In this issue

Forest Fires in Sikkim
Estimating emissions

Wildfires are a ecological process in the evolution of forests. Higher densities of human populations have, however, increased the number and extent of forest fires and altered the ecological and succession processes of forest species. Moreover, emissions from forest fires have assumed significant proportions in adding to global greenhouse gas and particulate emissions – carbon dioxide, methane and non-methane hydrocarbons, carbon monoxide, nitrogen gases, carbonyl sulphide, methyl chloride emissions and aerosols. Though there are global estimates of the extent of the problem, detailed local studies are rare.

In 2009, Sikkim recorded one of the highest forest fire incidences. 47.69% of the total geographical area of Sikkim is covered by forests. Most of this is in difficult terrain. How does one estimate emissions under such a situation? Moreover, there are different types of forests with different densities of biomass distribution. To complicate matters further, emissions in smouldering combustion are much higher than those for flaming combustion.

On **page 1864** in this issue, a Research Article finds a way to tackle the complexities of estimating emissions from the forests of Sikkim. They vectorized a forest type map and forest density map of the area and then overlaid them in GIS to obtain a composite type-density map having 18 type-density classes. These 18 classes of forests were then overlaid with forest fire polygons derived from remote sensing. This allowed the extraction of burnt areas of the forests having a combination of particular density and class. The areas of the respective polygons with particular type-density classes were then added to get the area burnt in a particular forest type-density class.

Thus, using data from ground surveys, remote sensing and geographical information systems, they calculated pyrogenic carbon emissions from the forests for 2009: more than 7000 tonnes from a burnt forest area of less than 1300 hectares!

Diagnostic Markers for Cancers
Translation from labs to clinics

Diagnosis of cancers is presently done primarily by imaging procedures: CT scan, nuclear scan, MRI, PET, ultrasound… Recent research has thrown up the possibility of using molecular markers for diagnosis of various types of cancers. In a Review Article on **page 1831** in this issue, researchers from the Shri Jagdishprasad Jhabarmal Tibrewala University, Vidyanagari, present us a bird's eye view of developments in this field.

Interestingly, though a few makers are very specific – prostate specific antigen (PSA) for prostate cancer, CA15-3 for breast cancer, HE4 for ovarian cancer – there are quite a few which are common for most cancers. Using a combination of these biomarkers to detect and diagnose different types of cancers is now becoming a possibility.

There is still a need to exploit the potential of these markers, say the authors. Someday soon, serum diagnostic markers may help accurate diagnosis of cancer in clinical settings.

Polyphenols in Honey
Adjuvant therapy in breast cancer

In folk medicine around the world, honey has been used for burns, wounds and acne as well as internally for cough, seasonal allergies, urinary tract disorders, diarrhoea, bronchial asthma, and nausea. Scientific research supports the claim that honey has anti-inflammatory, anti-bacterial, anti-malarial and anti-cancer properties.

However, these properties vary depending on the source of the honey. The therapeutic properties are dependent on minute quantities of phenolic compounds – especially polyphenolic phytochemicals. Some of these compounds have been found to potentiate the efficacy of anti-cancer drugs.

Scientists from Vietnam, Malaysia and India collaborated to investigate activities stimulated by honey and its polyphenols. They examined the details of research on the polyphenols of honey from various parts of the world. The polyphenols examined – apigenin, caffeic acid, quercetin, p-coumaric acid, chrysin, eugenol, kaempferol, ferulic acid, ellagic acid, pinobanksin, and hesperetin – seem to have different modes of action on various breast cancer cell lines.

In a Review Article on **page 1839** in this issue, they present sweet food for thought.

Breast Cancer in Men
A scientometrics study

Breast cancer in men is rare: about 1% of the cases in women. So research on the subject is also much lower. Yet, in recent years, publications on the topic have been rising steadily. Researchers from the Banaras Hindu University and the CSIR-National Institute of Science Technology and Development Studies present a scientometrics study of the topic in this issue.

They took into consideration the global research output records available in the Science Citation Index-Expanded. The data for the ten years between 2005 and 2014 was examined. There were 4413 records that deal with male breast cancer along with related keywords – breast neoplasm, tumour, carcinoma...

After removing items that were published as corrections, news items, editorial material, meeting abstracts, reprints and book reviews, as well as records without the required data, the researchers analysed the remaining 4168 papers from 1813 institutions and more than 1200 journals,

In a General Article on **page 1814** in this issue, they present the geographical distribution of the research output, institutions, authors, patterns of citations, journals that publish papers on the topic…

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