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Sod seeding in the brown loam

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Sod Seeding

--- Brown Loam Tests

MISSISSIPPI STATE COLLEGE
AGRICULTURAL EXPERIMENT STATION
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RECOMMENDATIONS

To avoid part of the hot droughty fall weather, the fall planted crop should not be seeded before late September, preferably October 1-15.

The pasture vegetation should be short.

A complete fertilizer should be applied under the seed at planting.

If a choice of small grains is to be made, oats should be the crop selected. Wheat and rye are satisfactory for forage, however, oats is a satisfactory forage and grain producing crop.

Wild winter peas are the most dependable legume tried for drilling in a permanent pasture sod. Crimson and red clover are satisfactory crops seeded by this method.

Livestock should be removed from the pasture at seeding time and remain off until the pasture is ready to be grazed or after it has been harvested for grain.

Dallis or Bahia grass can be planted in the spring after an oat hay crop without breaking the soil.

Fall plantings of small grains or legumes can be made in meadows following a hay crop in September without seedbed preparation as well as in permanent pasture sods.

Pastures with a thin cover can be interplanted with the desired grass or legume without destroying the existing vegetation.

The crop seeded should be on the recommended list. Sod seeding is too expensive for a crop failure. A fall seeded small grain crop will cost between $15 and $18 per acre depending on the amount of fertilizer used.

Table 1. Forage produced before March 1 by oats, wheat, rye, and barley seeded on upland soil in permanent pasture sod on Brown Loam Branch Station.

Rates of seeding in pounds per acre	Forage yields in pounds of dry forage per acre			
	1954-55	1955-56	1956-57	3-Year average
		OATS		
15	697	692	1915	1101
30	847	886	1716	1150
60	1010	976	2118	1368
90	1148	927	2282	1452
120	1111	853	2213	1392
		WHEAT		
15	915	910	1276	1034
30	895	857	1318	1023
60	880	1275	1504	1220
90	1059	1297	1771	1376
120	806	1292	1644	1247
		RYE		
15	918	1445	2053	1472
30	996	1757	2546	1766
60	1134	2328	2417	1960
90	1303	2353	2646	2101
120	1259	2533	2374	2055
		BARLEY		
15	601			
30	556			
60	586			
90	581			
120	557			

SOD SEEDING IN THE BROWN LOAM

By ROBERT E. COATS

For the past several years extensive tudies have been conducted on the Brown Loam Branch Station with rates and nethods of seeding pasture grasses and egumes. With rising costs of labor and naterials, a higher producing pasture is iecessary for a satisfactory income from he land.

Complete land renovation for fall-seed-d crops is expensive because land must e disked or plowed several times before he soil is in suitable seeding conditon. Seeding directly in the sod offers a means f reducing the cost of seeding a winter-growing crop while using the pasture nore than one season of the year.

Seeding Rates For Small Grains

Experimental plots were established in he fall of 1954 on Grenada and Calloway ilt loam with moderate erosion and gent-y sloping phases to determine forage and rain yields of oats, wheat, rye, and bar-ey when seeded at various rates. Seeding ates for each species were 15, 30, 60, 90, nd 120 pounds per acre. Seed was plant-d in 16-inch drill rows during October.

Fertilizer for the experiments included 50 pounds of ammonium nitrate, the quivalent of 300 pounds of 20 percent uperphosphate and 50 pounds of muriate f potash. These amounts of fertilizer vere applied in the drill just underneath he seed at planting time. The plots har-ested for forage were top-dressed with mmonium nitrate at per-acre rates of 5 pounds in December and 100 pounds gain about March 1. Plots from which grain yield only was harvested were op-dressed once with 100 pounds of am-nonium nitrate per acre on March 1.

Crops used in the experiments were Delta Red 88 oats, Atlas 66 wheat, Ab-uzzi and Florida Black rye, and Kenbar arley.

One half of three tests, oats, wheat, and rye were clipped for forage yields up to March 1 and left for a grain yield in June. The other half of each test was not clipped but was harvested for grain at maturity to help determine the effect of forage removal upon grain yield.

The treatments were randomized with four replications. Each individual plot consisted of five drill rows spaced 16 inches apart and 18 feet in length.

