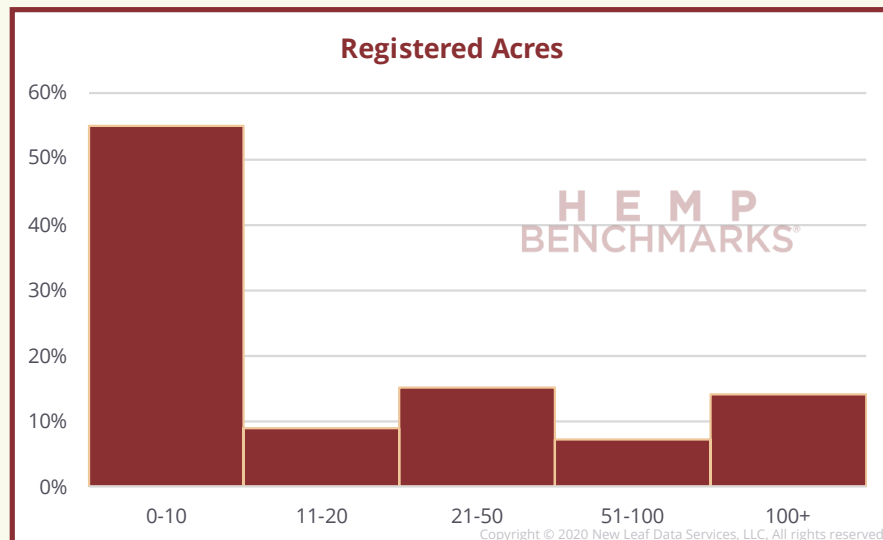


Hemp Benchmarks® Harvest Survey 2020

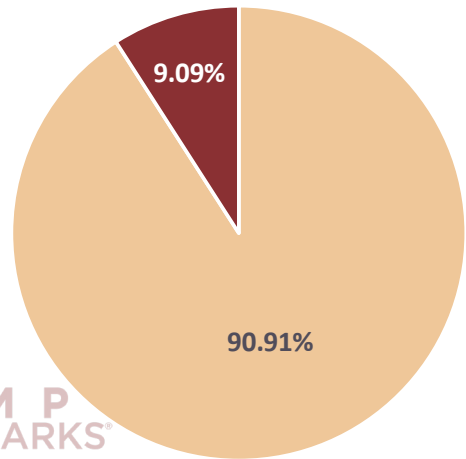
Earlier this month, Hemp Benchmarks circulated a survey with the assistance of the National Hemp Association and the Midwest Hemp Council. The survey asked growers various questions about their experiences farming and harvesting hemp this year and garnered several hundred responses. Respondents hailed from 38 U.S. states and Puerto Rico, along with several from other countries.

The majority of respondents reported registering relatively small plots, with 55% stating that they registered 10 acres or fewer for hemp production. This aligns with what we have heard from growers and state agriculture officials across the country this year; many farmers scaled back and grew smaller plots relative to 2019.

Additionally, respondents stated that they planted just over half of their registered acreage, specifically 55%. However, rates of successfully harvested acreage were high amongst respondents, at 81% of that planted, or 44% of the total registered.



Did your crops meet the 0.3% THC requirement?



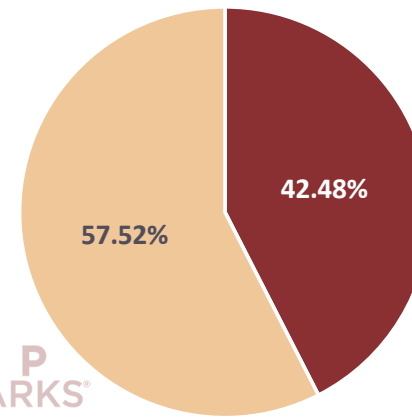
HEMP
BENCHMARKS®

■ Yes ■ No

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Over 90% of respondents stated that their hemp crops came in under the maximum THC threshold. This is largely in line with reports from state agriculture officials, who have told Hemp Benchmarks recently that anywhere from all to about 80% of their crops were compliant in regard to THC potency. Notably, however, some states with larger hemp programs - namely Colorado and Montana - have reported higher rates of hot crops, at 17% and 15%, respectively.

Did your crop have any issues with pests/mold/disease?



