

# 2023 Industrial Grain Hemp Variety Trial

Dr. Heather Darby, UVM Extension Agronomist  
UVM Extension Crops and Soils Technicians  
(802) 524-6501



**Table 2. Hemp grain varieties evaluated in the hemp trial, Alburgh, VT, 2023.**

Variety	Seed source	Days to maturity	Thourieties evThhou
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Harvest measurements and yields data are displayed below in Tables 5 and 6. NWG 4000 had the highest population at 15.2 plants ft<sup>-2</sup> or 662,112 plants ac<sup>-1</sup>, and was statistically similar to NWG 2463 and X-59. Carmenecta had the highest average plant height at 268 cm alongside Futura 83 at 250 cm. Like past years, Carmenecta continued to have the tallest plants on average in addition to

can increase from year to year and from field to field in both monoecious and dioecious varieties due to stress. Stress can manifest from a variety of biotic and abiotic factors such as weather events or lack of nutrients, and plants are most vulnerable to stress in the early stages of crop growth. In dioecious varieties, male plants can account for up to 50% of the plant population.

Futura 83 produced the highest grain yield at 2123 lbs ac<sup>-1</sup> and was statistically similar to Bialobrzeskie, Carmenecta, Fedora, NWG 2730, Orion 33, and X-59 (Table 6). Futura 83, Orion 33, and X-59 were all top yielding varieties between 2022 and 2023 (Figure 1). According to the USDA, the average yield for grain hemp in the US in 2022

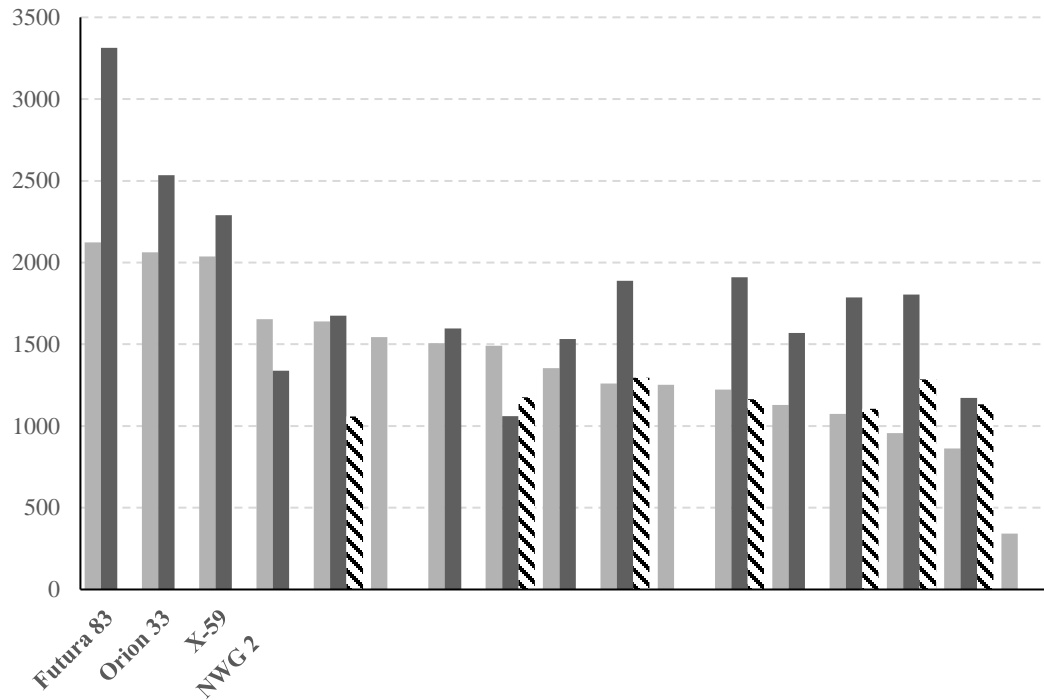


Figure 1. Hemp variety grain yields from 2021, 2022, 2023. Alburgh, VT.

## DISCUSSION

As in past years, the timing of grain maturity differed widely amongst varieties with harvest spanning from 6-Sep to 13-Oct. This is especially important to take into consideration when selecting grain varieties for your region. Those varieties harvested in the beginning of September are likely best suited for northern climates and would have the opportunity to fully mature, whereas those harvested late into October would be better suited for more southern regions. Based on past experiences, the trial was outfitted with both an air cannon and a laser to reduce bird predation as the seeds matured. In addition to bird predation, timing of harvest is also critical to produce a successful crop. Some shattering will be observed once grain is approaching ideal maturity as plants are indeterminate and will continue to develop. However, waiting too long can result in complete shattering or loss due to predation. The period for the 17 harvested varieties ranged over a month showing that many would be suitable for production in Vermont depending on growing area. However, Yuma was another late maturing variety not included in the statistical analysis as grain heads remained immature after our first frost on 31-Oct. While this variety had large seed and was entered into the grain trial, it is best suited to fiber production. Grain hemp should be harvested at a seed moisture range of 10-20% and then dried down to less than 10% for storage. Harvesting seed that is too dry increases risk of yield loss from shattering and can reduce the quality of the grain. Harvesting plants at moistures near 20% also helps prevent dry hemp fibers from getting wrapped in the combine. A wide number of new or more accessible varieties yielded well in our 2022 and 2023 trials and will be further evaluated in 2024. It is important to remember that these data represent only one year of research and in only one location. Additional research needs to be conducted to evaluate varieties under more growing conditions.