Forage Yields: The forage yields reported in Table I are exceptionally small for fall and winter growth of sod-seeded small grains, however, this late growth was due primarily to the extremely low rainfall during October for the three years reported. The average date of the first clipping was mid January.

The high seeding rates provided slightly more forage than low rates, however, most of the difference existed in the first harvest. Oats drilled at the rate of 120 pounds produced 1392 pounds of dry forage per acre by March 1, only 20 percent more than was produced by seeding 15 pounds (Table I). The difference was very similar for wheat and rye. The three-year average production of wheat and rye seeded at 120 pounds per acre was 17 and 28 percent more, respectively, than seeding 15 pounds. The three-year average yields of oats, wheat, and rye were higher from seeding 90 pounds per acre than any other seeding rate.

The test with barley was discontinued after the first year because of inferior forage growth and grain production.

Grain Yields: Experiments with cereals for grain production indicate oats are more dependable and higher producing than either wheat or rye. The highest yield was 70.6 bushels of oats per acre produced in 1956. Over a three-year period the low seeding rates (15 and 30 pounds) were not as productive as the

higher rates. Seeding 90 pounds of oats averaged 17.2 bushels more grain than seeding 15 pounds, and 12.8 bushels more than planting 30 pounds (table 2).

Wheat produced a satisfactory grain yield one year out of three. Twenty-six bushels per acre in 1957 from 90 pounds of seed was the highest yield produced over a three-year period. The wheat yields during 1955 and 1956 were definitely inferior and below that normally expected from a small grain.

During 1956 Abruzzi rye produced good yields from all rates of seeding, however, this good production existed only one year out of three. Over a three-year period 60 pounds of rye produced 19.5 bushels per acre.

Removing the forage by clipping up to March 1 had a definite depressing effect on grain yields of all three species of small grains tested (Table 2). There

Delta Red 88 oats. Note grass growing between 16-inch drill of oats. Picture taken April 1.

Table 2. Grain yields from oats, wheat, rye, and barley seeded at five rates in a Bermuda-Dallisgrass sod.

Rate of seeding lbs./acre	Grain yields in bushels per acre						3-Yr. av. bushels per acre	
	Clipped			Not clipped				
	1954-55	1955-56	1956-57	1954-55	1955-56	1956-57	Clipped	Not Clipped
				OATS				
15	47.3	21.4	10.3	42.9	40.8	48.4	26.3	44.0
30	47.5	29.8	11.7	39.3	53.4	52.5	29.7	48.4
60	44.8	36.1	11.5	43.6	58.9	63.8	30.8	55.4
90	38.9	31.1	9.6	46.8	70.6	66.3	26.5	61.2
120	41.9	33.0	10.2	41.5	69.9	65.7	28.4	59.0
				WHEAT				
15	9.8	1.9	3.3	11.7	5.2	19.7	5.0	12.2
30	8.5	3.2	3.4	10.4	8.8	21.1	5.0	13.4
60	9.3	4.2	4.0	10.7	13.4	23.2	5.8	15.8
90	9.4	4.4	4.7	10.0	12.0	26.1	6.2	16.0
120	9.5	5.7	4.5	10.3	15.6	24.8	6.6	16.9
				RYE				
15	8.4	14.0	----	8.1	33.1	10.2	11.2*	17.1
30	8.1	16.3	----	9.8	33.8	12.1	12.2*	18.6
60	10.3	20.7	----	12.3	38.4	7.9	15.5*	19.5
90	9.5	17.8	----	11.6	32.1	10.8	13.7*	18.2
120	10.2	18.1	----	11.5	36.1	7.4	14.2*	18.3
				BARLEY				
15	3.6	----	----	5.6	----	----	----	----
30	8.7	----	----	7.0	----	----	----	----
60	6.8	----	----	14.1	----	----	----	----
90	9.8	----	----	14.4	----	----	----	----
120	6.8	----	----	15.1	----	----	----	----

*Two year average

vas practically no difference in grain ield from any seeding rate from plots arvested for forage up to March 1. Oats eeded at rates of 15, 30, 60, 90, and 120 ounds per acre and clipped until March produced 40, 38, 44, 57, and 52 percent ess grain, respectively, than comparable reatments that were not clipped. Clipping vheat and rye reduced the grain yield ven more.

