



**Afr. J. Agric. Res.**

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African Journal of Agricultural Research Vol. 1 (4), pp. 078-084, November 2006  
ISSN 1991- 637X© 2006 Academic Journals

*Review*

## A review on mechanism of plant geotropism: developing trend in research on pine root geotropism

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Accepted 2 November, 2006

### Abstract

Despite the fundamental importance of gravity-driven growth response in plants, the mechanisms that result in root geotropism are poorly understood and the signaling pathways involved remain elusive. Therefore, we reviewed root gravisensing structures and theories (or propositions) explaining root growth geotropism in directions of genetics, physiology, biochemistry, and environmental influence. The available data show that the mechanism(s) of root geotropism and root-gravisensing sites depends on the plant species studied. Based upon such a review, key academic controversies on mechanism of root geotropism were pinpointed, and developing trend of research on root geotropism was addressed.

**Key words:** developing trend, hypothesis, mechanism, root geotropism.

