ARIDUS

Bulletin of The Desert Legume Program of The Boyce Thompson Southwestern Arboretum and The University of Arizona

Volume 21, Number 2 August 2009

What is in a Name? Legumes of Arizona – An Illustrated Flora and Reference

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As the story goes, when Colonel Thompson came over the mountain ridge called Apache Leap, he was so taken by the view, he decided to build a house where he could escape the cold winters of New York at the base of Picket Post Mountain, just west of Superior Arizona. How this event came to impact the title of "Legumes of Arizona, an Illustrated Flora and Reference" is worthy of explanation.

The Colonel had already done what most wealthy men of his age had done and donated a portion of his wealth to help mankind. In 1924, the Boyce Thompson Institute for Plant Research in Yonkers, New York was dedicated in order to help feed, clothe and house the peoples of the world. His choice of plant research was not because Mr. Carnegie had cornered the market for libraries, but rather his experiences with the Red Cross after the Russian Revolution convinced him that no government could exist that did not feed its people (248). He was worried about projections that the population in the United States would reach 200 million and bread would not be available.

Picket Post was to be a winter home, where in his later years he could enjoy both the sunrise and sunset over the beautiful desert landscape. As with the construction of any home, eventually one's mind turns to landscaping. The Colonel at first was satisfied with adding stairs and walkways but everything else should remain in its natural state. But after a month or so, his need for a project overtook him and he felt additional plantings were needed. His landscaping should be not only beautiful but instructive as well. Not content with just planting junipers, he would plant all the different junipers that grew in the Southwest. (304). As with those times and even today in most home improvement projects, a small project slowly evolved into a much larger one.

His desire to plant a few trees in this new climate led the Colonel to contact the University of Arizona. The University of Arizona had started out as a territorial school in 1885 but was now a full fledged state school since Arizona's statehood in

William Boyce Thompson circa 1923

Picket Post house from the east, 1934.

February 1912. Franklin Crider, the head of the Horticultural Department, came up to assist the Colonel and what started as an idea for a few trees became an idea for an arboretum of all the plants and trees of the Southwest. (305).

The Colonel after meeting with other experts in the state, realized that something else needed to be done. His plant institute in Yonkers was pure science but in Arizona, it would be different. He said "too little has been done to bring together and study the plants of desert countries and make the results available to the public" (305). With that thought, he founded the Boyce Thompson Arboretum. Now, more than just

Franklin Crider, head of the Horticulture Department at the University of Arizona, addresses a womens' group, 1928.

Smith building and greenhouse, 1926

plants of the Southwest were contemplated as plants from around the world were added to the list.

It is at this point where the title of our book begins to change. Normally, a scientific book would be entitled something like "Legumes of Arizona, a Flora". However, even though plant research was still on the Colonel's mind, in transforming his Arizona home into the most useful garden in the world, he made the mission of the Arboretum very different from that of the Institute. Farmers, landscapers and homeowners alike should be made aware of the importance of plants and how to improve their landscape as he had done. Therefore, in his deference to his original dream for the arboretum, the words "and reference" were added to the title as this volume should be useful not only to the plant scientist or professional, but accessible and useful to anyone with an interest in the Legume Family in Arizona.

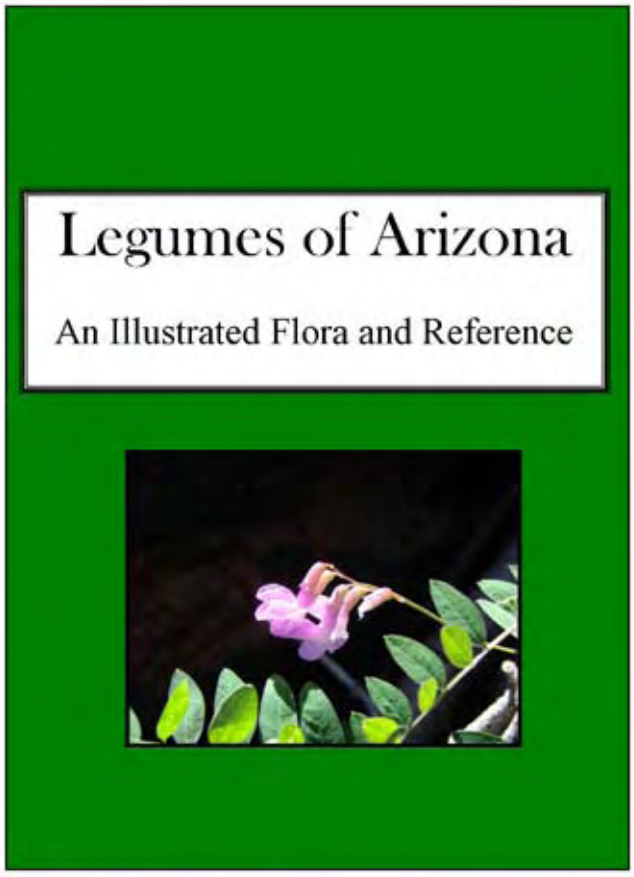
Now that you have a better understanding of the title, you may wonder how Legumes of Arizona meets the Colonel's intent in establishing the Boyce Thompson Arboretum and why legumes were picked in the first place.