It was apparent that cereals sod-seeded vere more severely injured by removing he forage than small grains seeded on prepared seedbed. Seedlings in the arrow slit grew almost straight up and vere subject to more injury than plants vhich had room to spread.

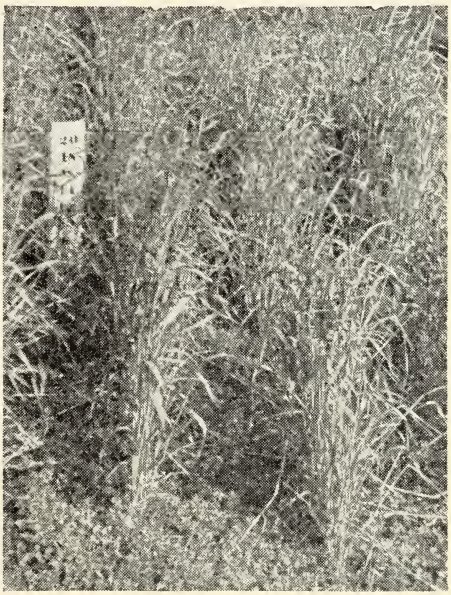
Cross-Seeding Wheat and Ryegrass

In Experiment 2, wheat and ryegrass vere seeded in individual plots at rec-mmended rates of 120 pounds of wheat nd 25 pounds of ryegrass. The same two rops were also cross-seeded at various ates. Rates of wheat were 30, 60, 90, and 20 pounds of seed per acre. Ryegrass vas seeded at 10, 20, and 25 pounds per cre. The test was fertilized at planting vith 150 pounds of ammonium nitrate, 00 pounds of 20 percent superphosphate nd 50 pounds of muriate of potash per cre applied in the drill. On plots seeded vith wheat in one direction and cross-eeded with ryegrass, one-half of the ertilizer was applied under the wheat and he other one-half was drilled under the yegrass. The plots were top-dressed uni-ormly with 30 pounds of nitrogen per cre from ammonium nitrate in late De-ember and again during the latter part f February.

Cross-seeding wheat and ryegrass on he same area was more productive than ither species seeded alone and the dis-ribution of high quality forage extended ver a longer period. It also lessens the langer of losing one crop by disease or evere cold weather.

Over a three-year period wheat drilled lone at 120 pounds per acre produced 297 percent more dry forage at the first clipping than ryegrass seeded alone at 25 pounds per acre. Production from cross-seeded wheat and ryegrass plots was greater than wheat seeded alone (Table 3). Thirty pounds of wheat cross-seeded with 20 pounds of ryegrass was 9 percent more productive than 120 pounds wheat seeded alone and 334 percent more productive than 25 pounds of ryegrass at the first clipping in mid-January. Cross-seeding 125 pounds of wheat with 25 pounds of ryegrass produced 33 percent more dry forage than wheat alone and 426 percent more forage than ryegrass alone. The test was active three years and ryegrass production was the lowest of any treatment each year at the first harvest. High forage yields during the winter months are very important if the pasture is to be grazed.

In total forage production ryegrass ranked above wheat (Table 4). Ryegrass drilled in 16 inch rows at 25 pounds per



Florida black rye seeded at the rate of 90 pounds per acre. Picture taken in February 1957.

acre produced 6 percent more forage than 120 pounds of wheat planted in the same way. Every treatment in which ryegrass and wheat were cross-seeded (at right angles) on the same plots produced from 965 to 1392 more pounds of dry forage than did wheat or ryegrass seeded alone. The increase ranged from 19 percent more for 30 pounds of wheat plus 10 pounds of ryegrass to 28 percent more for higher seeding rates.

Legumes Added in Cross-Seeding

Experiment 3 consisted of oats, wheat, and ryegrass seeded alone and cross-seeded with red clover, crimson clover, and wild winter peas. Ryegrass was also cross-seeded with wheat and oats. The legumes were all cross-seeded at 90-degree angles except three treatments with crimson clover which were seeded at 45-degree angles with oats, wheat, and ryegrass. The seed was drilled in 16-inch rows approximately one-inch above the fertilizer. Three hundred pounds per acre of 14-14-14 were applied under the grass seed at planting. One hundred pounds per acre was applied under the legume seed. Oats and wheat were drilled at rates of 90 pounds per acre. Ryegrass was drilled alone at 20 pounds and cross-seeded with 15 pounds of the other crops. The legumes were cross-seeded as follows: red clover, 10 pounds; crimson clover, 15 pounds; and wild winter peas, 30 pounds.

