Saving water while "growing food and community with local energy"

Sally High
Geothermal Greenhouse Partnership Inc

GGP's Amphitheater is busy with educational, recreational and cultural gatherings. Its placement on the banks of the San Juan River is ideal for large and small groups.

Geothermal Greenhouse Partnership (GGP) educates all ages about sustainable water use, renewable energy, and year-round food production in Colorado's San Juan Mountains.

The GGP is a multi-faceted nonprofit organization building a 21st Century botanic park in Pagosa Springs. The educational 501c3 now operates the first of three Growing Dome greenhouses – the Education Dome - on the banks of the San Juan River. It is the first geothermal project to be partially funded by Colorado Water Conservation Board and its significant progress to date could not have been achieved without initial CWCB support.

The Education Dome demonstrates conventional soil growing and its first season of growing food is a success. Local students and teachers, CSU 4-H Gardeners and Master Gardeners teach and learn together in the Ed Dome. Volunteers host visitors who stroll the River Walk in Pagosa Springs' Centennial Park. The Town of Pagosa Springs provides the site, geothermal water and irrigation water to the nonprofit. The Community Garden Dome and the Innovation Dome are slated to be built and operational in 2018.

The Community Garden Dome will welcome organized groups and civic organizations to grow food for the community, while embracing the GGP's educational mission. Its garden plots will use conventional soil techniques and, like the Education Dome, encourage pesticide-free food production, wise water use and natural soil health. GGP is partnered with local and regional organizations and agencies that are eager to grow food and mentor youth in the year-round Community Garden.

CSU Master Gardeners begin the food production process in early 2017 after the installation of conservative automatic watering systems in the GGP beds. The started plants were shared with the community later in the spring.

The Innovation Dome will demonstrate water-conservative 21st Century aquaponics to grow a high volume of vegetables. In a closed loop water system, water consumption will come as close to non-consumptive as possible and still achieve a high, steady yield of food for the community. The GGP enjoys partnerships with regional experts in hydroponic and aquaponics systems integration and plans collaborative teaching of these water-saving agricultural methods.

Colorado School of Mines students and professors receive an orientation about the water systems of the GGP's Education Dome. Controls for geothermal, irrigation and potable waters, as well as the geothermal heat exchanger, are on the north wall for public observation and education.

In addition to teaching school-aged children in 2017, GGP is producing six Lifelong Learning Workshops for adults. As of August, GGP has hosted the 5th Colorado Environmental Film Festival Caravan and two workshops - "Ornithology of a Healthy River" and "Trees and Native Plants." Three more workshops – "Entomology of a Healthy River," "Greenhouse Growing" and "The Three Sisters at your Thanksgiving Table" - will complete the environmental education series for 2017.

GGP is already planning 2018's workshops to include activities for all ages to enhance understanding of the Colorado Water Plan. Measuring and documenting water use in seasonal outdoor food production, indoor soil growing and indoor aquaponics systems is key to GGP's future role as a provider of relevant environmental understanding.

An enthusiastic group of third graders observe the greenhouse pond's fish and release ladybugs in the GGP Education Dome. Wise water use and geothermal energy potential are always part of the GGP's hands-on horticultural experiences.

Geothermal water from a Pagosa Springs' municipal well demonstrates a renewable energy source that could be utilized by other Colorado communities. The GGP "borrows" the heat from our geothermal water by using a heat exchanger. Heated water runs through pipes under the walkways of the Education Dome and heats the facility in cold months, while the geothermal water resumes its original flow. GGP's integrated use of geothermal, irrigation and potable water makes the project an exemplary demonstration site for 21st Century sustainable water conservation.

Third grade students delight in releasing ladybugs for natural aphid control in GGP's Education Dome.

So what's next for this unique grass-roots project? Completion of the next two greenhouses and outdoor landscaping is planned by GGP's professional Board of Directors and extensive cadre of skilled volunteers. The membership-based organization welcomes a widening community of enthusiastic supporters. GGP is an Enterprise Zone project in collaboration with Region 9 Economic Development District and brings economic revitalization to southwest Colorado around the theme of sustainability in local energy, food, water conservation and community engagement.

Keep your eye on GGP by visiting www.pagosagreen.org and www.facebook.com/geothermalgreenhousepartnership.