

ECONOMIC & POLICY UPDATE

VOLUME 20, ISSUE 11

Editors: Will Snell & Nicole Atherton

NOV
2020

Estimates of What it is Going to Cost Me to Destroy my "HOT" Hemp Crop



Author(s): Jonathan Shepherd and Tyler Mark

Published: November 25th, 2020

We recognize that no one plants a crop with expectations of having to destroy the crop. However, the risk of producing a hemp crop that is non-compliant is a real risk and has a genuine cost associated. As hemp genetics evolve, the risk of destruction will dissipate. The USDA's Interim Final Rule (IFR) for hemp states that any cannabis over 0.3% THC on a dry weight basis is considered a controlled substance and must be destroyed.[1] For the time being, the USDA has delayed the requirement for DEA and/or law enforcement to partake in non-compliant hemp disposal. Instead, producers who find themselves with a non-compliant crop can use standard on-farm practices for disposal. It is essential to note that the IFR is not a final rule meaning that allowable THC content may change and other

costs, including law enforcement cost or DEA cost reimbursement for oversight of crop destruction, may become an additional cost bared by the producer of an illicit crop. Individual states may also regulate the acceptable destruction methods and associated administrative costs associated with crop destruction.

The Agricultural Marketing Services (AMS) of the USDA has listed six acceptable methods of disposing of a non-compliant hemp crop (i.e., THC over 0.3%). These methods can be found on the [Hemp Disposal Activities](#) webpage.

These six methods are:

- **Plowing under**
- **Mulching/composting**
- **Disking**
- **Bush Mower/Chopper**
- **Deep Burial**
- **Burning**

This article begins to outline the time and cost estimates associated with the various methodologies of crop destruction. We have applied the University of Kentucky's 2020 Custom rates to help producers estimate what costs may be incurred under each of the destruction practices.[2] It is likely that these rates are understated for what it would cost for these same practices to be employed under the conditions on hemp destruction. Please note that each of these destruction methods' effectiveness will depend on the maturity and characteristics of the crop (i.e., crop height, stem diameter, etc.). Likely, destruction will occur after significant biomass has already grown in the field. Increased biomass that must be destroyed will result in varying effectiveness, multiple passes, and increased costs potentially. Also, bare-ground production practices are assumed in cost estimation. Alternative methods such as plasticulture production practices are addressed at the end.

Each operation will have to select the method that works best for them; however, this article is meant to provide some basic cost information for the allowable methods. Limitations of this are that we do not include the opportunity costs of capital, the value of the growing crop, other economic costs of investments, and limited information is available for using these methods on hemp production. As pointed about by AMS, a farmer facing crop destruction may employ a combination of more than one of the above methods to destroy the crop (i.e., plow and disk) fully.

Plowing Under Method

Assuming a six-bottom plow, at 4.5 mph you can expect about 4 acres an hour at approximately 80% efficiency. This would effectively destroy the crop. If using a 4-bottom plow, at 4.5 mph and 80% efficiency, capacity would be reduced to approximately 2.5 acres an hour. However, you would need to further work the ground to get it ready for the next crop. Using a 21-foot disk, 9/acres/hour is achievable at 4.5 mph and 80% efficiency. Typically, two passes will be required after plowing.[3]

	UK 2020 Avg Custom Rates/ Ac	Min. # of Passes	Total Estimated Cost/Acre
Plowing Under	\$20.50	1	\$20.50
Disking	\$15.50	2	\$31.00

Total Cost of Practice per acre: \$51.50

Mulching/Composting Method

To achieve this, you will most likely have to bushhog followed by disking. Assuming the use of a 15' bushhog at 90% efficiency and 5mph, an estimated 8 acres/an hour could be expected for traditional pasture clipping. However, bushhogging hemp is expected to be significantly slower with an estimated 4 acres/hr. Based on the same assumptions above, 9/acres/hour for disking is estimated. However, the overall maturity and characteristics of the crop (i.e., crop height, stem diameter, etc.) will determine equipment efficiency. Further, stalk characteristics alone (size and rigidity) could be problematic for tires and increase overall repair and maintenance costs.