Including a legume with oats, wheat, or ryegrass had definite advantages over these crops seeded alone. Even though the legumes were slower in initial growth, production during late winter and spring was of a higher quality than where the cereals and ryegrass were seeded alone. Crimson clover matured in early May while wild winter peas were still in a vegetative stage of growth up to June 1.

Table 3. Forage harvested at the first clipping or by January 15 from wheat, ryegrass, and wheat-ryegrass combinations when cross-seeded.

Rate (lbs.) and species seeded	Pounds of dry forage by January 15			3-Year average lbs./acre	Rank
	1954-55	1955-56	1956-57		
120 wheat	579.1	1479.8	821.1	960.0	
25 ryegrass	327.5	.....	397.2	241.6	9
30 wheat, 10 ryegrass	540.5	1386.4	859.7	928.9	8
30 wheat, 20 ryegrass	592.6	1622.6	933.1	1049.4	6
60 wheat, 10 ryegrass	614.9	1879.8	1017.5	1170.7	2
60 wheat, 20 ryegrass	596.3	1639.2	1039.6	1091.7	5
90 wheat, 10 ryegrass	575.5	1851.6	1014.2	1147.1	4
90 wheat, 20 ryegrass	687.7	1858.0	959.5	1168.4	3
120 wheat, 25 ryegrass	659.4	2043.9	1112.7	1272.0	1

Table 4. Total forage produced for three years from wheat, ryegrass, and a wheat-ryegrass combination.

Rate (lbs.) and species seeded	Yield of dry forage lbs. per acre			3 Year average lbs./acre	Rank
	1954-55	1955-56	1956-57		
120 wheat	3937.6	5296.1	5878.3	5037.3	9
25 ryegrass	5054.1	3579.1	7360.9	5331.3	8
30 wheat, 10 ryegrass	4956.5	5964.0	7302.2	6074.2	6
30 wheat, 20 ryegrass	5324.0	6481.3	7484.6	6429.9	1
60 wheat, 10 ryegrass	5582.4	6044.8	7066.6	6231.2	3
60 wheat, 20 ryegrass	4997.2	6538.2	7745.1	6426.8	2
90 wheat, 10 ryegrass	4879.2	5996.9	7131.3	6002.4	7
90 wheat, 20 ryegrass	4951.5	5837.6	7437.3	6075.4	5
120 wheat 25 ryegrass	5416.7	6357.1	6902.6	6225.4	4

Crimson clover successfully drilled into a thin fescue sod.

Red clover extended the productive period up to near July 1, however, it was slower in early spring production.

Over a two-year period wheat cross-seeded with wild winter peas produced 33 percent more forage than oats or wheat seeded alone (Table 5). Cross-seeding a legume at 45-degree angles in oats, wheat, or ryegrass had no advantages over cross-seeding at 90-degree angles.

Cross-seeding wheat or oats with ryegrass was just as effective for increasing forage yields as including a legume with a small grain.

Cross-seeding a crop at 16 to 20-inch drill spacings has an advantage over closer row spacings. Eight to ten inch rows are just as productive as cross-seeding, but the damage to the permanent pasture is not as great on cross-seeded areas at greater widths.

Planting Dates, Sod Condition

Experiment 4 evaluates five dates of planting and condition of sod cover interplanted. The five seeding dates were, September 1, September 15, October 1, October 15, and November 1. Three sod cover treatments were practiced at each planting date: (1) the sod cover was left 4 to 6 inches high, (2) the permanent pasture grass was clipped short with a mower, and (3) the plots were burned just prior to seeding.

Victorgrain 48-93 oats were drilled in 16-inch rows on each planting date. Three hundred pounds of 13-13-13 fertilizer per acre were applied at planting. The test was top dressed with ammonium nitrate, 75 pounds in December and 100 pounds on March 1. The test was arranged in a randomized complete block design and forage yields were taken through the growing season.

