Fill those Grains: Nutrients are Critical during Flowering Stage

Tagumpay Sa Palay Article for March 2012
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A well-managed rice field planted with Pioneer® hybrid rice has the potential to yield more than 11 tons per hectare. One of the reasons for this high yield is the relatively greater number of spikelet per panicle compared to traditional inbred.

It is a well-established fact that hybrids usually have lower spikelet fertility (filled grains per panicle) than inbred. Although the reason for the lower fertility of hybrids is not exactly known, low fertility is attributed to factors such as incomplete restoration in the hybrid and an insufficient source of photosynthates needed to fill all spikelets. Panicles of rice hybrids may reach more than 30 cm in length, and it takes a great deal of resources from the plant to turn those spikelets into seeds.

Fortunately, there is something you can do to maximize gains from planting PHB71 or PHB73 Premium Quality hybrid rice. Here's the key: ***supplementing the flowering stage with the right kind and right amount of fertilizer helps fill those grains.***

Traditional fertilizer application in inbred varieties requires splitting the application usually up to panicle initiation only. In previous articles in this column, it was indicated that 1 bag of ammonium sulfate (21-0-0) should be applied at flowering stage (80-83 days after sowing) to achieve sufficient grain filling. The table below presents the recommended fertilizer rates for planting PHB71.

Timing of Application	Dry Season (160-60-90)	Wet Season (120-60-90)
Basal	5 bags 14-14-14	5 bags 14-14-14
Mid-tillering (38-41 days after sowing)	2 bags 16-20-0	2 bags 16-20-0
	2 bags 46-0-0	1 bag 46-0-0
	2 bags 0-0-60	2 bags 0-0-60
Early Panicle Initiation (53-56 days after sowing)	2 bags 46-0-0	1 bag 46-0-0
		1 bag 21-0-0
Flowering (80-83 days after sowing)*	1 bag 21-0-0	1 bag 21-0-0

Farmers are not used to the practice of applying fertilizer during the flowering stage. This recommendation is one of the most ignored by our rice farmers, especially when they see good growth in their rice plants. Take note that plant growth does not stop at maximum tillering. While it is a good thing to see healthy and green rice plants, farmers sometimes feel content and assume that healthy and green rice plants with an excellent crop stand will result in good yields. And yes, it is true; a seven-ton harvest from a field planted with PHB71 is a good harvest.

But do you want to go from good to great? How about a great harvest of eight, nine, eleven or more tons? Following that small recommendation results in you reaping big benefits.

For the farmer, the most exciting stage of the rice crop is when the greenish spikelet becomes heavy and turns dark yellow. However, depending on nutrient availability, grain filling in hybrids varies. Also, there are some non-Pioneer hybrid varieties in the market that have up to 50% or more unfilled grains. Seedless may be a trait you want for your watermelons, but definitely not for rice.

Figure 1. Panicles from inbred (A) and hybrids with 21-0-0 application at flowering (B) and no application (C)

Figure 1 shows a fully fertile inbred panicle (A) exhibiting almost 90% fertility, but it has fewer spikelet than the hybrid panicles (B and C). Hybrid panicle B was taken from a plant fertilized with 21-0-0 at flowering and spikelet fertility may reach up to 90%, while hybrid panicle C came from a plant with no 21-0-0 application and spikelet fertility is just 65%.

Notice that hybrid panicle C shows evidence of base sterility, wherein the spikelet near the stalk is mostly sterile. This is because of unequal maturity of the spikelet, with those at the tip maturing first and those at the base maturing last. If the panicles are long, there is a high probability that the base spikelet will not have enough sources to complete grain filling.

For the sake of illustration and simplification, a harvest similar to hybrid panicle C in Figure 1 (65% grain filling) will yield 7.2 tons per hectare and will also give you lots of unfilled grains, as shown in Figure 2. Filling those grains can actually give you 2.8 tons per hectare more, for a magnificent yield of 10 t/ha. Those additional 2.8 tons translates to an extra income of about PHP40, 000.00.

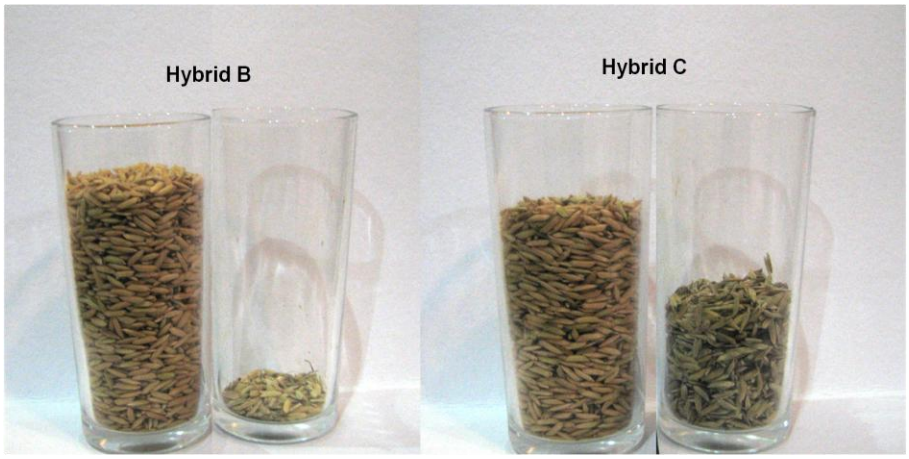

Figure 2. Harvests from plants with different grain filling characteristics.

That extra income in exchange for a bag of ammonium sulfate plus diligence and dedication in nutrient management is more than a fair trade. Your bag of Pioneer® PHB71 or PHB73 premium quality hybrid rice seeds contains a lot of potential for you to benefit from.

** For further information on this article, kindly send your inquiries to ask.ph@pioneer.com or text us at TXTPioneer 0917-592-0040.*