TEXAS AGRICULTURAL EXPERIMENT STATION
R. D. LEWIS, Director, College Station, Texas

lletin 729 October 1950

Rapid, Low-Cost Conversion From Rice To Improved Pastures

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in cooperation with the
UNITED STATES DEPARTMENT OF AGRICULTURE

The TEXAS AGRICULTURAL AND MECHANICAL COLLEGE SYSTEM
GIBB GILCHRIST, Chancellor

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Digest

The following conclusions are based on a 3-year study by the Rice-Pasture Experiment Station at Beaumont of Broadcast seeding of clovers and grasses, without seedbed preparation, in standing rice at last draining about 10 days before harvest or in stubble after harvest. Satisfactory stands of adapted grasses and legumes were obtained under either condition.

Clovers should be seeded between October 15 and December 15. Seeding earlier than Octover 15 resulted in poor stands in 2 of the 3 years. Earlier grazing can be had from October 15 seeding than from later seedings.

Oats and common rye grass should be seeded from mid-September to December; Dallis grass from mid-September to November. The most satisfactory dates of seeding Kentucky 31 or Alta fescue were the same as for clovers.

Phosphate fertilizer is needed to establish the clovers. From 150 to 200 pounds per acre of 0-45-0 or 300 to 500 pounds per acre of 0-20-0 are needed on most rice land. In some cases, lime and potash are required.

Inoculation of clover seed with the recommended inoculum before plainting is essential.

Fields with average to better than average drainage should be used. The drains and levee ditches should be opened after the rice harvest to provide a free flow of water from the fields.

For summer and some winter grazing, the following is suggested:

	Pounds per acre	Date to plant
Mixture of clovers: Louisiana white, Persian and hop (Louisiana red and alsike may be added)	3-5	Oct. 15 to Dec. 15
Dallis grass	7	Sept. 15 to Nov. 15 or March to May

For winter grazing, the following is suggested:

	Pounds per acre	Date to plant
Louisiana white clover (or a mixture of clovers)	3-5	Oct. 15 to Dec. 15
Kentucky 31 or Alta fescue	10	Oct. 15 to Dec. 15

For clovers alone, the following is suggested: pounds per acre, 5-10; date to plant, Oct. 15 to Dec. 15.

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V25-1150-6M-L180

Rapid, Low-Cost Conversion From Rice To Improved Pastures

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IN THE RICE-PASTURE system of farming of the Gulf Coast area of Texas, rice is grown from one to three consecutive years. Then for the next two to several years these fields are grazed by beef cattle as unimproved rice-stubble pastures. The vegetation consists of volunteer grasses and other plants. These fields seldom have been converted to improved pastures, because the methods used were thought too costly and often resulted in failure to establish the grasses and legumes planted. Yet, improved pastures following rice are several times more productive than unimproved rice-stubble pastures.

Experiments were started by the Rice-Pasture Experiment Station at Beaumont in 1947 to determine methods for quick, low-cost conversion from rice to improved pastures the fall of rice harvest. Broadcast seeding of grasses and legumes in rice before harvest and in rice stubble after combining seemed practical, because it would eliminate the preparation of a seedbed; it would allow establishment of the grasses and legumes in the fall before spring growth of volunteer grasses and weeds; and the existing levees and drains could be cleaned to provide drainage for the pastures. Because time of planting frequently is a major factor in the establishment of species, the grasses and legumes were seeded from July through February.

