

CLEAR SEEDING OF ALFALFA



Fig. 1. An excellent stand is necessary for high yields in the seeding year. Twelve pounds per acre, band seeded with press wheels, were used in this seeding.

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Seeding alfalfa alone in early spring with herbicides to control annual weeds is a relatively new method of establishment called "clear seeding" (Fig. 1). With this method, it is not difficult to harvest 2½ to 3 tons of clean hay in the seeding year.

Clear seeding producing yields of three tons of alfalfa in the seeding year will contain 1,000 pounds of protein. This is a reasonable goal for dairymen who need homegrown protein. Clear seeding is also a sound alternative for dairymen who have little use for oat straw or have difficulty in getting good seedings in oats.

The new system calls for seeding alfalfa alone in April or early May (the earlier the better) and harvesting up to three tons of clean hay in the seeding year. Because a herbicide replaces the companion crop and provides the necessary weed control, all the fertilizer, rainfall and sunshine are used by the alfalfa which provides the income during the seeding year.

Six years of Michigan State University research shows that spring clear-seeded alfalfa yielded an average of 3½ tons of hay with 20% protein during the seeding

year as shown in Table 1. Saranac alfalfa seeded on May 2, 1969, yielded 3½ tons per acre when cut on July 30 and September 23. In 1971 tests, Saranac seeded on April 10 yielded 4½ tons in three cuttings—July 9, August 20 and October 27. In 1972 tests, Saranac seeded on April 27 yielded 3½ tons in three cuttings. Yields of alfalfa seeded in other experiments in 1973, 1974 and 1975 ranged between 3 to 3½ tons hay in the seeding year.

Three tons of hay (12% moisture) contain 5,100 pounds of dry matter with an average of 20% protein or 1,020 pounds of protein. This protein has a value similar to that in soybean oil meal. The value of the alfalfa for protein and the feeding value of the alfalfa totals about \$200 based on current prices.

TABLE 1. Seeding-year yields of Saranac alfalfa in three separate experiments on a Conover silt loam, (S.M.G.2.5b) East Lansing. Seeded May 2, 1969; April 10, 1974; April 27, 1972.

Seed Rate (Lb/acre)	1969 (2 cuts)	1971 (3 cuts)	1972 (3 cuts)	Average (3 tests)
Tons dry hay (12% moisture) per acre)				
4	3.3	4.3	2.5	3.4
8	3.3	4.4	2.8	3.5
12	3.3	---	3.1	---
16	3.3	4.5	3.1	3.6
20	3.2	---	3.0	---
24	3.3	3.9	3.1	3.4

The highest yield during the seeding year is produced by using a fast-growing alfalfa such as Saranac, seeding early, cutting three times and using a seed rate of 12 to 16 pounds per acre. In the 1971 test (Table 2) three cuttings yielded 3.79 compared to 2.92 tons for a 2-cut system. Early seeding yielded 3.83 tons, 0.86 tons more than late seeding.

The two tests showed that 12 to 16 pounds of seed per acre insure greater yields, fewer weeds, and cleaner hay than if 8 pounds are used, especially when the herbicide doesn't work perfectly as in 1972. Further tests show that yields the year after taking three cuttings of a clear seeding were as good, or better than those from seedings made in oats or seeded alone in summer. This indicates that cutting three times—with blossoming at each cutting—does not hurt the plant in the seeding year.

TABLE 2. Seeding year hay yields (1971) of Saranac alfalfa sown at different seed rates with early and late spring seedings cut for hay two or three times the same year. 700 lbs of 0-10-30 at seeding, Conover loam, (S.M.G.2.5b) East Lansing.

Rate, Lb/acre	Seeded April 10		Seeded May 9		AVERAGE Early and Late Seeding	
	3 cuts ¹	2 cuts ²	3 cuts ³	2 cuts ⁴	3 cuts	2 cuts
	<i>Tons dry hay (12% moisture) per acre</i>					
4	4.26	3.17	2.96	2.26	3.61	2.71
8	4.40	3.62	3.53	2.65	3.96	3.14
16	4.58	3.06	3.27	2.85	3.92	2.96
32	3.93	2.96	3.41	2.84	3.67	2.90
Average	4.29	3.37	3.29	2.65	3.79	2.92
Average	3.83		2.79		3.36	

(1) 3 cuts — July 9, August 20, October 27.