Arid and semi-arid lands account for approximately 50% of the Earth's terrestrial surface, and these areas contain a disproportionate share of the malnourished segment of the human population. In these areas, several thousand arid-land-adapted legumes have evolved over millions of years. These plants are, for the most part, little studied and little understood despite the fact that the Legume Family is one of the most economically and agriculturally important plant families in the world. It is the third largest family of flowering plants, and it is second only to the grass family (cereals, grains, etc.) in importance to humans. From protein-rich food plants such as peanuts, soy beans, lentils, peas, and beans, to forage plants such as medics and clovers, to medicinal/herbal plants such as sennas and vetches, to ornamental plants such as redbuds and wisterias, to poisonous plants such as locoweeds and crazyweeds, to the many species that host nitrogen-fixing bacteria in their roots, the Legume Family impacts almost every aspect of human existence.

Legumes of Arizona – An Illustrated Flora and Reference, which will include native, naturalized, and cultivated species, will be available both as a hard copy volume and an online database. Even though the information will be specific to Arizona, it will be applica-

ble anywhere in the world that has relatively similar environmental conditions. For example, a legume crop that can be grown in southern Arizona could also be grown in various parts of Mexico, South America, Africa, Australia, Asia, etc. With a comprehensive reference and database available, it will be possible to make more informed decisions about which legume species have significant potential for arid lands use and production.

Currently in year three of this six year project, Legumes of Arizona – An Illustrated Flora and Reference should be available in 2012. We believe the Colonel would have heartily endorsed this project and hope that you will also.

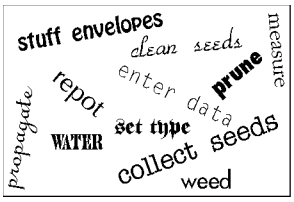


Proposed cover for Legumes of Arizona

References

Hagedorn, Hermann. 1935. The Magnate, Biography of William Boyce Thompson. John Day, 1935. Second printing Boyce Thompson Arboretum, 1977.

Sample of drawings for book. Left: *Medicago lupulina*. Right: *Melilotus albus.* (Lucretia Hamilton).



Staff and Volunteers in Action

Many Plants Flower Profusely this Spring

The summer months are always busy months of field work. There was a warm spring after a relatively mild winter and these conditions have resulted in profouse flowering of species that have flowered sparsely in previous years. Many of these plants are producing impressive quantities of pods. For some, this is the first year when pods have been produced. The year's pleasant environmental conditions and greater maturity of the specimens has been a winning combination for higher seed pod production. Seed pod collection becomes a critical job in our Tucson fields during summer months. Volunteer seed cleaners never really know what will be on the table for them when sessions resume in September, and this year they will be working on some collections that they have not seen, previously.

In November of 1996, Dan Sims and I grew two specimens of *Peltophorum africanum* for DELEP's shrub field at the Campus Ag Center. Those seedlings were planted in the spring of 1998. The two attractive specimens first flowered in 2008, but they did not produce any seed. This year their flowering increased dramatically and they have produced dozens of pods. This species has grown well in our Yuma fields where they required about 10 years before significant flowering and fruiting occurred. *Peltophorum africanum* is an eye-catching large shrub with good landscape potential for southern Arizona. It provides ample shade and has bright-colored yellow, sweetly aromatic flowers. It is not invasive or weedy and the species provides nice wildlife habitat.

Other younger specimens have shown new or increased seed productivity, this year. *Parkinsonia africana* was propagated for our west campus (Tucson) field in late 1999 and was planted there in the year 2000. We grew two plants from a small seed accession, and one specimen has endured. That tree first flowered in 2008, but flowers were few and fruit did not develop. This year, flowers on the tree were more numerous and I collected about one dozen healthy seed pods, in mid-July. Hopefully, this is a sign that the plant's productivity will continue into the coming years.