HEMP
BENCHMARKS®

■ Yes ■ No

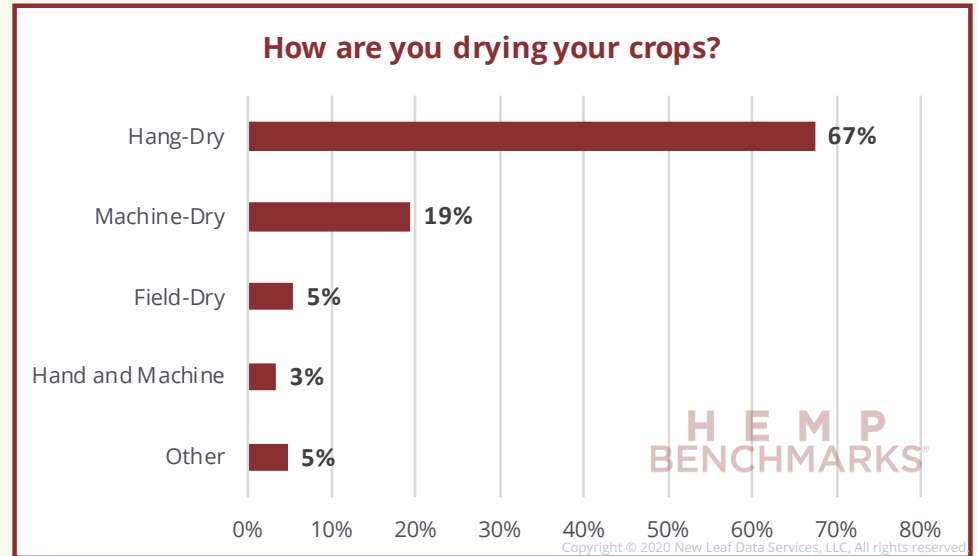
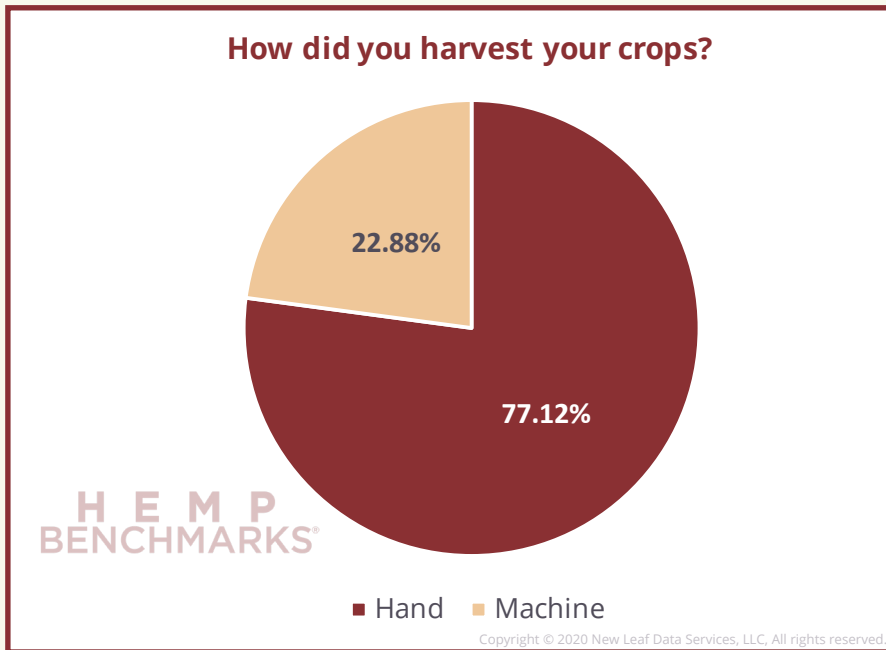
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A significant percentage of respondents stated that they had problems with various types of pests this season. While hemp is sometimes touted as resistant to pest issues, farmers and researchers are learning that hemp can be susceptible to many problems that impact traditional crops.

In open-ended responses, weeds were the most frequently-mentioned pest problem. Other issues included fungal diseases, such as powdery mildew and botrytis. Worms were mentioned as a problem by a couple growers, matching reports from agriculture officials, particularly in the Southeast. One respondent named Beet Curly Top Virus as an issue, which was also reported to Hemp Benchmarks by state agriculture officials earlier this year. Finally, numerous farmers pointed out that mammalian pests - such as mice, rabbits, and deer - caused damage to their crops.

We have over the course of the growing season noted some of the extreme weather and related conditions that impacted U.S. hemp crops, including the wildfires in Oregon - which were prefaced and exacerbated by drought and high winds - and hurricanes and tropical storms on the Gulf Coast and in the South.

The most prevalent weather problem amongst survey respondents was high wind, which was cited by about a quarter of farmers. About 12% stated that drought took a toll on their crops, while 5% pointed to damage caused by fires and ash. On the other end of the spectrum, just under a quarter of respondents noted that heavy rains or flooding negatively impacted their hemp crops this year.



However, 55% of respondents reported relatively smooth sailing in terms of weather this growing season. Overall, based on our survey results and reports from the field, it seems that growers in the Midwest experienced better weather for the most part, while growers in the West dealt with high heat, drought, and fires. In Colorado, Montana, and North Dakota early snow or freezes were reported, as they also were in parts of New England.

A vast majority of respondents indicated that they are employing low-tech methods for harvesting and drying their crops. Over three-quarters reported harvesting by hand, while almost that proportion said they either hung their crops to dry or left them to dry in the field.