(2) 2 cuts — July 20, October 1.

(3) 3 cuts — July 21, August 30, October 27.

(4) 2 cuts — August 3, October 1.

Guidelines for Successful Clear Seeding of Alfalfa

[1] Grow alfalfa on soils that have good moisture-retaining abilities. Such soils contain reasonable amounts of clay. Those belonging to the 1.5a, 1.5b, 1.5c, 2.5a, 2.5b, 2.5c, 3a, 3b, and 3c soil management groups are good examples (Table 3). These soils can usually support good alfalfa growth during extended dry periods in the seeding year. Loamy sands (4a, 4b, and 4c) and sands (5a, 5b, 5c) are not suitable for clear seeding.

[2] Grow alfalfa only on well-drained soils. Where soils are naturally imperfectly drained or poorly drained, tile drainage is essential for the best yields.

TABLE 3. Interrelationship among soil management groups.

Dominant Soil Profile Texture	Symbol	NATURAL DRAINAGE		
		Well Drained (a)	Somewhat Poorly Drained (b)	Poorly Drained (c)
Fine clay	0	0a	0b	0c
Coarse clay	1	1a	1b	1c
Clay loams	1.5	1.5a	1.5b	1.5c
Loam and silt loam	2.5	2.5a	2.5b	2.5c
Sandy loam	3	3a	3b	3c
Loamy sand	4	4a	4c	4c
Sand	5	5a	5b	5c
Muck or peat				Mc



Fig. 2. Adequate lime should be applied, preferably 6 to 12 months before seeding, and incorporated to bring the pH to 6.8 or above.

[3] Test the soil and correct the pH by liming to 6.8 or above (Fig. 2).

[4] The seedbed should be firm but not packed to provide good support of planting and harvesting machinery.

[5] Fertilize according to soil tests and preferably band the fertilizer under the seed. Three hundred fifty pounds of 0-14-42 will supply the phosphorus and potassium (0 + 50 + 150) for a three-ton hay crop.

[6] Inoculate (or use pre-inoculated seed) 12 to 16 pounds per acre of Saranac, 520, Thor, Anchor, Iroquois, Weevilcheck or other fast-growing, wilt-resistant alfalfas. These varieties outyield Vernal by a half ton per acre in the seeding year and are 10% higher yielding for a 3- to 4-year stand.

[7] Seed as early as possible without damaging the physical condition of the soil. In southern Michigan, this usually occurs in April or early May.

[8] Control annual weeds with three pounds EPTC (Eptam) acid equivalent (AE) per acre sprayed on the seedbed and incorporated into the soil immediately after application. Or, spray one pound of 2,4-DB AE ester when the seedlings have two or three leaves, usually four to five weeks after seeding. If broadleaved weed problems develop after using EPTC, 2,4-DB can be used during the seedling stage.

[9] Band seed with a fertilizer-grain-legume seed drill with band seeder attachment. The phosphorus banded under the band of seed placed on top of the ground gives the seedling a fast start by stimulating root development. A cultipacker seeder is also a satisfactory seeding method but is second choice. The seedlings have less vigor since the seed is broadcast and is not banded over the banded phosphorus.

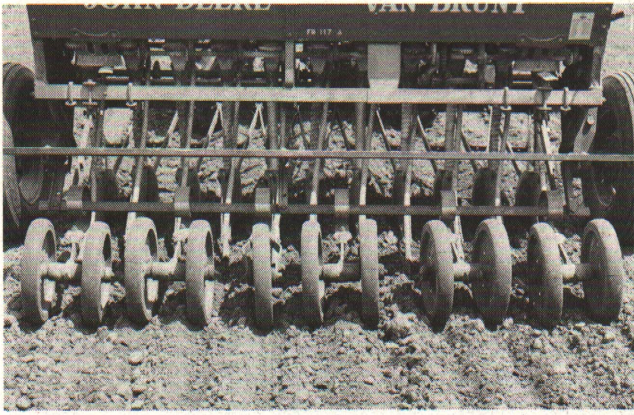


Fig. 3. The fertilizer-grain drill with band seeder attachment places the seed shallowly over a band of fertilizer. This gives maximum stimulation for the seedling from the phosphorus. Press wheels shown here cover the seed shallowly with soil and firm the soil around the seed for good germination. A fertilizer drill with band seeder and press wheels attached is the best method of getting excellent fast-growing stands of alfalfa.

