2020 Hemp Flower Harvest Date

2020 HEMP FLOWER HARVEST DATE

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In the Northeast, hemp harvest can take place any time from late August through October or later depending on hemp varieties and weather conditions. Harvest for autoflowering varieties can somewhat reliably be determined with the use of recommended harvest dates for individual varieties whereas full term or photoperiod sensitive varieties more often require careful monitoring through the use of visual or aromatic cues. Primarily harvest date for flower crops is determined by a number of noticeable changes in the p

Table 1. Agronomic information for the hemp variety trial, Alburgh, VT, 2020.

Location	**Borderview Research Farm Alburgh, VT**
Soil type	Benson rocky silt loam, 3-5% slope

(approximately 1-2 weeks) prior to planting. All entries were transplanted into black plastic mulch with drip tape irrigation. At each given harvest date, one 12" cola was selected per plant and flowers were collected randomly from each. Sampled flower was observed under microscope and pictures were taken of each harvest date to observe trichome formation. A subsample for each individual variety and harvest date was collected from each harvested cola. Samples from each plot were sent to ProVerde Laboratories (Milford, MA) to be analyzed for cannabinoids and terpenes.

Data were analyzed using a general linear model procedure of SAS (SAS Institute, 2008) when datasets were complete. Replications were treated as random effects, and treatments were treated as fixed. Mean comparisons were made using the Least Significant Difference (LSD) procedure where the F-test was considered significant, at $p<0.10$. When data were missing, the Mixed Procedure of SAS (SAS Institute, 2008) was used. Treatment mean pairwise comparisons were made using the Tukey-Kramer adjustment at the 0.10 level of significance. Variations in genetics, soil, weather, and other growing conditions can result in variations in yield and quality. Statistical analysis makes it possible to determine whether a difference between treatments is significant or whether it is due to natural variations in the plant or field. At the bottom of each table, a p-value is presented for each variable (i.e. yield). The p-value refers to whether the treatment was statistically significant overall, while the letters are drawn from the means comparison. In the example to the right, treatment C was significantly different from treatment

Variety x Harvest Date interactions

Within the harvest date study, there were a large number of significant interactions between the selected varieties and harvest date indicating that each variety responded differently to harvest date for these significant interactions. Of the measured parameters for cannabinoids, everything other than THCA was significant (Table 4). This suggests that for each of these significant interactions, levels of the various cannabinoids reacted differently for harvest dates. This could be expected as each variety was selected based on their relative maturation rate. Additionally, cultivars have differing chemical profiles and proportions of each analyzed cannabinoid.

Table 4. Variety by harvest date interactions for cannabinoid profiles. Alburgh, VT, 2020.

Variety	Harvest Date	Weeks from Flowering	D9-THC	THCA	CBD	CBDA	Total THC	Total CBD	Total Cannabinoids
			% weight	% weight	% weight	% weight	% weight	% weight	% weight
Boax	1	8	0.034	0.203	0.293	6.47	0.212	5.97	6.36
Boax	2	9	0.047	0.191	0.454	6.79	0.214		

Figure 1. Total cannabinoids for

Table 5. Variety by harvest date interactions for terpenes. Alburgh, VT, 2020.

NS – Not significant.

Table 5 continued. Variety by harvest date interactions for terpenes. Alburgh, VT, 2020.

Variety	Harvest Date	Camphene	Caryophyllene Oxide	Cis-beta-ocimene	D-limonene

Impact of harvest date

Cannabinoid concentrations were analyzed and grouped by harvest date (HD). When data was analyzed by harvest date, each of the analyzed cannabinoids within the trial appeared to peak in week three (20-Oct) of the trial (Table 6). Significant differences for each of these cannabinoids were observed across the four trialed harvest dates as well. Highest total cannabinoids observed in HD3 at 7.79% were statistically similar to HD4 at 7.72% total cannabinoids. For D9-THC and CBD, the last three harvest date values were statistically similar whereas total cannabinoids, total CBD, CBDA, and total THC values were statistically similar for the last two harvest dates. These values appeared similar in concentration suggesting that peak concentrations for many of these cannabinoids could be observed for many of these after HD1 or HD2 in this trial.

Table 6. Cannabinoid concentrations for hemp harvest dates. Alburgh, VT, 2020.

Harvest Date	D9-THC	THCA	Total THC	CBD	CBDA	Total CBD

Table 7. Terpene concentrations for hemp harvest dates. Alburgh, VT, 2020.

†Within a column, treatments marked with the same letter were statistically similar (p=0.10) Top performing treatments are in **bold.**

Table 7 continued. Terpene concentrations for hemp harvest dates. Alburgh, VT, 2020.

