

Abstract for 2008 Annual Meetings of the American Society for Horticultural Science

prepared by MK and AC, 3/3/08

Domestication and commercialization of *Taraxacum kok-saghyz*, a potential domestic source of natural rubber and inulin: progress and outlook

A. Chanon, D. Ehrensing, A.R. Miller, J. Streeter, S.C. Myers, R. Seiple, F.C. Michel and M.D. Kleinhenz*

The Ohio BioProducts Innovation Center (OBIC) and its private- and public-sector collaborators employ a market-pull approach to accelerate the commercialization of renewable specialty chemicals, polymers/plastics and advanced materials. *Taraxacum kok-saghyz* (TKS) roots contain high levels of inulin and high quality natural rubber but TKS is currently undomesticated. Since 2006, a private-public, multi-institution, multi-disciplinary team has worked to position TKS as a domestic source of natural rubber and inulin. TKS was the focal point of the WWII-era “Emergency Rubber Project” and is now considered as a prime candidate to complement *Hevea brasiliensis* as a main source of natural rubber for multiple applications. Also, while native to Uzbekistan and Kazakstan, TKS is adapted to the mid- and upper latitudes of the U.S. Still, TKS is relatively absent in the scientific literature. Beginning in Ohio with 39 g (approx. 1500 seed per gram) of wild-collected TKS seed, the project team has developed protocols to differentiate *kok-saghyz* from other members of the *Taraxacum*, assessed root rubber and inulin levels, and extracted rubber and inulin using commercial-like methods. The team has also allowed unrestricted crosses and performed controlled crosses among TKS individuals previously testing high for rubber production potential. And, various properties of TKS-derived rubber have been analyzed. To date in Ohio: a) 6151 TKS seedlings have been generated and another 9000 *Taraxacum* seedlings await roguing, b) root rubber levels of 10% or greater (commercialization threshold) have been found in 145 of 1467 individuals tested, c) average root rubber levels have increased from 1.4% to 8.9%, d) root inulin levels have averaged 53.4%, e) properties of TKS-derived rubber have been similar to those of *Hevea*-based natural rubber and f) 73.5 g of improved TKS seed have been produced. Follow-up work will integrate improvements in TKS genetics and production, harvesting and rubber/inulin extraction methods.