

Maximize Alfalfa Hay Quality in the Last Harvest of the Year

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As with any alfalfa harvest, maintaining quality after cutting is crucial. However, it is more difficult to accomplish in late fall since many other factors need to be considered. Most articles about late-fall cuttings (specifically, after September) focus on reducing winterkill risk, which is a priority. Very few, however, discuss forage-quality management in fall-harvested alfalfa. In a nutshell, fall harvest should be done late enough to prevent the plant from resuming growth after cutting, depleting root reserves and increasing winterkill risk. But it should be done prior to the first hard frost to avoid leaf loss (the main determinant of high-quality alfalfa hay).

Fall Harvest. Alfalfa requires ~6 weeks or 500°F growing degree days (base temperature 41°F) to prepare to survive the winter, referred to as acclimation or winterization. This is driven by daylength and temperature, signaling alfalfa plants to prepare to go dormant. During this time, alfalfa translocates reserves from leaves to roots, which have an important function in winter survival and rapid regrowth the following spring. Alfalfa growth accumulated in the fall after the last summer cut depends on its fall dormancy rating. Fall dormancy of 1 (FD1) means plants will go dormant as soon as they sense the days shortening after the end of August. Varieties with a fall dormancy of 5 (FD5) continue to grow well into October before a hard frost (~24°F). As long as varieties have a winter survival rating of 1 or 2, they can survive in the northern Midwest, even if they are FD5. It is not recommended to cut alfalfa in September since temperatures are still warm enough for plants to resume growth after cutting. If this happens, root reserves will deplete and winterkill risk increases. Alfalfa will not grow back in the fall if there is <200°F accumulated growing degree days from the last harvest to the first hard frost.

If alfalfa was seeded in the spring of 2022 and growing conditions were good throughout summer, you can take a fall harvest following precautions indicated above. If your newly seeded alfalfa was established in mid- to late-summer with a companion crop or it was stressed and did not grow well, do not harvest in the fall! Keep in mind, North Dakota and Minnesota research has shown a fall cutting results in lower forage yield in the first cut in the spring. However, total seasonal forage yield is greater compared with a no-fall harvest.

Forage Quality. Alfalfa harvested in the fall is usually of high quality (RFQ >151, 20-22% CP) since it is harvested shorter than earlier cuts. A shorter plant has a greater leaf-to-stem ratio. Most protein in alfalfa is in the leaves, which are much more digestible than stems. However, even if the quality of the standing alfalfa in the field is high, it can quickly be lost after cutting if leaf loss is substantial. In addition, alfalfa quality changes very little after September 1.

Ideally, cut alfalfa before the first hard frost. If already frosted when harvested, freeze-dried leaves will easily crumble and fall, rapidly decreasing quality. The drier the alfalfa is at harvest, the greater the leaf loss during cutting, raking, and baling. Leaf loss can amount to 70% if raked and baled at low moisture (<18%). One alternative to preserve leaves is to cut alfalfa as haylage at ~50% moisture.

Finally, harvesting versus delaying harvest after September 1 should be based on the likelihood of winterkill or winter injury if alfalfa stands are to be kept. Remember, maintaining forage quality will depend on cutting, raking, and baling management and not on harvest date/stage if harvested before the hard frost.