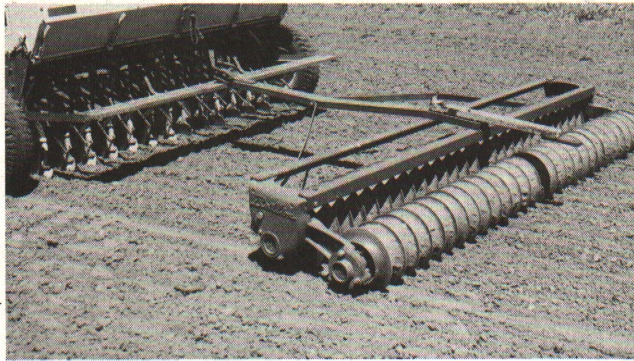


Fig. 4. Using a cultipacker instead of press wheels gives almost as good a stand and is recommended when press wheels are not available.



Fig. 5. First cutting alfalfa in early July 1975, in Oceana county yielded two tons hay per acre after a clear seeding made in early May. Eptam was used, preplant, at three pounds active ingredient per acre. The second cutting yielded one ton hay per acre.

[10] Use press wheels on the drill (Fig. 3) or tow a cultipacker (Fig. 4) behind the drill to firm the soil around the seed and cover it shallowly for fast emergence.

[11] Plan for three cuttings in the seeding year for more hay of better quality. Take the first cutting when the alfalfa is flowering. This is in early to mid-July in southern Michigan, about three months after seeding (Fig. 5). Make the next two cuttings at six-week intervals when flowering begins—about August 20 and mid-October (Fig. 6). The last cutting may need to be used for silage because of poor haying weather. Three cuttings in the 1972 tests yielded about $\frac{3}{4}$ tons more than two cuttings and the hay was of better quality—it had more protein and was leafier. If only two cuttings are made (as in northern Michigan), the second can be taken anytime after flowering begins which will be in late August or September. September cutting does not hurt next year's yield as long as the alfalfa has started to flower.

[12] Control leafhoppers by frequent harvests. If the first cutting in early July is flowering, starting to turn yellow and is stunted, leafhoppers are likely the cause. Cut immediately since yellowed alfalfa makes little growth. The young nymphs will generally be killed. Spraying the stubble to control the leafhoppers may sometimes be necessary. Check the second cutting similarly and cut if leafhoppers are causing yellowing in August. If the alfalfa in the second cutting shows leafhopper symptoms and is cut when starting to flower, it will not be damaged—and the leafhoppers will be controlled without any spraying. Leafhoppers will not likely be a problem with a third cutting made in mid- to late October.

[13] Topdress in the fall of the seeding year or next spring according to soil test and Extension Bulletin E-550 "Fertilizer Recommendations for Michigan" for high yields in the second and subsequent years.

Because annual yields will be higher after the seeding year, more fertilizer will be required to maintain high yields in the 4- to 6-ton range. The original soil sample can be used as the basis for topdressing with phosphorus, potassium and boron. Be sure to state yield goals derived for recommendations.

As a guide for annual topdressing, most sandy loams or loams testing low to medium in potash will require about 150 pounds potash (250 pounds of 0-0-60) per year. If the soil tests low to medium in phosphorus, 25 to 50 pounds phosphate would be needed annually. On most sandy loam or loam soils on many dairy farms, 300 pounds of 0-0-60 after the first year, 400 pounds of 0-14-42 after the second year, and 300 pounds of 0-0-60 after the third year will supply the phosphorus and potassium needed for yields in the 4- to 6-ton range. Boron at the rate of 1 to 2 pounds per acre on sandy loams or loams is also advised for high yields.



Fig. 6. Second cutting in mid-August, 1974, of a clear seeding made in late April after preplant treatment with Eptam to control annual weeds. The total yield of three cuttings was over three tons hay. Clinton county, tilled conover loam soil.

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