Two specimens of *Prosopis laevigata*, planted at our west campus fields in 1999, are now mature and produced a healthy seed crop this year. By comparison, *P. laevigata* of the same seed accession was planted in our original Ag center field in 1992 but did not flower until 2007. No seed was produced, then. While the ag center plants did flower and fruit in both 2008 and 2009, their slower progress to maturity indicates that the warmer west campus location is the better production area. All of those trees were propagated by Dan and me, while volunteers and students nurtured them during their nursery stage and in our field environments.

Four volunteers have been sharing the weekend responsibility of caring for our newly propagated and stock plants nursery. Members of this knowledgeable group have broad experience and are skillful at caring for our plants. That willingness and expertise goes a long way in reassuring me that everything in our container nursery will be alive, when I return to work on Monday. I extend my appreciation to each of those individuals (Kay and Mike Fagan, Jack Stroehlein, and Chris Marshall). Thank you all, for braving the summer heat! As Tucson's research "arm" of Boyce Thompson Arboretum, the Desert Legume Program is a Monday through Friday operation and we need help with weekend jobs, 52 weeks each year. Southern Arizona residents and visitors who are interested in learning more about volunteering for us can send me email (kcoppola@ag.arizona.edu) or reach me by telephone, at (520) 647-2460.

Bill Kendall has joined Matt Johnson for some seed exploration and collection trips, this summer. Matt indicates that they have located impressive plant populations which they will return to collect seed from, during the coming months. Some of the anticipated collections will be new species for DELEP.

Tentative dates for Fall 2009 Volunteer sessions are: September 9, October 14, November 11, and December 9. Contact me for further details. **KC**

The Legumes of Arizona Project and Legume Diversity in Arizona

Matthew B. Johnson
Desert Legume Program

As discussed in the lead article, *Legumes of Arizona – an Illustrated Flora and Reference* will be a comprehensive resource on the native, naturalized and commercially grown legumes found in the state. The Legume Family is the third largest family of flowering plants in Arizona with approximately 375 native and naturalized taxa. Legumes are important landscape plants in warmer areas of the state. In addition to over two dozen native taxa, nearly 70 non-native taxa are commercially grown as landscape plants. Alfalfa (*Medicago sativa*) is the only major agronomic legume crop in Arizona, although small acreages of *Cicer* and *Phaseolus* are planted.

Ranging from annual and perennial herbs to vines, shrubs and trees, legumes are found in Arizona from the hottest, driest deserts to cool, moist, high elevation montane habitats. This diversity is reflected in the approximately 75 genera of legumes native to the state. Arizona is a meeting point for plants with tropical and temperate affinities, and with the variety of habitats found in the state, it is not surprising that the family exhibits high diversity. The genus *Astragalus* has the largest number of taxa (116) in Arizona and is the largest genus of flowering plants in the world. Other large genera present in the state's flora with approximate number of taxa in parentheses include *Dalea* (31), *Desmodium* (15), *Lathyrus* (7), *Lotus* (16), *Lupinus* (25), *Medicago* (8), *Phaseolus* (9), *Psorothamnus* (8) and *Trifolium* (18). Other genera, though smaller, include such prominent plants as *Prosopis*, with 3 native taxa, 1 naturalized taxon and additional cultivated taxa.

Treatment authors will in some cases be including nomenclatural revisions that reflect the current state of legume research. The traditional genus *Acacia* is no longer present in Arizona except for non-native taxa. Those native Arizona plants formerly placed in *Acacia* are now separated into *Acaciella*, *Mariosousa*, *Senegalia* and *Vachellia*. *Legumes of Arizona – an Illustrated Flora and Reference* will provide detailed information on some 450 taxa in this diverse plant family and serve as a valuable reference for those interested in these plants.

Prolific flowering *Peltophorum africanum* (KC)

Tree Logo Here

Opportunities for Participation

DELEP's bulletin Aridus, is published three times annually to stimulate interest in desert legumes, to inform our readers of DELEP's activities, and to encourage support for DELEP's programs. Manuscripts related to legumes are welcome and should be mailed to the editor for review. Subscriptions are complimentary and are available by contacting the DELEP office. Aridus is published by The University of Arizona on behalf of The Desert Legume Program.

Financial support for DELEP is provided by private industries, government agencies and individuals through contracts, grants, and contributions. Dedicated volunteer work is an integral component of DELEP. Our volunteers have many different backgrounds and work on various projects including wild seed collecting, seed processing, special events and office tasks. DELEP volunteers meet once a month. To volunteer call (520) 647-2460 or email kcopola@ab.arizona.edu

To Contribute:

Call to discuss a pledge, restricted gift or estate planning

Make a chek payable to DELEP/U of A Foundation

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Pods of *Peltophorum africanum* (KC)