Even though early seeded oats came up and survived, no growth was made until rain came in November. September and October were dry and hazardous growth conditions existed throughout the planting season. The November plantings

were just as productive as earlier plantings (Table 6), however, this would not be expected during seasons of normal rainfall.

Clipping the pasture short or burning the dormant vegetation appeared to favor the oats more than leaving the pasture cover 4 to 6 inches high. The small oats appeared to be crowded out in tall vegetation so that the stand was not as good. Annual cool-season grasses such as wild barley appeared in the short grass earlier than in tall sod cover. One year's data shows little adverse effect from burning on the subsequent pasture production. Before the oats were gone, Bermuda and Dallis-grass were up to a good stand. The five leading forage producing treatments were either burned or clipped short (Table 6). More information is needed before definite conclusions are made.

Influence of Legumes

Wild winter peas and white clover were sodded in common and Coastal Bermuda

Table 5. Oats, wheat, and ryegrass seeded alone and cross-seeded with crimson clover, red clover, and wild winter peas.

Treatment	Pounds dry forage per acre				2-Year average	Rank
	1956	Rank	1957	Rank		
Oats	4563	14	5445	15	5004	17
Oats, red clover	4530	15	6279	11	5404	13
Oats, crimson clover	5516	3	6304	7	5910	3
Oats, wild winter peas	4722	12	6770	3	5746	6
Wheat	5249	5	4874	17	5062	16
Wheat, red clover	5248	6	5563	14	5406	12
Wheat, crimson clover	5843	2	5680	13	5762	5
Wheat, wild winter peas	6252	1	7103	1	6678	1
Ryegrass	5334	4	6275	9	5805	4
Ryegrass, red clover	4404	16	6595	5	5500	11
Ryegrass, crimson clover	4400	17	6302	8	5351	14
Ryegrass, wild winter peas	5012	10	6428	6	5720	7
Oats, ryegrass	4936	11	7079	2	6008	2
Wheat, ryegrass	5147	8	6196	10	5672	8
Oats, crimson clover*	5192	7	5427	16	5310	15
Wheat, crimson clover*	5050	9	5991	12	5521	10
Ryegrass, crimson clover*	4624	13	6602	4	5613	9

*Clover seeded at 45-degree angles

Table 6. Dates of planting and sod cover management for oat forage production.

Date of planting and sod cover management	Yield of dry forage lbs./A.		Total	Rank
	1st clipping	2nd clipping		
Sept. 1, cover 4-6" high	1743.9	4090.4	5834.3	12
Sept. 1, cover clipped	1393.3	4638.9	6032.2	9
Sept. 1, cover burned	2310.6	4295.5	6606.1	3
Sept. 15, cover 4-6" high	2163.5	4054.5	6218.0	8
Sept. 15, cover clipped	1878.5	3875.1	5753.6	13
Sept. 15, burned	2179.1	4259.6	6438.7	4
Oct. 1, 4-6" high	1424.6	4300.6	5725.2	14
Oct. 1, clipped	1765.8	3716.3	5482.1	15
Oct. 1, burned	1762.7	4152.0	5914.7	11
Oct. 15, 4-6" high	2003.8	4341.6	6345.4	7
Oct. 15, clipped	1728.3	4228.9	5957.2	10
Oct. 15, burned	1953.7	5059.3	7013.0	2
Nov. 1, 4-6" high	1825.3	4606.4	6431.7	6
Nov. 1, clipped	1753.3	5694.9	7448.2	1
Nov. 1, burned	1834.7	4515.9	6350.6	5

Sod seeded oats being combined in June on the Brown Loam Branch Experiment Station.

sods in Experiment 5 to determine the influence of a legume on (1) length of production period, (2) the effect on the grass after the legume was removed or dead, and (3) the yield of grass and legume. The legumes were sod-seeded in 16-inch rows in October and fertilized with 300 pounds of 20 percent superphosphate and 50 pounds of muriate of potash. The plots were 10 by 15 feet and the treatments were replicated six times. Seeding rates were 30 pounds for wild winter peas and 5 pounds for white clover

Sod seeding was a very satisfactory method of planting wild winter peas in an established permanent pasture sod. Results from this study indicate that white clover can be sod seeded with varying degrees of success and satisfactory uniform stands could not be expected every year.

