

[P2] Farming System

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 2 (Poster) (Farming System)

1:15 PM - 2:00 PM

[P2-34] Selection of Sorghum Growth Indicators for the Development of Smart Farm of Field Food Crops

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Digital agriculture is a useful solution to improve the productivity and quality of agricultural products, also to solve the aging problem in rural areas. Meanwhile, image analysis is a very important tool for the development of smart farm technology. Moreover, research on growth indicators to understand the growth situation of crops should be preceded for the development of image-based smart farm technology. We chose sorghum as a test crop for the image analysis because it makes us easy to acquire growth images due to its simple plant shape. Sorghum(var. Noeulchal) was sown in a tray sowing box and seedling was raised for 9days, then it was transplanted into the main field. And, we created fertilizer(control, heavy, no) and soil moisture(control, excess, drought) treatment plots to select key growth indicators with large growth changes among treatments, and investigated total 11 growth indicators(culm length, plant height, stem diameter, leaf age, internode length 1~2, 2~3, 3~4, ear length, ear width, upper leaf color, lower leaf color) every week after transplanting. As a result of the experiment, we selected meaningful key growth indicators through ANOVA variance analysis and DMRT as follows; (Fertilizer section) Culm length, plant length, stem diameter and upper leaf color at no fertilizer plot during the vegetation stage; Plant length during the reproductive stage. (Irrigation section) Upper leaf color at excess moisture plot during the vegetation stage; Stem diameter, upper leaf color and lower leaf color at excess moisture plot; Upper leaf color and lower leaf color at drought plot during the reproductive stage. We are currently pursuing an image analysis experiment using the YOLO algorithm.