city of work, research findings and plagiarism-related issues. Further, these journals are heavily promoted and publication charges are kept minimal so that a few authors come together and share the charges, which assures publication of their manuscript, covertly mentioned in 'Instructions for Authors'. The publication fee of these journals may vary between a few hundred rupees and a few thousand rupees. It is to be noted that most of the journals are on-line and hence do not incur substantial cost of publishing articles. These journals are not peer reviewed which casts serious doubts on the 'research' carried out by scientists and researchers.

Jeffery Beall, scholarly initiatives librarian at University of Colorado, Denver, USA calls this type of publishing as 'predatory publishing'[1,2]. Many of these publishing houses, according to Beall, claim to have their headquarters in the United States, United Kingdom, Canada or Australia, but in reality these publishers belong to countries like India, Pakistan and Nigeria. He has identified what he calls as 'predatory publishers' who often give lofty titles to their journals to make them seem legitimate in order to deceive novices in the field of scholarly communication. According to Beall, this trend is due to low barrier to entry in the field of learned publishing industry, where one only requires a computer, internet access to create a website and the unique ability to create fancy journal titles[2]. In Beall's list of 2010, there were only 20 predatory publishers listed, which has gone up to more than 300 in 2013. He estimates that approximately 4000 predatory journals exist[3]. Beall has identified the criteria for determining predatory open access publishers. Based on these criteria, he has come out with his own list of questions, scholarly open access publishers; the list is now popularly known as Beall's list[4].

This trend is due to increased pressure on academicians and researchers to publish their research findings. Balaram[5] refers to this phenomenon as 'impactitis', which has its root in Europe, an infection that appears to have spread among the scientific community in India. Nowadays, the race to publish is intense and publication counts are a measure to assess scientific output of different countries. Also, many authors prefer to publish in these journals, wherein the manuscript submitted is published without any corrections or peer review, as these journals assure them of publishing their manuscripts as soon as the publication fees are paid.

Publishers of such journals have to do away with the business bent of mind to protect the sanctity of the journal publishing community. However, these journals have potential to go a long way provided the intent is changed to sharing of research findings than minting money. Indexing agencies also have a responsibility to ensure that these journals do not tarnish their reputation.

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High throughput plant phenotyping in agriculture

Agriculture faces a tough challenge in ensuring food security due to global climate change and declining soil fertility and natural resources such as water. Recent natural calamities due to untimely heavy rainfall or drought have indicated climate change. There is an urgent need for agriculture scientists to get ready for the challenges and offer solutions for sustenance of agriculture sector by means of adaption to global climate change. Agriculture Scientists have been continuously striving to characterize the phenotype of individual plant or species. This phenotype was better understood from the view-point of genetics after the rediscovery of Mendel's laws of heredity in 1900. Today, phenotype is understood as an external appearance of gene and environmental interaction. In recent days, the term 'phenome' is often used. It is the study of plant growth, performance and composition[1]. Characterizing the phenome of an individual or species in a precise way is important to utilize its maximum potential.

The science of genetics has contributed significantly to development of agriculture. There are technologies which can be used to obtain whole genetic information of plant species. For example, genetic sequences of major crops such as rice, maize, sorghum, pigeonpea, chickpea and others are available in public domain for future research. To harness this fruitful result, it is necessary to link their genetic information with phenotype. During last two decades, efforts have been made to identify genetic sequences for particular phenotype through quantitative trait loci (QTL) identification, gene mapping and sequencing. Owing to these efforts, precise selection of desired phenotype for target traits is being done using molecular marker-assisted selection. In practice, phenotyping a trait is not an easy task, it requires endless efforts and knowledge to measure or quantify the traits. Conventional phenotyping was done in replicated experiments at multiple locations. Some traits are analysed using techniques which are destructive in nature; for example, estimation of nitrogen content, carbohydrates in stem, etc. These conventional phenotyping exercises are laborious and not very precise to match

the quality of today's genetic information. Therefore, it is relevant to analyse the phenotype with greater precision.

The automated phenotyping which involves various non-invasive techniques is not only precise but also efficient in terms of rate of phenotyping. Large number of plants can be screened at early and later stages to obtain maximum information of a particular trait and also measure different traits at a time. Plant organs such as roots are difficult to characterize, but are essential to understand the nutrient uptake phenomenon and other mechanisms of growth and development. Root structure can be characterized precisely using three-dimensional image analysis along with appropriate softwares[2]. Techniques such as X-ray, CT Scan[3,4], MRI along with positron emission tomography[5], which are being used in medicine and other fields are now available to study soil structural heterogeneity and also nutrient uptake phenomenon of roots. Thermal images obtained using infrared cameras provide useful information on drought, heat and salt stress. Hundreds of genotypes can be screened for stress tolerance using these thermal images at a single point of time[6,7]. The parameter Fv/Fm measured using chlorophyll fluorescence meter depicts the quantum efficiency of photosystem-II[8]. Chlorophyll fluorescence images are useful in analysing plants for biotic stress in very early stages of infection[9]. By measuring spectral reflectance at canopy level in the field, one can obtain enormous information of various traits such as photosynthetic rate, nitrogen uptake, biomass, pigment content and water content[10]. Mounting spectrometer on tractor or harvester increases the efficiency of measurement in field. Phenotyping facilities are created in the field by installing sensors, cameras, spectrometers to study the growth and development of plants and also their responses to various biotic and abiotic stresses. These instruments should be mounted using appropriate vehicles or towers with uninterrupted power supply and protected from adverse environmental effects. One such facility is being created at Canberra, Australia. The Australian plant phenomic facility is available for global research on high resolution and high throughput plant phenotyping[11]. In India, efforts are underway to develop high throughput phenotyping facility at the Indian Agriculture Research Institute, New Delhi. In this facility, pots with plants are labelled using barcodes; these pots are made to run along a conveyer belt into a chamber containing cameras, sensors and other equipments which capture the images and quantify the traits. The data of individual plant will be recorded in a computer system. Using this information, desirable plants are selected among the population for future crop improvement. Screening a large set of germplasm at early stages of growth will reduce the load of field evaluation for plant genetic resource managers and also for breeders. Precise phenotypic characterization of germplasm will enable breeders to use these readily in their breeding activity. In the present erratic climatic conditions, it is necessary for the breeders to be equipped with new technology and new sources of variation to generate crop varieties to suit changing climate and cropping patterns.

New technologies are emerging in every field and these new technologies have no boundaries and can be used in every sector. Agriculture is not spared from using new development in mathematics, physics, chemistry, computer science, space science and others for developing high throughput plant phenotyping technology. This inter-disciplinary approach promises significant new breakthroughs in plant science. Precise information on high throughput phenotyping technology complements the high quality genetic information available today from sophisticated sequencing technologies. Linking genomic information with the phenotype, aids in improvement of crop species for higher yield and sustainability to meet the global demand for food, fodder and fuel.

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Kerosene revisited – excellent fuel for rural households

All his life Mahatma Gandhi studied and wrote under the light of kerosene hurricane lanterns. These lanterns were always kept close to him since their light is feeble. How much kerosene-laden vapour he inhaled in his lifetime is anybody's guess. Yet he never suffered from any asthma attacks nor showed any other symptoms of respiratory disease. In fact, he also used to apply kerosene to his body as a mosquito repellent!

Yet there is a tremendous tirade by the Western countries against the use of kerosene as a household fuel and especially kerosene lanterns. As a result, the Indian Government has also decided to phase out kerosene, thereby depriving the poor people of a convenient household fuel.

It is the way in which a fuel is burnt that makes it clean or dirty. Thus liquid