Artemisia annua is a woody herbaceous plant that has medicinal value in developing countries. It is a vigorous plant that will provide control of weeds if grown as a summer cover crop. As a cover crop, the plant develops a lot of biomass and has a predictable seed development schedule at the end of the summer so it can be mowed before adding to the seed bank in the field.

When cultivars are developed that reliably produce the desired active ingredient from a seed-produced crop, *A. annua* has a strong potential as a high value crop that can double as a weed suppressing summer cover crop. Until that time, *A. annua* is still a heavy producer of organic material as well as an effective cover crop.

Cover: Dr. Pamela Weathers, Worcester Polytechnic Institute Professor of Biology & Biotechnology, near a specimen of the *A. annua*.

Artemisia annua
as a high value crop and weed control

SARE project FNE12-766
small farm, Stow, MA
http://small-farm.org/SARE2014.html

Artemisia annua
as a high value crop and weed control

SARE project FNE12-766

Artemisia annua, otherwise known as "Sweet Annie" or "Sweet Wormwood", is a large vigorous plant that is grown on many farms, primarily for decorative use. In addition to the common use, this plant produces a compound, artemisinin, which is used in anti-malarial therapy. Malaria is not a big problem in the United States, but in developing countries there is a strong demand for malaria medicines. This SARE project investigates the possibilities of growing this plant as a crop, but also since the plant is very vigorous and generates a large amount of foliage during the summer season it could be used as a summer cover crop.

This project showed that, on a small scale test plot, the plant was very effective in preventing weed growth. Although allelopathy has been suggested, we found the primary mode of weed prevention was through shading. There is a weak allelopathic action that causes a delay in germination of some plants after the *A. annua* has been removed from the field, but the delay was only about a week. The plant was quite effective on 1 square meter test plots, but it has not yet been tested on a large field. The artemisinin content was determined in the laboratory by Dr. Pamela Weathers at Worcester Polytechnic Institute, a technical adviser for the grant.

The possibility of growing *A. annua* as a crop is currently limited by the availability of cultivars that are heavy producers of artemisinin. The cultivar used in this study, provided by WPI, was effective but the plants are only propagated vegetatively. *A. annua* grown from seed is quite variable in production of artemisinin and probably would not produce sufficient quantities of this compound to produce a saleable crop. Other people are working to produce a cultivar that could be seed-propagated and high in artemisinin production. On the other hand, a number of investigators have shown that oral consumption of the dried leaves of the plant provides a therapeutic response equivalent to or better than that provided by pure artemisinin, but at much lower delivered dose.

At present *A. annua* appears to be a viable summer cover crop for suppressing weeds. Seed production does not occur until mid-September in New England, so there is ample time for the plants to generate a lot of biomass before mowing the crop to prevent re-seeding. The biomass could be turned into the field for organic material. When a practical seed-produced cultivar becomes available, this crop would have the additional advantage of being saleable at harvest.