

HAY YIELDS FROM GRASS PLOTS AND GRASS - ALFALFA MIXTURE PLOTS

1. 1951 Grass Plots.

Ten varieties of grass were cut for hay from the small plot trials seeded in the spring of 1951. The hay yields from the plots are given in [Table 1](#), together with the yields for the previous three seasons. The yield samples are clipped from two meter-square areas in each of three 1/80 th acre plots of each variety. The stands in nearly all plots are excellent stands. The hay clipping treatment has not weakened the stands in four years of clipping, and weeds in the plots are negligible for the most part. Tall wheat grass, pubescent wheat grass, and intermediate wheat grass plots are somewhat more weedy than the others. Average production of weeds in these plots, however, was less than 100 lbs. / acre this year.

The character of the growing season this year was not too favorable for the growth and development of cool-season grasses. The production of these grasses was cut considerably by dry weather in the early part of the season. The favorable moisture conditions of late May and of June, helped the grass a great deal, but the effects of the early dry weather could not be entirely overcome. The average production for all varieties this year was 1109 lbs. / acre as contrasted to 1396 lbs. last year, 1955 lbs. in 1953, and 1089 lbs. in 1952.

Table 1. Hay yields from Grass Plots Seeded in 1951 at the Dickinson Experiment Station					
Grass	Oven dry Weight - lbs. / Acre				4 - Year Average
	1952	1953	1954	1955	
Standard Crested Wheat grass	1178	2727	1719	1217	1710
Nordan Crested Wheat grass	983	2618	1698	1350	1662

Intermediate Wheat grass	1196	1926	1617	1307	1512
Green Stipagrass	1663	2094	969	1193	1480
Pubescent Wheat grass	1187	1846	1688	1089	1453
Fairway Crested Wheat grass	1169	2034	1243	1184	1408
Tall Wheat grass	1046	1596	1621	1074	1334
Northern Bromegrass	914	1795	1362	992	1266
Lincoln Bromegrass	794	1836	1203	1058	1223
Russian Wildrye	759	1082	841	626	827
Average	1089	1955	1396	1109	1387

For the first time in the four years of the trial, standard crested wheat grass was not the top yielder. It was exceeded slightly this year by Nordan crested wheat grass and by Intermediate wheat grass. On the basis of the four - year average, however, standard crested wheat grass is still the top yielder with an average production of 1710 lbs. of dry forage per acre. Nordan crested wheat grass is second at 1622 lbs. / acre, and intermediate wheat grass comes third with a four - year average production of 1512 lbs. / acre. In this trial common northern bromegrass shows a four - year average production of 1266 lbs. / acre, while Lincoln brome shows practically the same average yield, 1233 lbs. / acre. Of the 10 varieties in this trial, only Russian wildrye, at 827 lbs. / acre, has a lower four - year average yield than do the bromegrass varieties.

2. Uniform Bromegrass Nursery.

The uniform bromegrass nursery, which was seeded in the spring of 1953, was harvested for hay for the second time this year. This nursery compares 14 varieties of bromegrass. The trial consists of a randomized block with four replications. Stands on all plots are excellent. The variety Elsberry, which had a somewhat weak stand last year, was in complete possession of the plots on which it had been seeded by the time hay was cut this year. Weeds were negligible in all plots.

The top yielders this year were: Elsberry - 1548 lbs dry hay per acre, Lyon - 1511 lbs per acre, and Lincoln - 1498 lbs per acre. These three are southern type bromes. The northern type bromes, as represented by Manchar, Homesteader, Mandant 404, and Canadian commercial, have not yielded as well as most of the southern types in this trial. However, this year Manchar and Homesteader yielded better than some of the southern type bromes. Canadian commercial, at 1287 lbs per acre, was the lowest producer this year, as it was last year.

Table 2. Hay Yields from Uniform Bromegrass Nursery Seeded in 1953			
Variety	Dry Weight - lbs. / Acre		
	1954	1955	Two - year Average
Achenbach	1702	1463	1582
Lincoln	1606	1498	1552
Fischer	1637	1414	1525
Lyon	1380	1511	1445
Oklahoma Synthetic	1363	1426	1394
Lancaster	1275	1476	1375
Elsberry	1190	1548	1369
Manchar	1241	1478	1359
Kuhl	1334	1352	1343
Homesteader	1214	1433	1323
Mandan 404	1261	1359	1310
Bin 12	1289	1326	1307

Martin	1247	1335	1291
Canadian Commercial	1122	1287	1204
Average	1347	1421	1384

3. Intermediate Wheatgrass.

Two intermediate wheat grass trials are in progress. One nursery contains four varieties of intermediate wheat grass. This nursery was seeded in 1953. The other trial, seeded in the spring of 1954, contains five varieties of intermediate wheat grass and two varieties of pubescent wheat grass. [Table 3](#) give the results of the yield trials on the plots seeded in the spring of 1953, while Table 4 gives the hay yields from the trial seeded last year.

Stands in the 1953 seeding are excellent with the exception of the plots containing M2-10820 were listed as having no stand. This year they produced 1584 lbs. / acre of dry hay. Stands in these plots are still not satisfactory, but the few plants that were in each plot grew with unusual vigor and coarseness, producing a relatively high yield of stemmy material.

