couple of practical examples, including an analysis of food plant species (where we use the Big Mac as an example to argue that humans are generalist feeders in a broad sense) and an analysis of IUCN lists for threatened plants (species-poor (especially monotypic) angiosperm families are more often at risk of extinction than expected). While sometimes such analysis can be replaced with simpler analysis (and the phylogenetic analysis only provides a veneer of complexity and authority), we believe the study of phylogenetic patterns can contribute to a better understanding of many real-life processes.

doi:10.1016/j.sajb.2009.02.020

Paper Abstracts

**Pollen viability, pollen germination and pollen tube growth in *Jatropha curcas* – A potential oil seed crop for biodiesel**

H.A. Abdelgadira, S.D. Johnsonb, J. Van Stadena

aResearch Centre for Plant Growth and Development, School of Biological and Conservation Sciences, University of KwaZulu-Natal Pietermaritzburg, Private Bag X01, Scottsville 3209, South Africa

bSchool of Biological and Conservation Sciences, University of KwaZulu-Natal Pietermaritzburg, Private Bag X01, Scottsville 3209, South Africa

Experiments were conducted to investigate pollen viability, in vitro pollen germination and in vivo pollen tube growth in *Jatropha curcas*. Light and fluorescence microscopy were employed to examine the different developmental stages. It was possible to determine pollen viability and distinguish between fresh and dead pollen using 2,3,5-triphenyltetrazolium chloride (TTC). Pollen germination was significantly higher in agar-based medium composed of sucrose, boric acid and calcium nitrate compared to the control treatment (distilled water). Supplementation of IAA to the different media significantly increased pollen germination and pollen length compared to the control treatment. Pollen from hermaphrodite flowers had a lower viability, lower germination rates and shorter pollen tubes, with abnormal shapes, compared to the pollen from male flowers. Pollen tubes from both self- and cross-pollinated flowers entered the ovary within 8 HAP (8 h after pollination). However, at 6 HAP, the pollen tube length and growth rate were significantly higher in cross- compared to self-pollinated pollen. Our results suggest that TTC is a reliable test for pollen viability; boric acid, calcium nitrate, sucrose and addition of IAA are essential and beneficial for pollen germination in this plant. Pollen germination and pollen tube growth were not inhibited, nor interfered with, as a result of self-pollination treatments. During both types of pollination, fertility is maintained as evidenced by ovule penetration by pollen tubes. This suggests that type of pollination has no influence on the success of fertilization in *J. curcas*.

doi:10.1016/j.sajb.2009.02.021

**Effect of foliar application of plant growth regulators on flowering and fruit set in *Jatropha curcas* – A potential oil seed crop for biodiesel**

H.A. Abdelgadira, S.D. Johnson, J. Van Staden

*Research Centre for Plant Growth and Development, School of Biological and Conservation Sciences, University of KwaZulu-Natal Pietermaritzburg, Private Bag X01, Scottsville 3209, South Africa

Experiments were conducted to determine the potential of different plant growth regulators (PGR’s) to increase seed production in *Jatropha curcas* plants. In the subsequent year following a single foliar application, the parameters of flowering, fruit set, fruit characteristics and total oil content were evaluated. Number of flowers per plant and number of fruits per bunch were significantly affected by the different treatments. However there were no variations in percentage of fruit set. A single foliar application of BA (6-benzylaminopurine) produced more flowers per plant and more fruits per bunch with heavier weight and bigger size compared to MP (manual pruning) treatment. TIBA (2,3,5-Triiodobenzoic acid) at all concentrations produced heavier and more fruits compared to the control and MP treatments. Dikegulac (2,3:4,6-di-O-isopropylidene-2-keto-L-gulonic acid) at 2, 4, and 6 mmol l⁻¹ produced more seeds per fruit compared to MP. Maleic hydrazide (1,2-dihydro-3,6-pyridazinedione, coline salt) produced heavier and bigger fruits with numerous and heavier seeds compared to the control and MP. This study indicates that foliar application of PGR’s can be used in *J. curcas* to increase seed production and improve fruit quality.

doi:10.1016/j.sajb.2009.02.022

**Phylogenetic relationships in southern African *Strychnos* (Strychnaceae) inferred from plastid and its sequences**

A. Adebowale, J. Lamb, A. Nicholas, Y. Naidoo

School of Biological and Conservation Sciences, University of KwaZulu-Natal, Westville Campus, Durban 4000, South Africa

This study uses molecular phylogenetic relationships among southern African *Strychnos* to evaluate morphologically-informed sectional distinctions, and to provide some insight into the probable ancestral habitat for the genus. Nucleotide sequences from the nuclear ribosomal ITS2 region, *trnG*-*trnS* and *trnL*-*trnF* intergenic spacers of the chloroplast genome were generated for 15 species across six of the 12 sections recognized by Leeuwenberg. Parsimony and maximum likelihood analyses of combined dataset provided better resolution of phylogenetic relationships, with *Strychnos mitis* shown to be sister to the other species. Three main monophyletic clades are