



Editorial Introduction

K. Ravi Srinivas

This issue, the second in Volume 19 of *Asian Biotechnology and Development Review*, has articles and book reviews that discuss themes and issues that are of relevance for discussions on socio-economic development aspects of biotechnology.

Biotechnology opens up new opportunities in harnessing various types of biological resources. This has enabled more attention to previously under explored resources and their potential. Thanks to options like genome mapping it is now possible to study and understand the genetic map of all types of crops including millets and coarse grains. As there are initiatives to make them popular about the general public and enhance nutritional security, technology can play an important role in making them more useful to producers and consumers. Endophytic microorganisms that colonize plants and these microorganisms including bacteria and fungi have gained attention of plant biologists in view of their potential and beneficial uses and the scope for adopting them for different purposes. With applications in plant growth promotion, biocontrol of pathogens and pests, and as a potential source of novel biomolecules harnessing them in sustainable intensification of agriculture and developing biotechnological applications open up new opportunities. In this issue we have published an article by Dr. Pious Thomas, that describes the significance of these microorganisms in agriculture and horticulture. This article besides providing a comprehensive picture of these microorganisms, discusses their potential applications and ways to harness them. Obviously there could be years between research in them and wider adoption of applications based on them. Never the less it is important to bring to the attention of readers new and relevant research that is useful for developing countries.

Genetically Modified Organisms (GMOs) have been controversial ever since they were commercialized. Philosophers and social theorists have been

analyzing them from different vantage points. While ownership issues and access to GMOs have been often discussed in the context of intellectual property rights and policies of the government, questions relating to ethics and innovation, responsibility and ownership have been raised and the literature on this increasing, partly on account of the concept and practice of Responsible Research and Innovation (RRI)¹. Zoë Robaey discusses the moral responsibility of owners of GMOs using ideas from ethics and political philosophy. Such articles enable to under the issues and controversies better. In fact today the debate on GMOs has gone far beyond accepting them or rejecting them or projecting them as villains or as a panacea. This debate can shed new light on issues relating to technology, innovation and ethics on one hand, and, enable conceptualizing new ways to incorporate ethics and values in technology development and assessment, on the other hand.

This issue carries three book reviews which cover inter alia, plant variety protection, and, RRI and agricultural biotechnologies. We welcome your feedback including suggestions.

Endnotes

- 1 See for example, Daniel J. Hicks (2017), *Genetically Modified Crops, Inclusion, and Democracy*, *Perspectives on Science* Volume 25, Issue 4, Pp.488-520; Justin B. Biddle (2017), *Genetically engineered crops and responsible innovation*, *Journal of Responsible Innovation*, Volume 4, Issue 1, Pp 24-42; and, Sheila Jasanoff (2016) *The Ethics of Invention*, New York: W.W.Norton & Co