Seedings were made in 1947, 1948 and 1949 on Beaumont clay and Lake Charles clay loam soil types under two conditions. One was in rice after last draining and about 10 days before harvest; the other was in rice stubble after harvest. A few plots were also seeded in 1947 in water before draining the fields for harvest. There was no seedbed preparation. Drainage of excess water from rains was through cleaned levee ditches and drainage ditches used for the rice crop. In most instances, 500 pounds per acre of 4-12-4 fertilizer were broadcast at the time of seeding. In other instances, 100 to 200 pounds per acre of 0-45-0 were broadcast. Rates of seeding in pounds per acre were: sweetclover, 15; red clover, 10; white clover, 3; Persian clover, 3; subterranean clover, 15; Lappa clover, 5;

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Figure 1. Typical vegetation following rice. This area was in rice in 1949. The photograph was taken May 29, 1950.

crimson clover, 10; alsike clover, 3; Dallis grass, 8; tall fescue, 15; common rye grass, 10; Harding grass, 5; rescue grass, 50; Bermuda grass, 3; and oats, 100.

1947 Seedings

The following legumes and grasses were seeded in 1947: Hubam sweetclover, Evergreen sweetclover, Madrid sweetclover, Louisiana red clover, Louisiana white clover, Ladino clover, Persian clover, Tallarook subterranean clover, Dixie crimson clover, Bermuda grass, Dallis grass and Alta fescue. They were broadcast on the following dates:

July 10 in rice before draining
Aug. 12 in rice after last draining
Aug. 28 in rice before draining
Sept. 5 in rice after last draining
Sept. 20 in stubble after harvest
Oct. 1 in stubble after harvest
Oct. 15 in rice after last draining
Nov. 21 in stubble after harvest
Dec. 23 in stubble after harvest.

Good stands of legumes were obtained from seedings made October 15 and November 21. Fair stands were obtained from December 23 seedings. Stands were poor when seedings were made between July 10 and October 1. Stands of Alta fescue and Dallis grass were satisfactory from seedings made October 15 and November 21.

There were good stands of Louisiana white, Persian, Louisiana red, Tallarook subterranean and Dixie crimson clovers, and of Alta fescue in the winter of 1948-49. On May 13, 1949, nearly 2 years after the seeding of October 15, 1947, the following yields of hay in pounds per acre were obtained: Louisiana white, 1,600; Persian, 3,120; and Dixie crimson, 1,520.

1948 Seedings

The following legumes and grasses were broadcast seeded between September 16 and December 3, 1948: Evergreen sweetclover, Louisiana white clover, Louisiana red clover, Ladino clover, Persian clover, Tallarook subterranean clover, Dixie crimson clover, alsike clover, Lappa clover, Dallis grass, Harding grass, Alta fescue, Texas rescue 46 grass, common rye grass and Ranger oats. Good stands of legumes were obtained from seedings between October 22 and December 3. Stands from the October 5 seeding were fair, but stands from earlier seedings were so poor that yields were not taken. Yields of the clovers in pounds of hay per acre taken May 13 to 18, 1949, are reported in Table 1. The best date to seed was October 22, but satisfactory stands were obtained through December 3 for Louisiana red, Louisiana white, Ladino, Persian, alsike and Lappa clovers. Louisiana white, Persian, Louisiana red and Lappa clovers consistently gave the best stands. Stands of Evergreen sweetclover in the 1948 experiments were unsatisfactory.

Figure 2. Oats (right) and common rye grass (left) broadcast September 27, 1948 in rice drained that day. Photographed December 10, 1948. The oats were 12 inches tall, the rye grass about 9 inches tall. Both were ready for grazing.

Table 1. Dry forage in pounds per acre, May 13-18, 1949, from clovers seeded in 1948

Clovers	Dates seeded in 1948							
	Average of seedings in rice and in stubble				Average of seedings in stubble			Average Oct. 5—Dec. 3
	Sept. 16	Sept. 30	Oct. 5	Oct. 22	Nov. 5	Nov. 19	Dec. 3	
Evergreen sweet			.....	.....	.....	.....	.....	.....
Louisiana red			960	3300	3260	2260	3920	2740
Louisiana white	Too	Too	1760	3880	3480	2180	2540	2770
Ladino	poor	poor	.....	4400	3100	2180	3220	2580
Persian	to	to	1720	3100	3460	2780	2720	2760
Tallarook subterranean	harvest	harvest	1740	3720	4620	.....	.....	2020
Dixie crimson			.....	2460	.....	.....	1800	850
Alsike			.....	3060	3120	2460	2640	2260
Lappa			4320	3200	4080	3100	2060	3350

Figure 3. A mixture of Dallis grass and clovers. Photographed May 29, 1950. The Dallis grass was broadcast September 29, 1949 in rice at last draining. The clover was broadcast in the stubble in November 1949. Twelve-inch rice stubble is obscured by grass and clover.

