Corporations sold 14 tracts compared with 21 tracts in the second quarter a year ago. The number of sales by corporations has been generally decreasing since the end of 1943. Corporations now make up only 6 percent of the sales; States and counties make up 33 percent; and individuals, 61 percent.

There was no change from the previous quarter in percentage of individual sellers that were owner-operators. One-third were owner-operators, and 86 percent of these expect to continue farming. The other 14 percent intend to retire.

How Are the Great Plains Shelterbelts

A Review

E. N. MUNNS, Chief, Division of Forest Influences, Forest Service, U. S. D. A., and Joseph H. Stoeckeler, Silviculturist, Lakes State Forest Experiment Station, St. Paul, Minnesota, have published an appraisal of the present condition of the Great Plains shelterbelts in the April, 1946, issue of the Journal of Forestry. This action program was supervised by the U. S. Forest Service from 1935 to 1942 under the name of the Shelterbelt Project or Prairie States Forestry Project. In 1943 the Soil Conservation Service took over the project. In 1944 some ten years after the beginning of the project the Forest Service made a random sampling of the area to determine their present condition.

The condition of North Dakota's shelterbelts were rated as follows in 1944:

Excellent	54.2%
Good	20.3%
Fair	14.1%
Poor	6.6%
Very poor	0.5%
Destroyed	4.3%

The weighted average condition in North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas was as follows: Excellent, 58.1%; Good, 20.3%; Fair, 11.2%; Poor 6.6%; Very poor, 1.8%; Destroyed, 2.0%.

The Forest Service also rated the existing shelterbelts by states and county groups with similar rainfall and soil conditions. Site A is listed as favorable for trees, Site B mostly favorable for trees, Site C, moderately difficult for trees. The conditions were rated according to the following schedule.

Class 1, excellent, survival mostly 81—100%.

Class 2, good, survival mostly 61—80%.

Class 3, fair, survival mostly 41—60%.

Class 4, poor, survival mostly 21—40%.

Class 5, very poor, survival under 20%.

In commenting on the reasons for variation in survival the authors state: "Usually the belts were best in growth and survival in areas of better rainfall, where soils were friable and sandy and consequently more favorable where the farm economy included the growing of intertilled crops, and where there was a high percentage of

The following table shows the percentage distribution of trees in each of the five "survival classes" and the percentage in a combination of classes 1 & 2.

ea	Counties	Ave. Ann. Rainfall (Inches)	Site	No. of Belts	Distribution of belts by rating classes					
					1	2	3	4	5	1&2
l River Valley	Walsh, Grand Forks Cass	20-22	A	62	81	11	6	2	0	92
vils Lake	Benson, Ramsey, Nelson	16-20	C	46	26	33	30	11	0	59
lley City	Barnes, Stutsman, LaMoure, Ransom Sargent, Dickey	16-20	B	77	54	23	12	8	3	77
wner	Bottineau, Ward, McHenry, Pierce	14-16	B	18	55	17	17	11	0	72

Similar tables are shown for the other Plains states in the shelterbelt project.

owner-operated farms. In general row crop farmers usually take better care of their belts than wheat farmers, in large part because they have equipment well adapted to cultivating shelterbelts and more 'know-how' in the handling of row crops. Furthermore, those who practice diversified cropping are generally among the more progressive and ambitious farmers who do a good job on anything to which they turn their hand, whether livestock management, crop rotations or shelterbelt cultivation. For the most part, though not always, farmers who own and operate their own farms took better care of their belts than did tenants".

This reviewer points out that in his opinion it is likely that owner-operators were more likely to have cooperated with the U. S. Forest Service in the selection of their farm for a shelterbelt than in the case of the tenant operated land. It is probably true, however, that the owners of rented land often consented to the tree planting in the hope that it would add to the value of their land holdings.

The Cottonwood

In commenting upon the survival of particular species the authors emphasize that the cottonwood does best on deep, relatively loose, sandy soils into which water percolates readily so that a large proportion of the rain which falls can be stored. They note that on the loams and clays in areas of lighter rainfall cottonwood grows slowly and dies out early. They also note that cottonwood is often damaged by the Cytospora canker and by leaf rust. The white willow is suggested as a substitute for the cottonwood.

The Siberian Elm

The Siberian Elm, incorrectly called the Chinese elm, comes in for much comment. They state, "It forms a dense shade, thus aiding greatly in keeping down weeds, it is fairly tolerant and retains live branches almost to the ground; the twigs and

branches are rather finely divided and so intertwine as to form a dense windbreak at all times; occasional failures in the rows are filled in rapidly, both height growth and survival are good. It has been frowned upon in some quarters because it is subject to wind breakage and wood-rotting fungi when broken or cracked open". The authors call attention to the damage to Siberian elm by the sharp freeze of September, 1942 and the great freeze of November 11, 1940.