Relatedly, in response to a question about the biggest surprise farmers had growing hemp this season, the most prevalent answer was that respondents did not expect how laborious and costly harvesting their crops would be. While we have noted some innovations in hemp harvesting technology and reports from

the field tell of some operations exploring more mechanized approaches, our survey responses indicate that harvesting and drying technologies are an area where the young hemp industry remains underserved.

Over 90% of respondents stated that they were growing primarily for CBD or CBG, indicating that cannabinoids remain the dominant production target of the vast majority of hemp grown in the U.S.

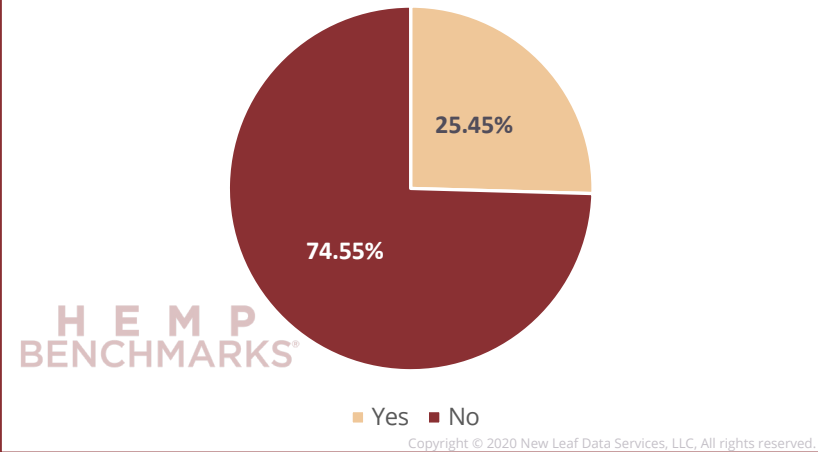
We have noted previously that lack of processing capacity for hemp fiber is a major stumbling block for those interested in cultivating hemp for that end use. While grain hemp appears to have found a foothold amongst specialty crop farmers in states like Montana, North Dakota, and Minnesota, to name a few, our recent introduction to the U.S. grain hemp market details some of the challenges preventing that sector from expanding rapidly.

Three-quarters of respondents stated that they will not be processing their CBD or CBG biomass in their own facility, while 25% indicated that they are vertically integrated cultivation and processing operations.

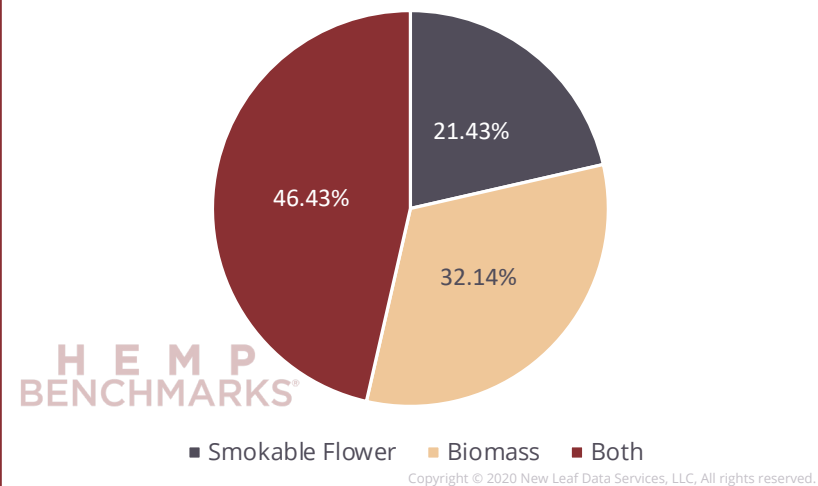
A related question asked whether growers who are not vertically integrated with extraction operations will be taking splits or processing their crop via a tolling arrangement. Almost 60% stated that they would employ one or both of those options in order to process their crops. In other words, the majority of respondents to that question stated that they will be paying to process their hemp crop into cannabinoid extracts.

The other roughly 40% may have arrangements to sell their crop for cash, or are at least intending to attempt to do so. In a prior survey conducted earlier this growing season, only about 35% of growers who responded stated that they had a contract to offload their biomass.

Will you be processing your biomass in your own facility?



Did you grow for Smokable Flower or Biomass?



In response to the question, “What was the biggest surprise you had growing hemp this season?” a handful of answers were echoed by numerous growers. We already noted above that the cost and amount of labor required to hand-harvest crops was the most prevalent answer, while problems with weeds was another surprise cited by many.

Another frequently mentioned topic was the inconsistency of hemp genetics, particularly seeds. Low germination rates were noted by multiple respondents, as well as inconsistency amongst plants grown from the same batch of seeds. Some growers also reported issues with clones, but those responses were not as frequent as comments regarding seeds.

A significant number of farmers also commented on the volatility of the hemp market, specifically that the pace and magnitude of the drop in biomass prices in the wake of 2019’s harvest was unexpected. Several mentioned that they could not find buyers for their crops.

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