†Within a column, treatments marked with the same letter were statistically similar (p=0.10) Top performing treatments are in **bold.**

Throughout the analyzed harvest dates, pictures were taken for each variety and are included below (Images 1, 2, 3, and 4) for comparison. As mentioned previously, there are a number of visual cues that are traditionally used for determining harvest window, of which these pictures attempt to capture. This includes overall form of harvested cola, pistils of sampled flowers, and capitate resin glands (bracts are not included in the following picture set).

during this four-week period, Southern Sunset did not appear to reach full maturity based on these visual cues, with comparatively lower cannabinoid concentrations and overall observable flower mass.

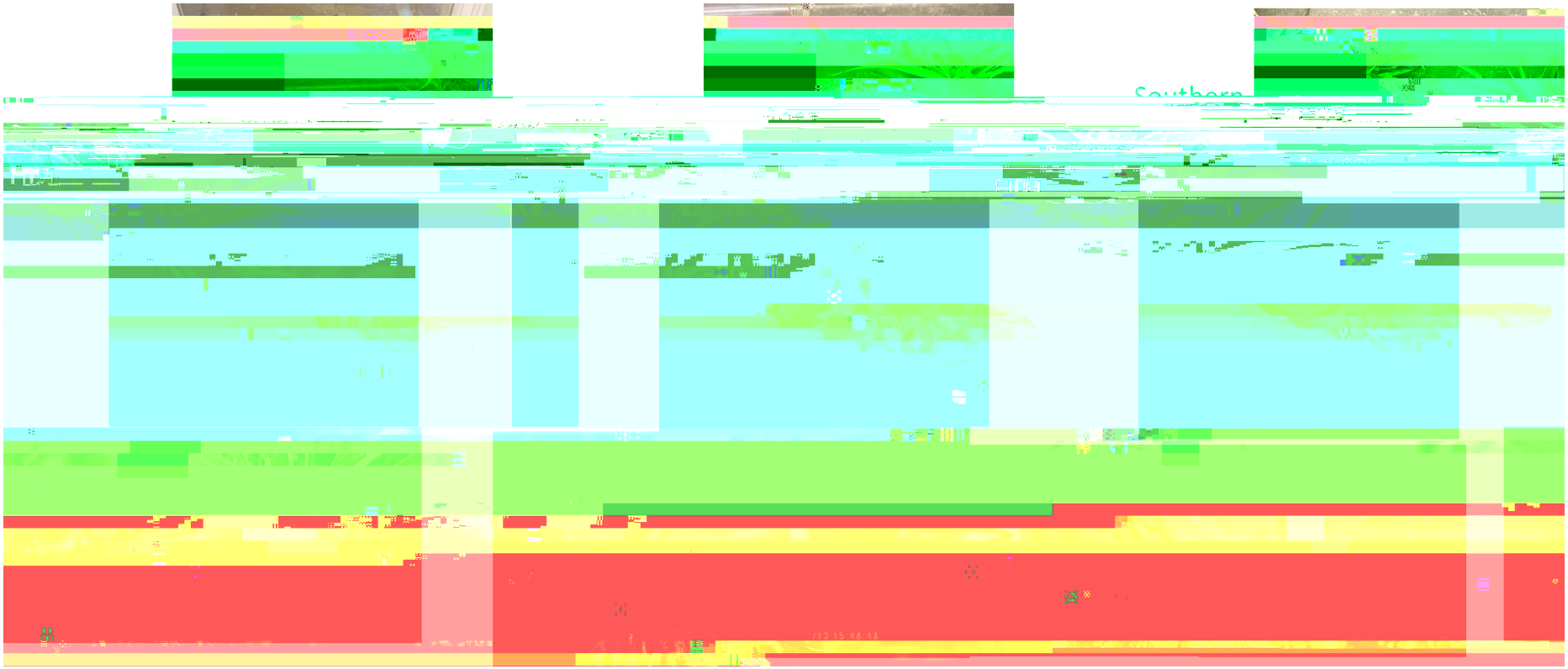

Image 1. Harvest date 1 pictures for harvested cola, flower pistils, and trichomes of Boax, Cherry Blossom, and Southern Sunset cultivars.

