

## Studies on callusing efficiency of popular indica genotypes

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### Abstract

An investigation was made on the initiation and maintenance of callus from explants (mature seeds) of five popular *Oryza sativa* varieties- CR Dhan 300, Lalat, MTU-1010, Maudamini and IR-64. Mature seeds were used as explants in MS medium supplemented with 2mg/L of 2, 4-D. It was found suitable for inducing high amount of embryogenic calli in the studied genotype. It was induced with hormone kinetin with 2, 4-D with different concentration. In this hormonal concentration maximum 99.1% callus was induced in MTU 1010 variety followed by 98.4% in MAUDAMINI variety. The range of shoot germination was 2-10 days and the highest number of shoot were obtained by using ms medium containing 1mg/L kinetin. MTU 1010 was found most suitable for in vitro culture among the five genotypes used.

**Key words:** *Oryza sativa* L., Callus induction, 2, 4-D, kinetin, CR Dhan 300, Lalat, MTU-1010, Maudamini, IR-64

### Introduction

Rice (*Oryza sativa* L.) is the staple food for two-third of the world's population. It has been cultivated in warm climates since ages. According to the Asia rice foundation, "people of china, Indonesia and india-2.5 billion i.e. more than half of the world's population rely on rice as staple food. In the next 20 years the number of people depending on rice will grow by 1.2 billion. Rice belongs to the Gramineae family and the genus *Oryza*. It is believed to have originated 130 million years ago. Rice has 24 species, of which are 22 are wild and two viz. *Oryza sativa* and *Oryza glaberrima* are cultivated. At present there are twenty one wild species and two cultivated species in the genus *Oryza*, nine are tetraploid and the remainder are diploids. *O. Sativa* is Asian rice, grown only in limited areas of West Africa. There are three main varieties of *O. sativa*" [1,2]

1. Indica:- This variety is long -grained ,for example Basmati rice, grown notably on the Indian sub-continent.[2]
2. Japonica:-This rice is short grained and high in amylopectin (thus becoming "sticky" when cooked) and is grown mainly in more temperature or colder region such as Japan.[3]
3. Javonica:- This rice is grained and grown in tropical climate.  
Recent advances in plant biotechnology (i.e., in plant tissue culture, molecular breeding and transgenic research) have made it possible to reduce crop resistant to variety of biotic and a biotic stress and that can help to substantially reduce or even eliminate the huge crop losses. "The introduction of beneficial genes from other