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Editorial Open Access

In the 21st Century Transparency and Equal Access to Information are Imperative: The Case of Plant Viruses and Their Management

Vincenza Ilardi*

CRA Plant Pathology Research Centre (CRA-PAV), Rome, Italy

I am going to talk about plant viruses, my field of interest, but this is only one of many possible examples as I strongly believe that open access journals are important for all scientific subjects.

Of the various etiological agents that affect plants, viruses are a particular class of pathogens. They are obligate parasites which lack a metabolic machinery of their own and are totally dependent on their host cell for replication and movement throughout the plant. Crop losses resulting from viruses are due to the reduced growth and vigour of infected plants which, in turn, lead to a reduction in yield and only in some instances do viruses actually kill the plant. Besides yield reduction, the quality and commercial value of the products may be affected. The production of food, feed and fibre is continuously affected by viruses in all parts of the world. This is even more so in developing countries that depend on one or a few major crops for their livelihood.

A good example of this is cassava (*Manihot esculenta* Crantz) which is the primary food crop in sub-Saharan Africa. This plant is severely affected by two viral diseases: Cassava Brown Streak Disease (CBSD) caused by two ipomoviruses [1], and Cassava Mosaic Disease (CMD), caused by seven distinct cassava mosaic geminiviruses [2]. Both diseases have a significant negative impact on yield. Field trials have shown that CBSD can decrease root weight in the most sensitive cultivars by up to 70% [3], while the continent-wide impact of CMD on African cassava production has been estimated as being up to 27 million tons based on a total annual production of 97 million tons. Assuming a financial value of USD 100 per ton, this amounts to an economic loss of USD 2.7 billion - just for CDM [4]. Virus management is thus fundamental. Unlike diseases caused by other pathogens, viral diseases are far more difficult to manage. In fact, viruses cannot be directly controlled by chemical application on infected plants. Apart from the control of the virus vector and the use of virus-free planting material, the development of virus-resistant varieties appears to be the most effective approach to achieve control of plant viruses. In some crops and for some viruses natural sources of resistance have been found and introduced into plant cultivars; however, for many other plant-virus combinations no sources has been identified or the sources of resistance are too complex and thus transgenic approach has been exploited [e.g. 5,6] Nevertheless, this technology is controversial and although the first genetically modified plant (GMP) was deregulated and put on the market in 1994 [7], the scientific and public debate on risks and benefits of GMPs is still open and does not look likely to be resolved in the near future.

The above scenario highlights that it is imperative that all information and data regarding virus epidemiology, detection, management and natural or biotechnological resistant traits are free. This is true not only for scientific purposes but also for an ethical aim of transparency and equal opportunities. Perhaps the economic crisis that is affecting many industrialized countries could open people's eyes to the important matter of free access to information. In fact, "Open Access puts rich and poor on an equal footing for these key resources and eliminates the need for permissions to reproduce and distribute content "[http://www.omicsgroup.org/journals/aimsandscopeBS.php]. In the internet era, in which we are overloaded with information it is important to select the right information, such as that reported by peer reviewed journals.

Scientific problems are no longer studied from a single point of view, but everything is approached in a multidisciplinary manner. GMOs are a typical example. In fact, this is a complex issue that encompasses a broad range of genetic, health, environmental, economic, political, ethical and social factors [8]. In this context, but not limited to this subject, "Biosafety" together with the other 199 peer reviewed journals published by "OMICS", offer a great opportunity - and not only to researchers. In fact, the journals span from "Accounting & Marketing" to "Yoga & Physical Therapy" and all articles published under Open Access can be accessed by anyone with an internet connection.

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***Corresponding author:** Vincenza Ilardi, CRA-Plant Pathology Research Centre, Via C.G. Bertero, 22 00156 Rome, Italy, Tel: +39-06-82070371; Fax 39-06-82070372; E-mail: vincenza.ilardi@entecra.it

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