In this issue

Visual function modifications during aging process

A number of studies have shown that various visual function declines with age, such as decreased visual acuity, lower visual information processing speed, reduced contrast sensitivity and compromised orientation and motion direction detection. However, the mechanisms underlying aged changes of visual function are still in exploring stages. Changzheng Zhang *et al.* (**page 1544**) report recent findings regarding visual function modifications during the normal aging process and the possible mechanisms underlying these changes. They report that each visual function may be affected differentially with age. Some functions show little damage with age, whereas others demonstrate drastic loss during aging. Age-related visual function declines arise from multiple factors. Some types of visual function reduction, for example, visual acuity, may be mainly attributed to the optical media abnormality of the eye and retinal degeneration; while other kinds of function decline, such as changes in orientation discrimination, motion direction detection, contrast sensitivity and binocular summation, may chiefly involve senescent modifications in the visual cortex, such as a compromised intracortical inhibition. Still others, such as a worse wavelength sensitivity and visual attention in the old, may result from a multifactorial nature of the aging process.

The neem terpenoid azadirachtin that selectively targets insect actins is a boon for organic crop production

The Indian neem tree has been the focus of many researchers across the world for nearly four decades due to its complex chemistry and fascinating biological effects of its phytochemicals. More specifically, the azadirachtins, the terpenoids present in the neem seed kernel extract has been found very effective on more than 550 species of economically important insects. Voluminous literature is available on the chemistry, biological effects and medicinal properties of azadirachtins. However, the safety of these molecules to non-target organisms including humans is under greater scrutiny worldwide.

In Indian agriculture neem seed extracts are traditionally used to control pests and a number of formulated products are also being sold. Unlike synthetic agrochemicals used in pest management, azadirachtin has not been clearly defined of its targets in insects and its mode of action. Two very important pests where neem exerts phenomenal control is *Spodoptera litura* and *Plutella xylostella*. Anuradha and Annadurai (**page 1588**) have been working towards identifying the targets of azadirachtin and its mode of action using the powerful genetic tools in the fruit fly *Drosophila melanogaster*. Recently, they have identified insect actins as targets of azadirachtins using *in silico* and *in vivo* approaches. In order to substantiate the *Drosophila* results in *Plutella* and *Spodoptera*, the authors show that the targets of Aza is indeed unique. Phalloidin labelling of haemocytes has also indicated the exact passage of azadirachtin in highly proliferating developmental tissues. Also, the target could be exploited for designing biorational molecules for insect management. A broad spectrum phytochemical molecule of this kind with highly insect-specific target is indeed a boon for organic crop production.

Spatio-temporal variation of run-off generation

Spatial distribution and temporal variation of generated run-off is crucial for conservation and development of land and water resources. Over recent years, the scarcity and competition for water have been increasing worldwide among the different water users. Therefore, status of surface water availability on basin scale is emphasized for planning and decision making. Numerous studies to estimate run-off have been done at the watershed scale taking into account average condition of the study area, because of non-availability of spatial input data like rainfall, hydrological land use/cover. Remote sensing technology and advancement in the remote sensing data analysis algorithms have made it possible to get spatial inputs for run-off modelling at the regional scales. Geographic information system (GIS) which is capable of handling voluminous raster data, has open up feasibility to setup methods like soil conservation service curve number in the GIS environment using arc macro language. Therefore, SCS CN model was setup in the GIS environment to predict run-off generation in spatio-temporal domain integrating remote sensing inputs like rainfall (from Climate Prediction Centre of NOAA) and hydrological and cover classes (generated using SPOT–VGT NDVI data). This study opens up the feasibility of real time prediction of generated run-off at spatial scale. See **page 1580**.