Hay yields in these plots this year were slightly better than last year, Ree wheat grass producing a little over one ton per acre, and Nebraska 50 and A-12496 each producing about 1870 lbs. per acre. On the basis of the two year average, Ree wheat grass has produced slightly more hay per acre than the others.

The yields from the 1954 seeded trial are unusually good. None of the varieties yielded less than 1 1/4 tons of dry hay per acre and top producing variety, Ree yielded almost 1 3/4 tons per acre. All stands on these plots are excellent, and weeds were only a very small part of the yields from these plots.

Table 3. Hay Yields from Intermediate Wheat grass Plots Seeded in 1953			
Variety	Dry Weight - lbs per acre		
	1954	1955	Two - Year Average
Ree	1759	2057	1903

A - 12496	1844	1867	1855
Nebraska 50	1673	1869	1771
M2 - 10820	no stand	1584	---
Average	1759	1844	1843

Table 4. Hay Yields from Intermediate Wheat grass - Pubescent Wheat grass Yield Plots Seeded in 1954.

Variety	Yield - Lbs. per acre			Composition	
	Grass	Weeds	Total	% Grass	% Weeds
Ree	3419	18	3437	99.5	0.5
Nebraska 50	3299	11	3310	99.7	0.3
Pubescent wheat grass	3131	13	3144	99.6	0.4
N. Dak. Intermediate	2839	21	2860	99.3	0.7
M2 - 10820	2724	24	2748	99.1	0.9
A -12496	2647	28	2675	99.0	1.0
N. Dak. Pubescent	2580	41	2621	98.4	1.6

4. Mixture Trials.

Ten of the 15 different grass and grass-alfalfa combinations included in the mixture plot trial were harvested for hay this year. The remaining five mixtures have such poor stands on the plots that they cannot be considered comparable to the others. The hay yields from the plots harvested are given in [Table 5](#). This table also gives the

composition of the samples harvested this year. The estimate of composition is based on hand separation of all samples. As can be seen from the composition estimate, the plots containing mixtures of grass and alfalfa have very nearly equal parts of grass and alfalfa in them (dry-weight basis). Weeds are negligible in the plots harvested for hay.

The hay yields from the mixture plots trial for the 1955 season range from a high of 2673 lbs per acre for the intermediate wheat grass - alfalfa mixture, to a low of 1500 lbs per acre for straight brome grass. In general yields from the mixture plots were appreciably higher than they were last year. The mixtures containing grass and alfalfa all yielded better than the grass combinations or straight grass plots. This has not always been the case in this trial. Last year straight crested wheat grass out yielded all grass-legume combinations and all other grass mixtures or straight grass plots.

The combination of intermediate wheat grass and alfalfa is the top yielding mixture on the basis of the four-year average yield.

Table 5. Hay Yields from Mixture Plot Trials Seeded in 1951 at Dickinson Experiment Station								
	1952	1953	1954	1955	Average	Grass	Alfalfa	Weeds
Intermediate wheat grass & alfalfa	1268	3783	1845	2673	2392	46.6	53.4	---
Crested wheat grass & alfalfa	979	2813	1859	2324	1994	56.4	43.6	---
Mandan wildrye - Russian wildrye green stipagrass - alfalfa	873	3312	1557	2046	1947	43.2	56.8	---
Alfalfa ¹	728	3388	1331	1960	1852	100.0	---	---
Mandan wildrye - Russian wildrye Alfalfa	917	2980	1227	2070	1798	44.9	55.1	---
Crested wheat grass	961	2709	1918	1587	1794	99.7	---	0.3
Intermediate wheat grass	992	2006	1342	1524	1466	99.1	---	0.9
Mandant wildrye - green - stipagrass	935	1730	1332	1699	1424	100.0	---	---

Bromegrass - alfalfa	---	---	1518	2393	1955 ²	50.8	49.2	---
Bromegrass	---	---	1231	1500	1365 ²	99.9	---	0.1
Average - plots with grass only	963	2148	1456	1577	1536			
Average - plots with grass and alfalfa	1009	3222	1601	2301	2033			
¹ one cutting only ² 2 - year average								

Intermediate wheat grass seems to be especially responsive to the presence of alfalfa. This year the mixture of intermediate and alfalfa yielded 75.4 percent more hay than the straight intermediate wheat grass plots. Bromegrass and alfalfa produced 59.5 percent more hay than straight bromegrass, and the crested wheat grass - alfalfa mixture produced 46.4 percent more than straight crested wheat grass. This was the first year since the beginning of the trial that the crested - alfalfa mixture has produced substantially more than straight crested wheat grass.

The average yield of hay on all plots containing grass only was 1577 lbs per acre this year. The average yield of all the plots containing grass and alfalfa mixtures was 2301 lbs per acre, a difference of 724 lbs, or 45.9 percent greater yield than from the straight grass plots. Last year the yield advantage for the grass - alfalfa combinations over the straight grass plots was only 9.9 percent. The year before that the grass - alfalfa mixtures had a yield advantage of 50 percent. On the basis of the four - year, over - all average, 1952 - 1955, the grass - alfalfa combinations show a 32.3 percent yield advantage over the straight grass or mixtures.

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