf, sucrose synthase (SS) and adenosine diphosphate glucose pyrophosphorylase (AGPase) in kernel, and the contents of sucrose and starch in kernel all appear the same trend as the Pn among the same population density of different areas at silking and grain filling stages, that is, Qitai > Yinchuan > Gongzhuling. so we infer that light intensity is the determining factor of photosynthetic rate, and temperature, which is relevant to sunlight, also affect the dark reaction of photosynthesis. In summary, the strongest sunlight in Qitai is most conducive to maize photosynthesis and yield formation, followed by light condition of Yinchuan, and the weakest sunlight in Gongzhuling are the limiting factor of maize yield promotion. Systematic proteomics and metabolomics studies are being conducted on the carbon metabolism of maize leaves and kernels.

Biography

Jiang Xu completed his PhD from China Agricultural University (CAU) and postdoctoral studies from National Institute of Biological Sciences (NIBS) in Beijing. He works as a research professor now at the Institute of Crop Science, Chinese Academy of Agricultural Sciences (CAAS). He has published more than 40 papers in reputed journals.

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