The plots were mowed March 13 and May 16, 1950. Yields are shown in Table 2. Legumes returned in the fall and winter of 1949-50 in plots which had stands in the spring of 1949. By March 13, there was an average of 1,100 pounds of hay per acre. An additional 620 pounds were produced between March 13 and May 16. Sufficient seed was produced in the spring of 1950 to insure volunteering in the fall of 1950.

Table 2. Dry forage in pounds per acre of clovers seeded in rice stubble in 1948

Clovers	Harvested May 13-18 1949	Harvested 1950		Total for 2 years
		March 13	May 16	
Louisiana red	2740	1040	800	4580
Louisiana white	2760	1180	280	4220
Ladino	2580	820	1060	4460
Persian	2760	1400	560	4720
Tallarook subterranean	2020	1300	240	3560
Dixie crimson	860	1160	540	2560
Alsike	2260	1040	1080	4380
Lappa	3360	840	340	4540

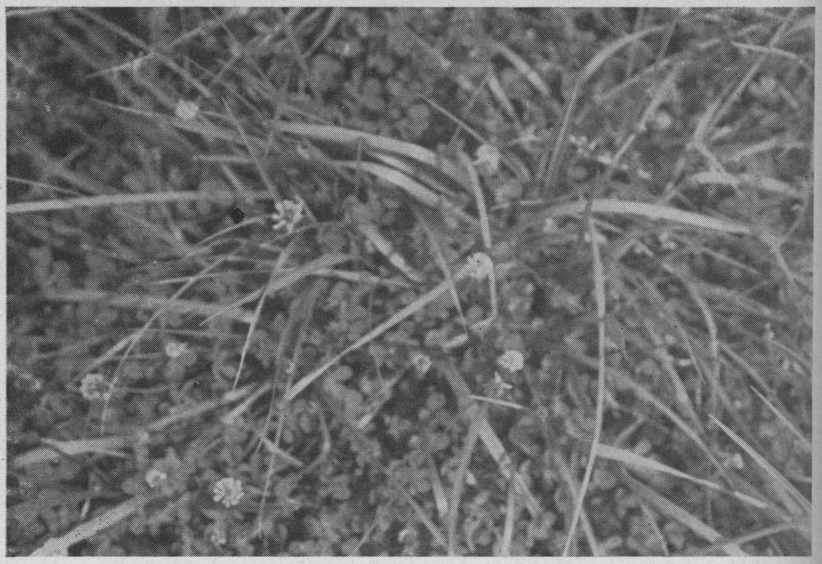

Figure 4. A mixture of Alta fescue and Louisiana white clover. Photographed May 29, 1950. The Alta fescue and clovers were broadcast December 3, 1948 in rice stubble.

Seed yields of some of the best clover plots are reported in Table 3. These plots were seeded December 3, 1948 and harvested late in May 1949.

Oats and common rye grass seeded from September 16 to December 3 produced good stands. The early-seeded oats and rye grass were ready for grazing by early December. Alta fescue had good stands from seedings between October 20 and December 3. Poor results were obtained with Harding and Texas rescue 46 grasses. Dallis grass, seeded October 20, produced a satisfactory stand.

