isomerous androecia the primordia may initiate directly at the floral axis. We present for the first time floral developmental data from members of all four genera of Didiereaceae: The 6-12 stamens arranged in one series are formed nearly simultaneously on a more or less prominent ring primordium. This ring primordium may be interpreted as homologous with a larger one found in the Dilleniaceae, sister to a broadly defined caryophyllid clade, judged from molecular data (Soltis et al. 2000). Further ontogenetical studies are required in the portulacaceous alliance contributing to current phylogenetic relationships in this still controversially discussed group.

P0534. The Scanning-Transferring; Dried and Fresh Plant Materials to the Computer with Isik Kutusu

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Abstract body
The **ISIK KUTUSU** for transferring pictures, images of motionless beings and objects to the computer, depending on the quality of the scanner.
This device provides remarkably good results in transferring three-dimensional images of motionless beings and objects to the computer with a qualitated imaging and printing when used with scanners. Our device also provides facility for the analysis of the images of various entities in a number of fields in digital environment with a magnitude up to 60 times bigger than the real object (6000 %). An equality has been formulated in order to give the approximate count of the real magnitude depending on the dpi and the zooming counts. The device is patented, up to 2007
http://nadidem.net/flora/kutu/index.htm
But recently the description of device will be free for everybody on the web page. We will demonstrate; preparing, scanning and transferring plant materials to the computer with **ISIK KUTUSU**. Also the plant images of The Virtual Herbarium of Van Province is prepared with using **ISIK KUTUSU** will be introduce on web page
http://nadidem.net/flora/kutu/po/po.html

P0535. Testing molecular-based sister group relationships: floral ontogeny and morphology of the *Antirrhinum*-containing subclade revisited

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Inflorescence and floral morphology and development were studied in *Aragoa* (Plantaginaceae) and related genera. Inflorescences of *Aragoa* and *Plantago* are lateral racemes. In *Aragoa*, the five sepals emerge from the abaxial to the adaxial side of the floral apex, but the mature calyx becomes actinomorphic. The four stamens arise simultaneously and before petal initiation. The four petals emerge unidirectionally but the corolla becomes actinomorphic. Aestivation is cochlear ascendent. The abaxial-adaxial inception of the calyx and corolla during early floral development in genera such as *Aragoa, Digitalis, Plantago* and *Veronica* may indicate that zygomorphy is ancestral in those genera. The tetramerous corolla, which is actinomorphic during middle and late development, and tetrandry are potential synapomophies of the clade *Aragoa* + *Plantago*. Pentamery of the calyx and corolla appears to be plesiomorphic in the broader *Aragoa-Angelonia* clade. Inflorescence and floral development and morphology of *Aragoa* are essentially similar to those found in *Plantago*, which is consistent with the molecular-based sister group relationship between these genera.

P0536. Pollen morphological study of *Halimocnemis*, *Halanthium*, *Halocharis* and allied genera of tribe Salsoleae (Chenopodiaceae) in Iran.

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The pollen grains in Chenopodiaceae have been mostly considered to show no variation. Present studies were conducted to evaluate some characters including pore number and pollen diameter as distinctive features taxonomically.The comparative pollen morphology of the genera *Halanthium*, *Halimocnemis*, *Halocharis*, *Petrosimonia*, *Gamanthus* and *Climacoptera* belonging to a problematic complex and microscopic data by LM and SEM are given. Pollen morphological studies of specimens clearly show distinctive position of *Petrosimonia*, with the highest pore number and the least pore number can be seen in *Halocharis*. The obvious different between pore number of the two species of *Gamanthus* suggests that they can be included in different genera.
Different communities of the species *Climacoptera turcomanica* showed different pore numbers distinctively which can be attributed to the possibility that this species can be divided to smaller taxa. The position of the genus *Climacoptera* in pollen pore diagram showed considerable distance from *Salsola* which confirms the acceptance of *Climacoptera* as an independent genus from *Salsola*.

P0537. Pre-meiotic RNA polymerases are sufficient for male but not female gametophyte development and fertilization in Arabidopsis

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Unlike animals, whose gametes are direct products of meiosis, plant meiotic products undergo additional mitoses, differentiation and development to produce multi-cellular haploid gametophytes (gamete plants) that contain the egg and sperm cells. The complex development and metabolic activities of plant haploid gametophytes is presumed to select against deleterious loss-of-function mutations that cannot be complemented in the haploid state. Consistent with this expectation, we show that female gametophytes defective for nuclear RNA polymerases I, II or III arrest early in development, indicating that the female gametophyte relies on transcriptional machinery encoded by its haploid genome. However, male gametophytes (pollen) bearing defective polymerase genes survive, grow and transmit the mutant genes to the next generation, showing that transcriptional machinery derived from the pre-meiotic pollen mother cell is sufficient for pollen development and fertilization.

P0538. Anther Development in *Melilotus indica*- some interesting features

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Melilotus indica is an annual fodder legume that flowers during winter months. Leaves are trifoliate and flowers are yellow in colour arranged in a racemose manner. Pods are very small and one-seeded. The anther is tetrasporangiate. Anther wall development follows the dicotyledonous type. The mature anther wall is comprised of an outermost epidermis, edothecium, one middle layer and the inner most tapetal layer. The tapetum is of secretary type. At the sporogenous stage of microsporogenesis, tapetal cells become irregular and during late ontogeny a transverse septum is observed in the microsporangia. The septum is of tapetal origin that seems to be an adaptation for better nourishment of developing microspores. The mature pollen grain of *Melilotus indica* is tricolporate. The exine is reticulate, well differentiated into ectexine and endexine. The ectexine is distinguished in a tectum, bacula and foot-layer. Aggregation of pollen grains by means of small exinal connections has also been observed. Another interesting feature noticed during this study is the *in situ* germination of pollen grains.

P0539. A re-investigation of *Tetracera* pollen.

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Among 29 investigated dillenioid species only 6 neotropical *Tetracera* species have pollen dimorphism. We have studied 31 pollen specimens of bisexual and male flowers of 15 *Tetracera* species by LM and SEM. 6 of them are from Old World and have only 3-colporate pollen as other species in subfamily Tetraceroideae. 11 male flowers patterns and 2 bisexual flowers patterns (*T.tigarea*) have 3-colporate pollen grains, 11 bisexual flowers pollen patterns are cryptoporate. Exine is tectate, microperforate, endexine is very thin. Round pores are disposed in endexine. However, species have different number of pores, their exposition are not similar too. So, *T.parviflora* have 3-8-cryptoporate pollen grains with exposed pores. Endopores in *T.willdenowiana* pollen are hardly observed. We have found 1 specimen (*T.jamaicensis*) with a combination of 3-5-multicryptoporate, 3-porate and 3-short-coporate pollen. True