

Entry No. IRRC-0212

Category	: International Rice Research Conference
Select Theme	: Climate change and environmental sustainability
Endorsement email	:
Keyword 1	: Climate smart agriculture
Keyword 2	: Water-energy nexus
Keyword 3	: Environmental sustainability
Title of Entry	: Effective management of nitrogen fertilizer for enhancing rice productivity after submergence in rainfed lowlands of eastern India
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Abstract : Flash flood is a common phenomenon in rice growing rainfed lowland areas, seriously affecting crop establishment and leading to severe yield losses. New flood tolerant rice varieties have been developed by the International Rice Research Institute through introgressing the submergence tolerance gene SUB1 into mega rice varieties of South Asia. Following submergence, survival of the Sub1 lines (Swarna-Sub1, Samba Mahsuri-Sub1, and IR64-Sub1, etc.) is substantially higher than that of non-Sub1 varieties. Post-flood nitrogen application plays an important role in helping rice plants to resume quick growth after flood water recession. But dose and application time of N may vary with the severity of the flood stress and tolerance limit of genotypes, thus need to be standardized for these new Sub1 varieties. On station experiments were conducted during the wet seasons (Kharif) of 2011 and 2012 at the instructional farm of the college of agriculture, Chiplima, Sambalpur, Odisha, to study the effect of 3 post-flood nitrogen doses (N1: 10 kg ha⁻¹; N2: 20 kg ha⁻¹; N3: 30 kg ha⁻¹) and 3 application times (T1: when 10-15% plants started showing at least one green leaf after de-submergence; T2: when 30-35% plants started showing at least one green leaf after de-submergence; T3: when 65-70% plants started showing at least one green leaf after de-submergence) on survival, growth and yield performance of the rice variety Swarna-Sub1. Treatments N3 and T2 produced significantly higher survival than other treatments (91.4 and 96.3% respectively). Additional N increased the number of hills m⁻², tillers m⁻², leaves m⁻², grain filling, number of grains panicle⁻¹, grain weight, and finally grain yield. In both years of experimentation, maximum grain yields were recorded with N3 (3262 and 3513 kg ha⁻¹) and T2 (3448 and 3733 kg ha⁻¹). When the additional N dose was applied earlier (T1) or late (T3), the average yield reduction was 18.9 and 9.6%, respectively, compared to T2. Results of this study can be used for crop management recommendations for rainfed lowlands of western Odisha and other nearby rainfed lowland areas of eastern India..

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