Table 3. Seed yields, May 1949, in pounds per acre, of clovers seeded in rice stubble December 3, 1948

Clovers	Pounds of clean seed per acre
Louisiana red	129
Louisiana white	54
Persian	54
Dixie crimson	11
Lappa	301

1949 Seedings

The following grasses and legumes were seeded in 1949: Dallis grass, Alta fescue, Harding grass, Texas rescue 46 grass, common rye grass, Camellia oats, Evergreen sweetclover, Louisiana red clover, Louisiana white clover, Persian clover, Tallarook subterranean clover, Dixie crimson clover, alsike clover and Lappa clover. The dates of seeding were the 1st and 15th of each month from September through December and the 1st of each month from January to March.

The best stands of clovers were obtained from seedings made September 29 through December 16, or 2 weeks earlier than in 1947 and 1948. There was a fair stand from the January 3 seeding, but from the February 1 and March 1 seedings, the plots were too poor to harvest by May 16, 1950. Yields shown in Table 4, were highest from seedings in October. Considering the 3 years, the best time to seed clovers was between October 15 and December 15.

Dallis grass had satisfactory stands from seedings September 15 to November 15; Alta fescue from seedings October 15 to December 15; and common rye grass from seedings September 15 to December 15. Water from heavy rains early in October caused poor stands in early-seeded oats, but seedings from October 15 to December 1 had good stands. Stands of Texas rescue 46 grass and of Harding grass were not satisfactory.

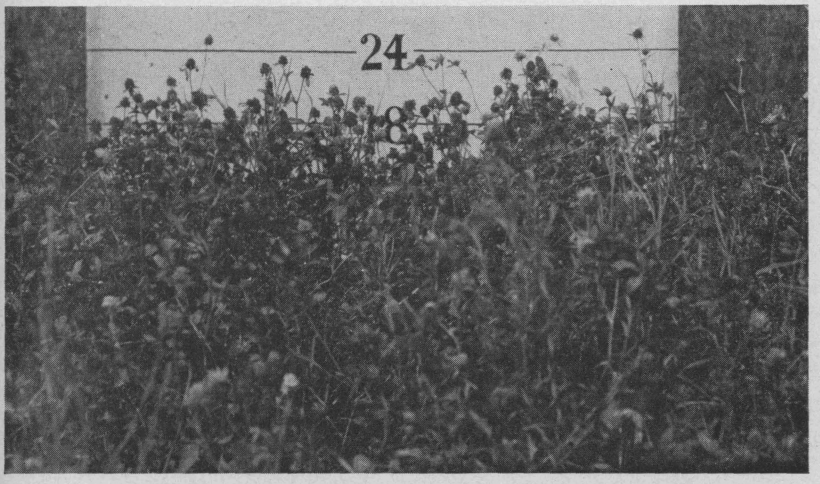

Figure 5. Louisiana red clover broadcast October 14, 1949 in rice at last draining. Photographed May 29, 1950. The scale is in inches.

Table 4. Dry forage in pounds per acre, May 16, 1950, from clovers seeded in 1949

Clover species	Dates seeded in 1949								
	In rice			In stubble					Ave.
	Sept. 15	Sept. 29	Oct. 14	Nov. 1	Nov. 15	Dec. 1	Dec. 16	Jan. 3	
Evergreen sweet	440	1680	1320	760	180	880	2240	600	1010
Louisiana red	1200	2600	2140	2480	2140	1300	1400	760	1750
Louisiana white	2400	2660	3140	2840	1900	920	1380	580	1980
Persian	1900	2120	1440	2260	1300	820	1680	200	1460
Tallarook subterranean	2700	3540	3140	2680	3200	1760	1320	180	2320
Dixie crimson	580	1280	1200	860	1620	1840	760	.....	1020
Alsike	720	1620	1520	500	520	920	640	.....	800
Lappa	2680	4760	5240	2600	2140	1940	1240	.....	2580

Forage for Early Grazing

Legumes seeded in 1948 had good return growth in the winter and spring of 1949-50. Most of them had produced 1,000 pounds of hay per acre by March 13, 1950, Table 5. Those seeded October 14, 1949 also had sufficient forage for grazing by March 7, 1950. At that time there were nearly 1,000 pounds of hay per acre. A mixture of Alta fescue and Louisiana white clover seeded December 3, 1948, produced 2,060 pounds of hay per acre by March 13, 1950, while Alta fescue, without clover, produced only 280 pounds. A mixture of Alta fescue and clovers appears promising as pasture for winter grazing.

