Ark 2014 than commercial wheat cultivars presently grown in the area. Ark 2014 occasionally shows a light infection from Septoria nodorum. Maturity date averaged 29 May from four locations in Arkansas over 2 years. Ark 2014 has shown good forage production potential compared to wheat and grain yield was 221 kg/ha less than 'Rosen' soft red winter wheat (Triticum aestivum L.) but 504 kg/ha more than the wheat cultivar 'Doublcrop.' Superior disease resistance, seed quality, forage potential, and grain production are the distinctive features of this experimental line. Ark 2014 is a facultative-winter habitype and maintained stands during the severe Arkansas winters of 1976 to 1979. The growth habit is erect and the line is a mid-season, mid-tall triticale with erect, awned spikes. Ark 2014 has substantially better seed quality than Ark 2301, slightly better disease resistance to Septoria and is 4 days later in maturity than Ark 2301.

Ark 2301 (GP 6). This facultative-winter triticale also survived the severe Arkansas winters of 1976 to 1979 with good stands and is an erect, mid-season, mid-tall line with erect, awned spikes. The line was derived from the cross 6TA-204/Arm T-909. Arm T-909 was developed as an experimental spring habit line by CIMMYT in Mexico. Seed are moderately plump but the test weight is low (60.2 kg/hL). The line is early in maturity (25 May) compared with Doublcrop soft red wheat (22 May) or Ark 2014 triticale (29 May). Grain yield and forage rating were similar to Ark 2014. Ark 2301 is moderately susceptible to S. tritici and has shown light leaf rust symptoms. The line is susceptible to S. nodorum and relatively severe infections have been observed depending on the environment. Ark 2301 performed well at the Cotton Branch Station of the Arkansas Agricultural Experiment Station at Marianna, Ark., on medium textured, well-drained soils. Stands of Ark 2301 were practically eliminated on poorly drained clay soils during the winter of 1981-1982 at Keiser. Little outcrossing occurs in Ark 2301 although a few offtypes may occasionally be observed.

Ark 2307 (GP 8). Ark 2307 was selected from the cross of 6TA-204/PPV-13 and is a spring habit line that is mid-tall, early maturing, and has a low test weight (58.0 kg/hL). PPV-13 was developed as an experimental spring habit triticale by CIMMYT in Mexico. Over a 2-year period (1979-1980, 1980-1981) Ark 2307 had the most productive forage potential rating for fall and spring forage when stands were not reduced from winter cold. Stands have been reduced in Ark 2307 by severe winters in northeast Arkansas, particularly on poorly drained clay soils. The line has exhibited sufficient winterhardiness on sandier, well-drained soils. The line is erect in growth habit and has erect, awned spikes. Seed are variable in quality. Disease levels of S. tritici in Ark 2307 have been moderate relative to commercial wheats and other triticales while leaf rust and S. nodorum infection levels have been light to none.

Ark 2309 (GP 9). Stands of Ark 2309 may be reduced if planted where minimum winter temperatures are less than —5° C. Ark 2309 has consistently given superior stands compared with Ark 2307 in northeast Arkansas. Ark 2309 was produced from the same cross as Ark 2301 (6TA-204/Arm T-909). However, Ark 2309 has spring growth habit while Ark 2301 is a facultative to winter type. The growth of Ark 2309 is erect and the spikes are awned and erect in this mid-tall line. Maturity is the same as Rosen wheat and 3 days later than Doublopcrop wheat. Occasional outcrossing is observed in Ark 2309 and the line has only moderate seed quality. Levels of S. tritici and other foliar diseases on Ark 2309 have been light to moderate. Total forage produced from Ark 2309 was slightly more than that produced from Ark 2307 during the 1980-1981 season at Fayetteville and Hope, Arkansas. Seed will be maintained by the Arkansas Agricultural Experiment Station at the Northeast Res. and Ext. Ctr., Keiser, AR 72351, and small amounts will be available on request after July 1983.

REGISTRATION OF EIGHT CLUB WHEAT GERMLASM LINES RESISTANT TO STRIPE RUST
(Reg. Nos. GP 209 to GP 216)

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Eight semidwarf club soft white winter wheat (Triticum aestivum L.) germplasm lines were developed by Wheat Breeding and Production, USDA-ARS, in cooperation with the Agricultural Research Center of Washington State University, Pullman, Wash. These eight lines possess diverse and varying degrees of resistance to the pathogen causing stripe rust (Puccinia striiformis West.). A composite of the eight lines plus 'Tyee' (CI 17773) and 'Faro' (CI 17590) comprise the multiline designated as 'Crew' (CI 17951) which was released jointly by the USDA-ARS and the Agricultural Experiment Stations of Washington and Idaho on 27 Oct. 1981.

These lines were developed by backcrossing in which eight stripe rust resistant sources were used as nonrecurrent parents. One or two backcrosses were made to 'Omar' (CI 13072), a stripe rust susceptible cultivar (Table 1). The stripe rust resistant sources were 'Webster', 'Spaldings Prolific', 'Falco', 'Ibys', 'Miniere', Triticum spelta/Coastal', 'Druchamp', and Sel. 2629. Resistance programs of these populations were then crossed to CI 12666/6'Omar or CI 13253/5'Omar. CI 12666/6'Omar and CI 13253/5'Omar are stripe rust susceptible semidwarf selections which were developed by five and four backcrosses to Omar, respectively. The eight resistant sources were chosen for their field reaction to prevalent stripe rust biotypes at Pullman, Wash., during 1961 to 1967.

Table 1 gives agronomic and quality data of the eight lines, and the cultivars Tyee and Faro. Except for glume color, the eight lines are morphologically similar. Their plant heights averaged 94 to 100 cm. They differ in average days to heading by 3.6 d and are 2.6 to 6.2 d later in heading than Faro (Table 1). The average grain yields of the eight lines ranged from 45.9 to 55.2 q/ha in 18 site-years of tests. These yields were 10% less to 8% greater than the average yield of Tyee (Table 1). Average test weights determined from 6 site-years varied between 73.2 to 79.0 kg/hL for the eight lines or 1.5 to 7.3 kg/hL heavier than Faro.

Flour yields, alkaline water retention capacities, absorption peak times, and flour protein values indicated that the eight lines have typical club wheat quality and rate very satisfactory to satisfactory for overall milling and flour quality (Table 1).

Table 2 summarizes the reactions of the eight lines, Tyee and Faro to stripe rust biotypes that occurred in 6 site-years of field tests. The stripe rust infection types and severities suggested that the eight lines represent three classes of resistance to stripe rust, i.e., resistant: CI 17912, CI 17913, CI 17916; moderately resistant: CI 17913, CI 17918; and intermediate: CI 17914, CI 17916, and CI 17919.

All lines have seedling resistance to biotype CDL 7 of the stripe rust fungus. Lines CI 17912, CI 17914 and CI 17916 show temperature sensitive reactions to CDL 7 which may indicate they also have field-stable high temperature resistance (Table 2).

Tests for allelism and other conventional genetic tests have not been completed among these eight lines. However, unpublished results from our laboratory suggested that six or more different resistant biotypes of leaf rust caused by Puccinia recondita f.sp. tritici