



# KrishiKosh (कृषिकोश)

(/) An Institutional Repository of Indian National Agricultural Research System



(/)

[Advanced Search \(/advanced-search\)](/advanced-search)

[Krishikosh \(/\)](#) / [Birsa Agricultural University, Ranchi \(/handle/1/93542\)](#) / [Thesis \(/handle/1/93550\)](#)

Please use this identifier to cite or link to this item: <http://krishikosh.egranth.ac.in/handle/1/5810039675>

Authors: [Shree, Bhavya \(/browse?type=author&value=Shree%2C+Bhavya\)](/browse?type=author&value=Shree%2C+Bhavya)

Advisor: [Chakraborty, M. \(/browse?type=author&value=Chakraborty%2C+M.\)](/browse?type=author&value=Chakraborty%2C+M.)

Title: Tissue Culture in Maize (Zea mays L.)

Publisher: Birsa Agricultural University, Ranchi, Jharkhand-6

Language: en\_US

Type: Thesis

Pages: 52

Agrotags: null

Keywords: Tissue Culture in Maize (Zea mays L.)

**Abstract:** Maize (*Zea mays* L.) is a widely grown cereal crop in the world today. Under the pressure exerted by limited land, water resources, expanding population and environmental stresses, there is great demand for maize of both quality and quantity requires regeneration of maize. To achieve such demand application of biotechnological tools in maize improvement programme can ensure sufficient production. An efficient plant tissue culture procedure with high regeneration frequency is prerequisite for this approaches. In light of the situation an experiment was conducted with an objective of to optimize regeneration of plants using different ex-plant of maize. The experiment was conducted using three different genotypes of maize viz. two hybrids GS-802 and 27P17 and a composite BVM-2 for protocol development for in vitro regeneration of maize (*Zea mays* L.) using six different explants namely: shoots, endosperm, mature embryo, immature embryo, ovules and anthers. Shoots of all the genotypes were inoculated in MS media supplemented with 1mg/l BAP, 2mg/l BAP, 3mg/l BAP, 4mg/l BAP and 5mg/l BAP along with a control. Endosperm of all the genotypes were cultured in callusing media containing MS basal salts supplemented with 1mg/l 2,4-D+ 1mg/l NAA and 0.2mg/l 2,4-D+ 2mg/l NAA. The immature embryos, mature embryos, ovules and anthers were inoculated in the N6 medium. Better response of kernels regeneration was observed when treated with Hgcl<sub>2</sub> for 10 minutes. In case of shoot culture, it was found that the genotype BVM-2 gave the highest response with 92.06% for shoot elongation and for shoot survival GS-802 showed highest percentage with 46.66%. The response observed for shoot elongation, shoot survival by different hormones and growth regulator was different. Hundred percent response to shoot elongation was observed in GS-802 with 2mg/l BAP, 3mg/l BAP while in case of 27P17 and BVM-2, 100% response was observed with 4 mg/l BAP and 1mg/l BAP respectively. Highest shoot survival (57.15%) was observed in GS-802 with 2mg/l BAP while in 27P17 highest shoot survival (57.14%) was observed in 3mg/l BAP. From overall survival data it is concluded that with 2mg/l BAP is better for shoot culture. In endosperm culture, callusing observed on MS medium with different concentration of 2, 4-D+NAA. Better response of GS-802 was recorded in the hormonal combination of 2,4-D-0.5mg/l + NAA-2mg/l and for BVM -2 in the hormonal combination of 2,4-D-1mg/l +NAA-1mg/l. For experiment with mature embryo culture the highest number of callus formation was observed in the 27P17 genotype with 20.00 % of callus induction. Callus induction was very less in GS-802 with a percentage of about 13.33 the third BVM-2 showed no response to the callus formation. Immature embryos was cultured in two different ways: with and without pre cold treatment. When cold treatment was given to the immature embryos, the genotype GS-802 showed highest response with 71.43% followed by 27P17 with 42.86 %. The composite genotype BVM-2 does not show any response in this case. When immature embryos inoculated without cold treatment then GS-802 gave the highest response of 85.71% followed by 27P17 (50.00%) and BVM-2 (35.71%). In case of ovule culture 85.71% of sprouting was observed in GS-802 genotype followed by BVM-2 and 27P17 with 76.91% and 47.61% respectively. In the present study, no response was observed in case of anther culture. There may be various reasons responsible for it like genotype of the donor plant, combination of nutrient media, inductive treatment of isolated microspores.

**Description:** Tissue Culture in Maize (*Zea mays* L.)

**Subject:** Biotechnology

**Theme:** Tissue Culture in Maize (*Zea mays* L.)

**These Type:** M.Sc


**Issue Date:** 2017

**Appears in** Thesis (/handle/1/93550)

**Collections:**


Files in This Item:

File	Description	Size	Format
1639 Bhavya Shree.pdf		30.97 MB	Adobe PDF



[View/Open \(/displaybitstream?handle=1/5810039675\)](/displaybitstream?handle=1/5810039675)

[Show full item record \(/handle/1/5810039675?mode=full\)](/handle/1/5810039675?mode=full)

 [\(/handle/1/5810039675/statistics\)](/handle/1/5810039675/statistics)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.