

## Wet Pasture into Silvopasture: Guideline & Steps using Hybrid Poplar

In Factsheet No. 2 – *Reasons for Considering Silvopasture Systems in Connecticut and Southern New England* – we lay out the rationale for converting from pasture or woods to silvopasture. Conversion of a pasture or field makes sense if the silvopasture will produce more benefits, cut costs or both.

Wilhelm Farm has some marginal pasture areas, most of which are wet through parts of the summer with the vegetation weighted toward sedges and rushes. These pastures produce few benefits for the farm because the soils are too wet for grazing animals and sedges and rushes are neither palatable nor nutritious. One pasture was tiled at some earlier time, we think by Oscar Wilhelm in the late 1930s/early 1940s, but the costs of retiling today are too high for the potential benefits that would result.

## Hybrid Poplar as Live Water Pumps

We had observed the use of eucalyptus in India as live water pumps to dry wet lands near fields and roads. We also saw Indian wheat farmers grow hybrid poplar in fields that are irrigated during the winter season (wheat is a winter crop there). We decided to experiment with using of hybrid poplar<sup>1</sup> to dry wet pastures. We planted hybrid poplar on two different sites in 2014 on 8-foot centers. We also retained natural black birch and red maple saplings where they came into the south end of this pasture because both species are tolerant of wet soils. The poplar survival rate was about 75% with most of the dead seedlings observed in summer 2016, which was unusually dry.

We also had a small very wet area where we planted hybrid poplar in a thick sedge sod. The survival rate was lower—about 50% -- probably reflecting the root competition with sedge. However, the surviving stems demonstrated strong height growth in the 2017 season. We will explore methods of converting the sedge to pasture grass in 2018

It is too early to fully see how effective this experiment is, but the survival rates and fast height growth (some are over 6 feet tall after three years) lead us to be optimistic. We will plant on closer centers in the future (4 feet by 4 feet or even 3 feet by 3 feet) to obtain more water pumping and faster shade cover over sedge.

These results also suggest some other small wet areas that might be shifted toward hybrid poplar with grass underneath. In 2018, we will plant an additional 50 rooted cuttings in the larger pasture and the very wet area. A few cuttings will be planted along a wet path that was used for moving livestock to what the main silvopasture unit. Our goal on the path is to replace brush,

<sup>&</sup>lt;sup>1</sup> Hybrid poplar is cottonwood that has been bred for rapid growth in specific situations. The original research was conducted by the Forest Service in Mississippi and additional work was done by Texas A&M and other research centers. The results helped industry produce large volumes of white pulp furnish for paper. Australian research furthered the work focusing on seasonally droughty situations, which provided the planting stock that Indian wheat farmers used on seasonally wet irrigated croplands. Our hybrid poplar comes from the NYS Forest Nursery, Saratoga NY.

mainly multiflora rose and Japanese barbury, with hybrid poplar. If densely planted, the poplar's shade, coupled with grazing on the edge, will keep brush under control.



**Picture 1.** This is the hybrid poplar plantation in July 2016 after 1-1/2 growing seasons. Each sapling sticks up from grass/sedge that was not cut to avoid stem damage. In the distance are taller black birch and red maple saplings that seeded in from the southern periphery.



**Picture 2.** A year and a half later, this poplar sapling is 6 feet tall and clearly doing well. Results like this encourage us to plant more rooted cuttings from NYS Forest Nursery in 2018 and from our own rooted cuttings in 2019 In spring/summer 2018, we will begin to root our own hybrid poplar cuttings from material cut from our own plantations. We had some success in our first effort in 2016 but lost most of the cuttings to the drought and lack of a systematic watering schedule.

We have some plastic barrels that we will fill with a mix of potting soils and compost, with stones and gravel at the bottom to insure good drainage. We may also construct a raised bed dedicated to rooted cuttings for a few years.

Later revisions of this factsheet will report results.

We buy hybrid poplar and other forest tree seedlings from the NYS Forest Nursery, Saratoga NY. The 2018 price is \$60 for 100 rooted poplar cuttings. For species and prices, see <a href="http://www.dec.ny.gov/docs/lands\_forests\_pdf/treenurserybrochure.pdf">http://www.dec.ny.gov/docs/lands\_forests\_pdf/treenurserybrochure.pdf</a>