Significant findings
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1. Cyanobacteria, the oxygenic phototrophic Gram negative bacteria insinuate the ability to degrade lignocellulosics resulting in ecofriendly, oxygenic zero pollution environment.

2. The lignocellulose based technology (coir pith, *P. juliflora* and *L. camara*) is attractive due to its replenish available resource and cost effectiveness and its efficacy to produce value added products.

3. With only a minimal supplementation of 0.1% urea could emphasize on the diazotrophic potential of cyanobacteria by the increase in growth and degradation rate.

4. The degradation ability is ascertained by the spectral study and the presence of lignolytic enzymes laccase, polyphenol oxidase and manganese independent peroxidase.

5. Presence of hydrogen peroxide released into the *milieu* also clearly substantiates the degradation ability of the cyanobacteria.

6. Release of sugars and phenols in *milieu* supports the capability of the *O. annae* to grow, immobilize and degrade the lignocellulosics with bare nutrient requirement and shorter incubation of 15 days.

7. Dilute acid hydrolysis revealed increased release of reducing sugar from *O. annae* treated lignocellulosics when compared to control lignocellulosics.
Correspondingly the fermentation by *Pichia stipitis* NCIM 3498 revealed higher bioethanol production in *O. annae* treated hydrolysates after detoxification.

8. For bioethanol, the future of the fuel, the two common weeds *P. juliflora* and *L. camara* was adjudged to be the ideal lignocellulosics due to its high sugar content.

9. Irrespective of the lignocellulosics *O. annae* treated culture filtrate (500 ppm) could serve as an efficient foliar spray by improving the vegetative and reproductive growth. This indicated the presence of plant growth regulator there by reducing the cost of chemical fertilizer.

10. During the test period, (60 days), no infestation was observed suggesting the role of phytometabolites as antifeedants.