The Boxelder

The good old boxelder, which this reviewer used to think of as a weed on his home farm down in Wisconsin, is given a high rating by the Forest Service for use in the Plains. They say, "Boxelder was an outstanding species as regarding survival, growth, and ability to form a closed canopy and leaf mulch and could well be used more freely in the northern and central Great Plains". For hardwoods they endorse green ash, American elm, hackberry, and Siberian elm and certain other species, but these are particularly valuable for North Dakota.

The Conifers

With respect to conifers the slow growing spruces are recommended for planting on sandy loam to silt loam soils because of their general beauty. The eastern red cedar and the Rocky Mountain juniper they consider to be outstanding conifers for the Plains. They found that the Ponderosa or bull pine gave satisfactory survival only in Nebraska and the northern two-thirds of Kansas. This reviewer points out that the Ponderosa is found as a native species in the Little Missouri drainage basin area in this State principally in the southwestern corner of the State and that there are some very satisfactory old plantings of bull pine in this State.

Shrubs

The Plains Shelterbelts have shrubs on the outside rows where they take the worst beating from "weeds, wind, sun, livestock and sometimes farm machinery". Nevertheless this survey shows highly satisfactory survival of such shrubs or small trees as Russian olive, wild plum, common chokecherry, Tatarian honeysuckle and lilac. Russian olive suffered some frost injury in North Dakota whereas the native, closely related, silver buffalo berry was not injured. The well-known caragana, or Siberian pea tree also survives well, but was found to grow slowly and most likely to lose its leaves due to damage by blister beetles and grasshoppers.

Causes of Damage

Cattle damage accounted for 2.4% damage in North Dakota but for the Plains as a whole livestock damage amounted to 8.1%. Rodents do some damage especially jack-rabbits, cottontail rabbits and mice. Hail and snow do some damage. The defoliators listed as the worst are the blister beetles and grasshoppers on caragana, cecropia moth larvae on boxelder, tent caterpillar on Siberian elm, webworm on chokecherry, leaf beetle on cottonwood and bagworm on junipers. Borers were found to be common in green ash, black locust, cottonwood and honey locust. Grasshoppers did early damage to entire shelter belts.

The authors discuss the problem of pruning at some length but come to the wise conclusion that, **"in most belts, pruning appears neither necessary nor advisable".**

The shelterbelts in North Dakota averaged 16 feet in height in 1944. The chief problems noted are inadequate cultivation on half of the belts under four years of age and livestock damage. This reviewer finds himself in hearty agreement with Messrs. Munns and Stoeckeler's concluding sentence, to wit: "The shelterbelt project has been a success".

(Reviewed by H. L. Walster)

Crop Diseases in Peru

Every once in a while some enterprising but over-enthusiastic producer of crops is tempted to import a new variety of some crop from South America. There has just come to my desk a publication from the Agricultural Experiment Station, La Molina, near Lima. Peru, which lists the diseases of common agricultural and garden crops of Peru. Some of these diseases could be carried in the seed, some in soil sticking to the seed, and some in trash or crop residues mixed with the seed grain. Many of the diseases which Peru has we also have in North Dakota but some in different physiological races. The introduction of a new physiological race of flax rust from Peru could conceivably wipe out all of North Dakota's most rust-resistant flax varieties. The introduction of especially virulent races of diseases attacking our other now disease-resistant crop varieties would be equally fatal.

Here, then, are the diseases of some of the crops in Peru as listed by their own federal Department of Plant Pathology:

Barley:	Loose smut, covered smut, stripe disease, spot blotch, net blotch, powdery mildew, stem rust, Ramularia leaf spot, Rhynchosporium Scald.
Rye:	Stem rust.
Wheat:	Loose smut, stinking smut or bunt, leaf-spot, powdery mildew, root-rot, Punto negro (root rot, foot rot and black point), stripe rust, leaf rust, and stem rust.
Oats:	Covered smut, loose smut, powdery mildew, crown rust, stem rust.
Flax:	Rust, pasmo, damping off, and dodder (a parasitic plant).
Corn:	Corn smut, Cercospora leaf-spot, Helminthosporium leaf blight, black spot, wilt, mosaic, cob-rot, corn rust, and Polisora rust.
Potatoes:	Andean disease, late blight, early blight, wilt, powdery mildew, stem-rot, powdery scab, two kinds of rust, and mosaic.
Tomatoes:	Downy mildew, wilt, mosaic, powdery mildew, blossom-end-rot, and yeast rot.