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## Physiological Mechanisms of Poor Grain Growth in Abnormally Early Ripening Wheat Grown in West Japan

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**Abstract:** We found a symptom of abnormally early ripening in a farmer's field in Natajima, Yamaguchi Prefecture, Japan, in 2004/2005, and examined its physiological mechanisms for two weeks until maturity. In the following two seasons, 2005/2006 and 2006/2007, we examined the mechanisms throughout the grain filling period at another farmer's field where the symptoms appeared in the preceding four seasons. The grain yield was lower in abnormally early ripening (AER) than in the normal because of lighter grain weight in 2004/2005. The grain weight and water soluble carbohydrate, WSC, in culm were similar at the beginning of symptom, two weeks before maturity, then the grain weight increased and WSC in culm decreased more sharply in the normal than in the AER. So the grain weight was poorer and more WSC in culm remained unutilized at maturity in the AER. Another field showed the symptom of AER in both seasons. The spike dry weight and WSC in culm were the similar between the treatments from anthesis to milk ripe stage in 2005/2006, then they showed almost similar pattern in their change as in 2004/2005 until maturity. It was thought that the slower grain growth in later phase might be due to limited current assimilation and poor remobilization of culm reserves to the grains in AER.

**Keywords:** [Abnormally early ripening](#), [Culm reserves](#), [Poor grain filling](#), [Remobilization](#), [Starch granules](#), [Wheat](#)

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