Interplanting wild winter peas in common and Coastal Bermuda sods extended their productive period by 2 to 2½ month This increase makes it possible to utilize the area for forage production approximately 9 months.

The Bermuda grass, both common and Coastal, was much greener and in a thrifty stage of growth after the peas were gone, indicating the Bermuda grass had benefited from the nitrogen left by the peas. Coastal Bermuda grass sod seeded with wild winter peas produced 7060 pounds of dry forage per acre (Table 7). This was an increase of 4412 pounds over similar plots not seeded with peas. Wild winter peas interplanted in a common Bermuda sod increased the yields from 1058 to 5258 pounds of dry forage per acre. Neither Coastal or common Bermuda sods appeared to be adversely affected by the narrow slits made by the sod-seeding machine.

Seeding Dates, Peas and Clover

Experiments 6 and 7 were established to evaluate five dates of seeding Wild Winter Peas and Crimson Clover. The

seeding dates were September 1, September 15, October 1, October 15, and November 1. Seeding rates were 30 pounds for wild winter peas and 20 pounds for crimson clover. One hundred pounds of 47 percent superphosphate and 50 pounds of muriate of potash were applied at planting time. The two tests were arranged in randomized complete block designs with four replications.

Early planted crimson clover was much larger during winter and early spring than late plantings even during a very dry fall. The yields decreased from 5109 pounds of forage per acre for September plantings to 3252 pounds for clover planted on November 1 (Table 8). The difference in growth lasted until the growing season was practically over.

Wild winter peas did not respond to the dates of planting during 1956-57. The peas appeared to suffer from drouth in September and October and yields were somewhat erratic.

Four Legumes Compared

Four legumes, wild winter peas, red, white, and crimson clover were seeded in 16-inch drill rows in a permanent pasture sod for forage production in Experiment 8. One hundred and fifty pounds of 20 per cent superphosphate and 50 pounds of muriate of potash per acre were applied at planting time. The legumes were seeded in a short sod.

Table 7. The influence of sod seeding a legume in either Coastal or common Bermuda sod.

Treatment	Yield of dry forage lbs./Ac. 1954	1955	1956	3 Year av.	2 Year av. 1955 & 1956
COASTAL BERMUDA					
Check (no legume)	1726	3055	2240	2340	2648
Coastal, wild winter peas	2413	7040	7079	5511	7060
Coastal, white clover	1785	3432	2497	2571	2965
COMMON BERMUDA					
Check (no legume)	.....	1131	984	705	1058
Common, wild winter peas	.....	5325	5190	3505	5258
Common, white clover	.....	1676	1259	978	1468

Sod seeding a Bermuda grass pasture with oats on the Brown Loam Branch Experiment Station in October. The narrow seeding feet cause little damage to the permanent sod.

Table 8. Wild winter peas and crimson clover seeded in a permanent pasture sod at five different dates.

Date of seeding	Yield of dry forage pounds per acre	
	Wild winter peas	Crimson clover
September 1	7258.6	5109.5
September 15	3772.0	5109.5
October 1	5669.6	5041.1
October 15	3664.0	4759.5
November 1	7080.9	3552.5

Table 9. Forage production of four legumes seeded in permanent pasture sod.

Species seeded	Yield of dry forage pounds per acre		2 Year average	Rank
	1954-55	1955-56		
Crimson clover	3403.2	4415.2	3909.2	2
White clover	1315.6	2872.1	2093.9	4
Red clover	2371.1	4312.6	3341.9	3
Wild winter peas	3162.7	6520.4	4841.6	1

Wild winter peas and crimson clover came up to a better stand than did red or white clover and were higher in production. Over a two-year period wild winter peas produced 4842 pounds of dry forage per acre (Table 9). Most production from the legumes was in March, April and May. The productive period of red clover extended farther into the summer than the other legumes and the clover came back to a satisfactory stand the following fall. However, it did not come back the second year.

