

# EFFECT OF PYRROLOQUINOLINE-QUINONE ON GERMINATION AND GROWTH CHARACTERISTICS OF GROUNDNUT (*ARACHIS HYPOGAEA*)

NAGAR A., TAMHANE A., CHOUHAN R. AND RATNAPARKHE S.\*

\*Corresponding Author: Email - supriya.ratnaparkhe@gmail.com

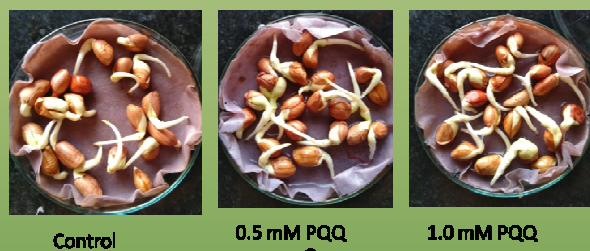
Received: May 03, 2019; Revised: May 24, 2019; Accepted: May 26, 2019; Published: May 30, 2019



**Abstract :** Pyrroloquinoline-quinone (PQQ) has been implicated as a plant growth regulator in several studies. However, a detailed mode of action of the molecule is yet to be described in plants. It is known to be an antioxidant and a redox cofactor. Natural and nature identical molecules that improve the seed germination and plant growth are helpful in designing novel organic inputs. In order to assess the usability of PQQ to design such formulations, we studied the effect of various concentrations of synthetic PQQ on the seed germination and growth characteristics of groundnut. We found that in groundnut, PQQ treatment shows significant difference in root development. Remarkably, the seedlings arising from 1.00 mM PQQ treated seeds showed triple the fresh weight of roots as compared to the controls. There was also an improvement in seed germination and other growth characteristics in the PQQ treated seeds. Our results show that PQQ is a promising molecule in designing novel formulations for plant growth and development.

## Materials and Methods

1. 25 peanut seeds per treatment were soaked overnight in either 0.5 mM PQQ solution, 1mM PQQ solution or De-ionized water (DI) water. Seeds soaked in DI water were treated as control.
2. Radicle emergence test and speed of germination were determined as has been described earlier
3. At 5 days after completion of germination, the seeds were transferred to soil and the growth characteristics were observed. The root and shoot lengths were monitored at regular intervals
4. 30 days after transfer, plants were uprooted and the fresh weight and dry weight of roots and shoots were recorded. Also, the average number of leaves and average area of leaves were recorded.



## Conclusion :

In present investigation, synthetic Pyrroloquinoline- quinone was found to improve seed germination and seedling growth parameters in groundnut. Pyrroloquinoline quinone has earlier been implicated in many studies as a plant growth regulator although a detailed functional characterization is yet to be carried out. We conclude that natural and nature identical molecules such as PQQ have immense potential in organic product development and therefore a detailed study of their effect on various growth aspects of various plant species, and also in soil application, would be very helpful in designing new formulations of organic inputs.