Seeding Large Fields

An airplane seeding of clovers and Dallis grass at the Rice-Pasture Experiment Station in mid-October 1948 on 35 acres of Lake Charles clay loam in rice at last draining, 10 days before combining, resulted in satisfactory stands. Three pounds of a mixture of Louisiana white, Persian and hop clovers and 18 pounds of low-germinating Dallis grass were seeded per acre. This field was fertilized by airplane with 100 pounds per acre of 0-45-15 in December 1948. Clover growth in the winter of 1949-50, undoubtedly, would have been better had twice as much phosphate been applied.

Several good stands of clovers were obtained in the fall of 1949 from broadcasting in stubble after combining of the rice. This was true for 4.5 acres which were seeded at 6 pounds per acre of mixed clover October 29 and broadcast fertilized with 100 pounds per acre of 0-45-0. Thirty-two acres were broadcast seeded on November 29 and 30 to clovers and grasses.

Table 5. Dry forage in pounds per acre, March 1950, of clovers and of Alta fescue seeded in stubble December 3, 1948 and in rice October 14, 1949

Species	Seeded Dec. 3, 1948; harvested March 13, 1950	Seeded Oct. 14, 1949; harvested March 7, 1950	Average
Evergreen sweetclover	0	620	....
Louisiana red clover	1040	880	960
Louisiana white clover	1180	940	1060
Persian clover	1400	820	1110
Tallarook subterranean clover	1300	1360	1330
Dixie crimson clover	1160	760	960
Lappa clover	840	1660	1250
Alta fescue without clover	280	....	....
Alta fescue with Louisiana white clover	2060	....	....

Satisfactory stands resulted from Persian, Louisiana white, hop, ball and Lappa clovers and from common rye grass, Kentucky 31 fescue and Camellia oats. This field received 500 pounds per acre of 8-20-10 fertilizer in 1947, 135 pounds per acre of 16-20-0 in 1949 and 250 pounds per acre of 10-10-0 in the spring of 1950. Another 10 acres seeded November 29 and fertilized with 500 pounds per acre of 4-12-4, produced excellent growth. Rate of seeding was 6 pounds of mixed clover per acre.

Seeding of Large Fields by Farmers

A farmer in Jefferson county broadcast a mixture of Louisiana red, Louisiana white, hop, alsike and Persian clovers in 40 acres of rice stubble after combining by airplane at 10 pounds per acre on November 10, 1947. He also seeded in adjoining areas, at the same time, about 10 acres of Alta fescue and 10 acres of common rye grass. All fields were fertilized by airplane with 500 pounds per acre of 4-12-4 fertilizer. There were satisfactory stands of the clovers and grasses by the spring of 1948. The clovers and Alta fescue were still furnishing pasture in the winter and spring of 1949-50.

In November 1949, another Jefferson county farmer broadcast seeded 170 acres by airplane in stubble a mixture of Louisiana white, Persian and hop clovers at the rate of 5 pounds per acre. This field was fertilized by airplane with 100 pounds per acre of 0-45-0 fertilizer. A satisfactory stand of clovers was obtained and grazing started in late April. Dallis grass was broadcast by airplane at the rate of 5 pounds per acre on March 22. Dallis grass seedlings were seen June 1.

Acknowledgments

These investigations at the Rice-Pasture Experiment Station at Beaumont are carried on cooperatively by the Texas Agricultural Experiment Station; the Division of Forage Crops and Diseases and the Division of Cereal Crops and Diseases, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture; and the Texas Rice Improvement Association.