

Studies of the phenomena of waving plants (“HONAMI”) caused by wind: why does rice plants undulate?

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There are many rice fields around our school. We often see the undulating rice plants on windy days. So we have studied the phenomena of waving plants (“HONAMI”) caused by strong wind. To clarify “ HONAMI” phenomena, we choose field surveys and a video analysis as our survey methods.

At the result of the field survey, the fallen rice plants formed an oval shape depression. And the long axis of the depression formed perpendicular to the direction of wind.

Next, we tried the video analysis. The video of the “HONAMI” has been shot by a smart phone camera which is fixed at a place where the camera could film whole area of the rice field.

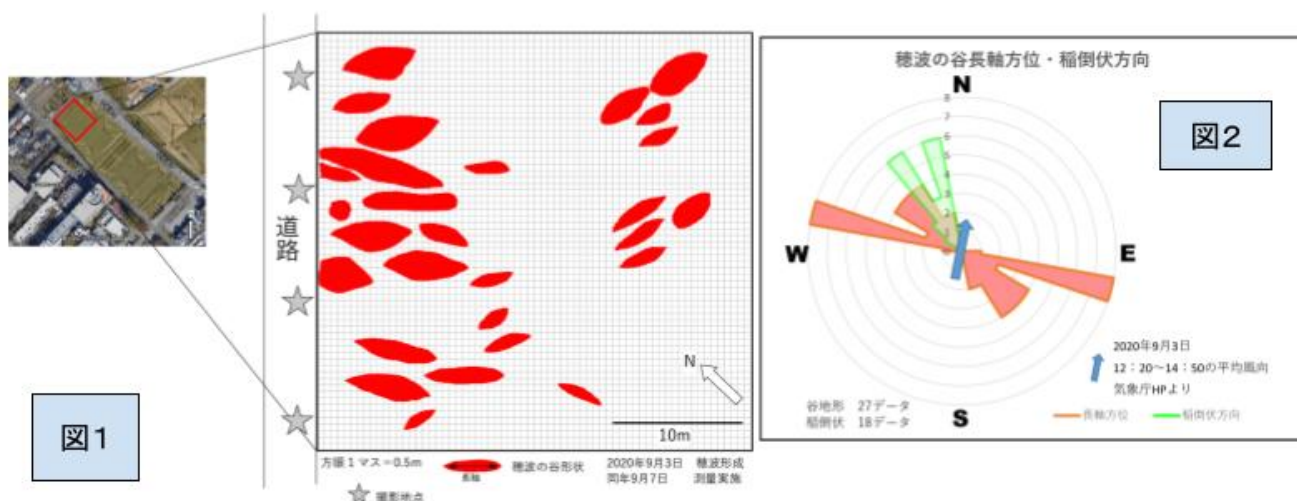
From the video analysis, we found that it was classified into a single type "HONAMI" and a complex type one.

The moving speed of the single type one has no correlation with the wind velocity.

On the other hand, the complex type one has a positive correlation with the wind velocity.

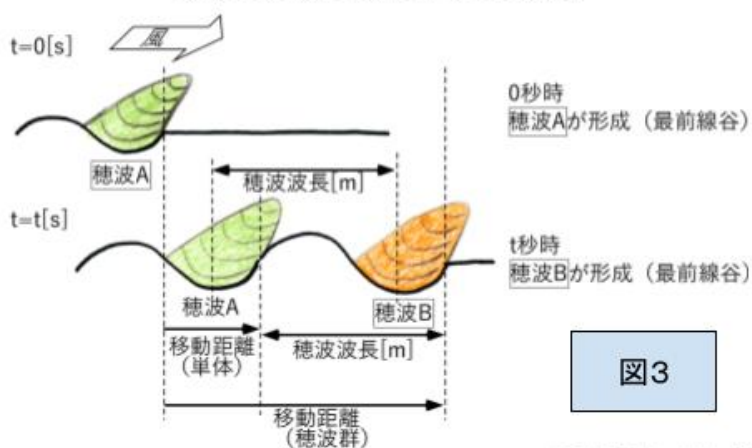
Finally, we focused on the shape of the depression. The wavelength and the long axis length were found to have a strong positive correlation with the wind velocity.

Keywords: Honami, Undulating rice plants, Wind, Self-made anemometer

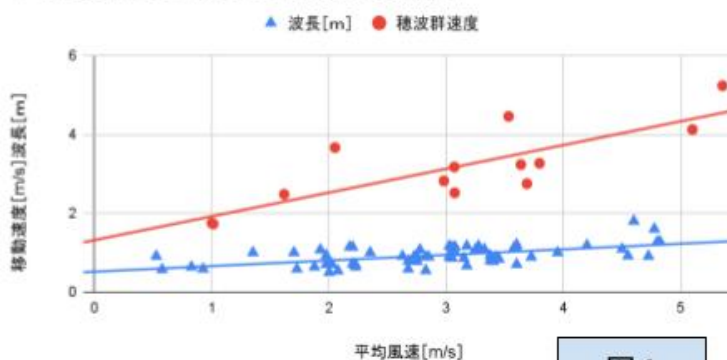


水田に保存された穂波位置図

穂波の形成と使用語句の関係図



平均風速[m/s]と波長[m]穂波群速度[m/s]



長軸長さ[m]と過去10秒移動平均風速[m/s]