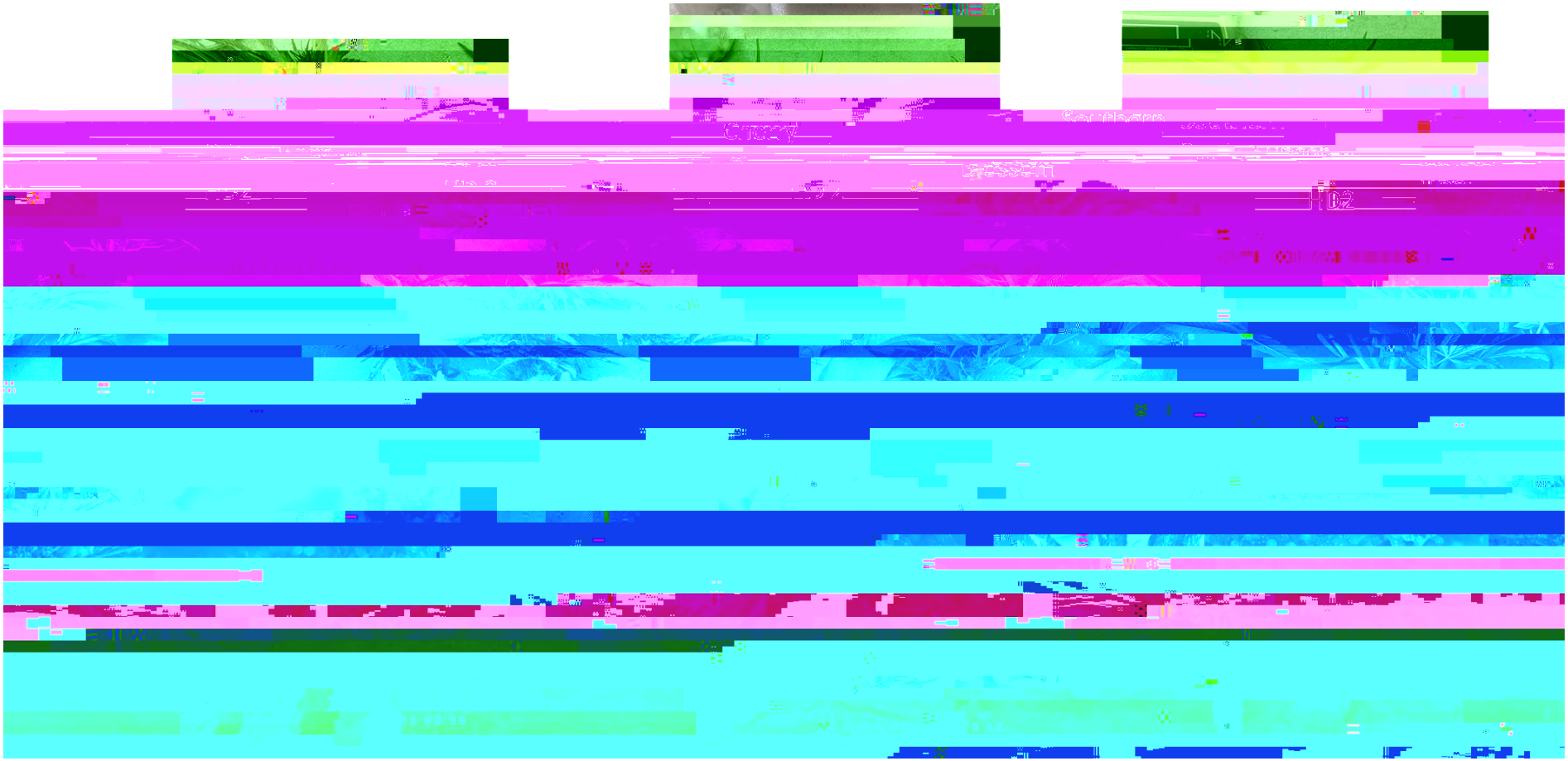

Image 2. Harvest date 2 pictures for harvest cola, flower pistils, and trichomes of Boax, Cherry Blossom, and Southern Sunset cultivars.

Image 3. Harvest date 3 pictures for harvested cola, flower pistils, and trichomes of Boax, Cherry Blossom, and Southern Sunset cultivars.

Image 4. Harvest date 4 pictures for harvested cola, flower pistils, and trichomes of Boax, Cherry Blossom, and Southern Sunset cultivars.

DISCUSSION

With many concerns surrounding hemp compliancy and overall crop quality, hemp harvest timing can be one of the most important components of hemp production. Furthermore, pre-harvest sampling for compliancy is required for many growers and becomes another important factor and will be an early indicator for crop compliancy. Rules and regulations for sampling can differ between states so it is important to follow your states growing requirements. Vermont rules and regulations can be found online here:

https://agriculture.vermont.gov/public

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