



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Venkat N. Sankar	Project Number J1928
Project Title Using Astragalus purshii var. tinctus to Inhibit Growth of Invasive Thistles (Centaurea spp.)	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this project is to find a natural and cost-effective method that does not use pesticides to control the spread of star thistle, genus <i>Centaurea</i>, a family of plants that has reached invasive levels in California. Thistle infestations deprive native plants of water, reduce access to open spaces and cause fatality when ingested by livestock. Specifically, based on the observation that star thistles coexist in their native Mediterranean habitat with several species of milkvetch (<i>Astragalus</i>), the project attempts to determine whether native California milkvetches (<i>Astragalus purshii</i> var. <i>tinctus</i>) can be effective in inhibiting the growth of star thistles.</p> <p>Methods/Materials The growth of star thistle was compared in two experimental settings: a control group where star thistle was grown from seeds by itself; and an experimental group where thistle was grown along with milkvetch. The plants were grown in large redwood planter boxes inside a temperature-controlled greenhouse facility. Much care was taken to replicate a classic foothill soil similar to what may be found in the Sierra Nevada and Diablo Range mountains of central California. The growth of these plants was observed over a one month period. Seedling count for star thistle was systematically recorded in the control and experimental groups at 4-day intervals. Biomass of star thistle and milkvetch was also measured at the end of 32 days.</p> <p>Results The growth of star thistle in the experimental setting was observed to be significantly less compared to the control group, in terms of both seedling count and biomass measurements. The results support the hypothesis that milkvetch could be effective in inhibiting the growth and spread of star thistle.</p> <p>Conclusions/Discussion The experimental results indicate the effectiveness of milkvetch in controlling the growth of star thistle. Further experimentation during spring or summer months in larger outdoor plots of land to derive statistically significant results is recommended as a next step.</p>	
Summary Statement An experimental study confirming the effectiveness of Pursh's Milkvetch (<i>Astragalus purshii</i> var. <i>tinctus</i>), a California native plant, as a natural and cost-effective inhibitor in controlling the growth and spread of the highly invasive star thistle (<i>Centaurea</i> spp.).	
Help Received Mr. Sommer helped me with the experimental setup in the greenhouse.	