Beef Production

In grazing studies on the Brown Loam Branch Experiment Station, Coastal wheat seeded in a permanent pasture sod provided 76 more days grazing than comparable pastures not sod seeded. Sod seeded Bermuda-Dallis grass pastures were grazed 247 days compared to 171 days for pastures that were not interplanted. The total gains were 271 and 137 pounds of beef per acre, respectively, for sod-seeded and non-sod-seeded pastures.

The per acre cost of sod seeding was slightly over four times greater than pastures that were not interplanted. Counting the fertilizer cost at planting, two top-dressings with ammonium nitrate, seed, and cost of seeding, the per acre cost of sod seeding was $19. This compares to $4.50 for fertilizer and its application on non-sod-seeded plots, or a difference of $14.50 per acre.

In other work on the Brown Loam Branch Station, tests involving beef animals were conducted on sod-seeded pastures and pastures seeded by the conventional method. Coastal wheat was drilled in a fescue sod at the rate of 90 pounds per acre two years out of three. The third-year the wheat was drilled into a Bermuda-Dallis grass pasture. Rates of gain from these pastures and length of grazing seasons were compared to gains made by animals grazing wheat and ryegrass, one of the better grazing combinations, seeded and fertilized by the conventional method.

Over a three-year period wheat and ryegrass provided 179 days of grazing compared to an average of 142 days for steers grazing sod-seeded pastures of wheat and fescue and wheat drilled in a permanent pasture sod. There was essentially no difference in average daily gains from steers grazing the two pastures. The return above cost for steers that grazed wheat and ryegrass seeded on a prepared seedbed was $39.51 compared to $25.34 for steers that were grazing sod seeded wheat and fescue.

Discussion

The sod-seeding method of planting is not confined to cool season growing grasses and legumes. Dallis grass has been very satisfactory when established following an oat hay harvest in May. Satisfactory grazing from millet was obtained by drilling the seed in an oat stubble relatively free of crab grass following a hay harvest in May. Good stands of lespedeza, orchard grass, fescue, bahia grass, and sub clover have been established in short Bermuda grass sod on the Brown Loam Branch Station. Wild winter peas drilled into a Bermuda sod have shown up exceptionally well. Peas planted by this method have been as good and sometimes better than peas seeded by the conventional method or broadcast on top of the sod. Sod seeding is a good practice on land where bogging, trampling, erosion, and water runoff are problems. Sod seeding, with its band placement of fertilizer, is a practice that can be completed with one trip over the pasture with one machine.

Generally, more hazards are encountered in sod seeding than crops planted on a prepared seedbed. The lack of soil moisture during the fall at planting time delays early growth of the seeded crop generally until November. The crop is planted in a viable sod of various types of vegetation with which it must compete for moisture, fertilizer, and sometimes sunlight. Because of unpredictable long dry periods and competition between the seeded crop and permanent pasture vegetation, the fall-seeded crop generally has as much growth when seeded in October as earlier plantings.

Sod seeding has a definite place in Mississippi. However, it is not anticipated that this method of seeding pastures with small grains or legumes will take the place of crops seeded on conventionally prepared land but should supplement it. The crop is seeded approximately one month later than similar crops on a prepared seedbed, consequently, grazing cannot be started until approximately two months or more later than conventionally-planted crops. If a suitable profit is to be realized from grazing, the pasture crop should be large enough to stock during November. Generally, sod-seeded pastures are not productive enough to carry one 500-pound steer per acre through the grazing season even when annual grasses are prevalent between the sod-seeded rows. Experimental data show a high yield of forage but most of it was made after January 15. Sod-seeded crops probably have more of a place for grain, hay, or the introduction of new crops into a sod than for winter grazing.

Experiments indicate that the most dependable small grain for seeding in a permanent sod is oats. This is especially true for grain production. Over a 22-acre field in the spring of 1957 Delta Red oats averaged 40 bushels per acre. Fifty acres of Coastal wheat had a per acre grain yield of 10 bushels. Normally higher yields of wheat are expected. Wheat and rye have produced satisfactory forage yields.

Better results have been obtained from sod seeding wild winter peas than any other legume.

Crops drilled in a permanent pasture sod are not generally as productive as comparable crops planted on a prepared seedbed, however, sod seeding does offer an excellent opportunity of getting extra grazing, hay, or grain from pastures that would otherwise be left idle during the winter months.