	UK 2020 Avg Custom Rates/ Ac	Min. # of Passes	Total Estimated Cost/Acre
Mulching/Composting	\$14.00	1	\$14.00
Disking	\$15.50	1	\$15.50

Total Cost of Practice per acre: \$29.50

Disking Method

Destroying the crop via disking alone will most likely require multiple passes. With this method, the overall maturity, and characteristics of the crop (i.e., crop height, stem diameter, rigidity, etc.) will drastically impact the effectiveness of this method and dictate the number of passes. For this purpose, assume a minimum of 3 passes over the field averaging 9/ac/hour (21-foot disk at 4.5mph and 80% efficiency).

	UK 2020 Avg Custom Rates/ Ac	Min. # of Passes	Total Estimated Cost/Acre
Disking	\$15.50	3	\$46.50

Total Cost of Practice per acre: \$46.50

Bush Mowing/Chopper

Assuming the use of a 15' bushhog, 8 acres/hour is achievable for traditional pasture clipping (5pmh and 90% efficiency). Bushhogging hemp will be significantly slower with an estimated 4 acres/hr. Stalk characteristics alone (size and rigidity) could be problematic for tires, repair and maintenance costs, and speed.

	UK 2020 Avg Custom Rates/ Ac	Min. # of Passes	Total Estimated Cost/Acre
Bush mower /Chopper	\$14.00	1	\$14.00

Total Cost of Practice per acre: \$14.00

Deep Burial

Deep burial requires digging trenches and burying surface soil a minimum of 12 inches. In most cases, the deep burial method would be cost-prohibitive. This is likely to be the least used methodology or only used in unique circumstances. As a result, we will not estimate the time and costs associated with this method. Producers considering this method will need to consider the equipment, labor hours, and transportation costs to the burial site.

Burning

The rate at which a crop could be burned will depend on the amount of biomass to be burned as well as moisture of the crop, wind conditions, method of prescribed burn, and overall climatic conditions on the day of burning. Currently, there is no available information on burning a hemp field and field burning is not a typical practice used in Kentucky. An important caveat here is that you would have to get the crop moisture down to a point where burning is feasible. This would require either cutting the crop (i.e., by hand, sickle bar mower, or bushhog) or applying a chemical desiccant. However, depending on the crop's height, a chemical desiccant application could be challenging with traditional chemical sprayers and may require an aerial application. Individual states and jurisdictions have differing regulations on prescribed burning methodologies. Creating appropriate firebreaks around fields would certainly increase costs. Post-harvest burning is another consideration not estimated here.

Alternative Production Practices

Plasticulture

Based on a 2018 University of Georgia study[4], it is estimated that 4 workers could remove 2 acres of plastic an hour, 2 workers to remove 1 acre of drip tape per hour, and 1 worker to mow an acre of plants per hour. Regarding plastic, the same plastic and irrigation may be used for 3-4 years. If an alternative crop is identified to follow the hemp crop that must be destroyed or if the site will be used for hemp again, then this may not be a necessary cost to incur. However, the non-compliant hemp crop would then have to be cut and removed from the plasticulture field for composting, burning at an alternative sight, or deep burial.

Greenhouse Production

For destruction of a greenhouse crop, consideration of labor costs needs to be calculated for the de-plotting of plants, physical removal from the greenhouse and time associated with composting, burning or deep burial.

High Tunnel Production

Destruction of a high tunnel crop will be similar to greenhouse production destruction with the caveat of the plants being directly planted in the ground. In this case, physical removal of the plants from the high tunnel or physically moving of the structure will be required. Then one, or a combination of the above practices, will be employed to destroy the crop.

[1] USDA Interim Final Rule: <https://www.federalregister.gov/documents/2019/10/31/2019-23749/establishment-of-a-domestic-hemp-production-program>. An update to the Interim Final Rule is scheduled to be released by USDA-AMS in early 2021, so the acceptable practices listed here are subject to change. Furthermore, states operating under the 2014 Pilot Program in 2021 will be utilizing their own standards and not the USDA Interim Final Rule. For example, in Kentucky given the allowance for variance around 0.3% THC, the crop is still considered hemp up to 0.399%.

[2] https://agecon.ca.uky.edu/files/custom_machinery_rates_applicable_to_ken...

[3] [https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1020&context=aen ...](https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1020&context=aen...)

[4] <https://site.extension.uga.edu/aaecext/2019/09/estimated-cost-per-acre-of-removing-and-replacing-plastic-mulch-damaged-by-hurricane-michael-in-georgia/>

Author(s) Contact Information:

[Jonathan Shepherd](#) | Extension Specialist | jdshepherd@uky.edu

[Tyler Mark](#) | Associate Professor | tyler.mark@uky.edu