

Topic: “The Desert Blooms” - The Story of Crested Grass Development
Prepared by Amy McInnis, May 2004, for the Winning the Prairie Gamble exhibit, North
Battleford WDM

1. Introduction

In the words of James H. Gray, “...few Canadians have ever played so large a role in changing the face of the earth as Dr. Lawrence E. Kirk, and few seeds of grass have ever been so face-changing as the crested wheat grass he developed at the University of Saskatchewan” (96). A strong statement, nevertheless, the impact of crested wheat grass in reclaiming abandoned fields and depleted pastures in the drought scourged prairies of the Dirty Thirties, and in other semi-arid areas around the world, can’t be overstated. The purpose of this research paper is to highlight the development of crested wheat grass varieties suitable for the climate of Saskatchewan, and the impact it has had on the province and beyond.

2. A Chance Discovery

The association between Dr. Lawrence E. Kirk and crested wheat grass seemed fated from the beginning. Kirk stumbled across some crested wheat grass seeds in the drawer of the desk he was assigned when he assumed employment with the University’s Department of Field Husbandry in 1916. Years before the dustbowl of the 1930s, researchers at the University were searching for a drought resistant and winter hardy grass to alleviate some of the chronic livestock feed shortages of the Palliser Triangle (Gray, 96-97). The head of the department, Professor John Bracken, recalled ordering the seeds during the previous year as part of this research program and urged Kirk to try his hand at planting them (Gray, 98).¹

3. The Early Years

Kirk’s early experimental plantings of crested wheat grass were somewhat disappointing. The grass showed excellent winter hardiness, but otherwise did poorly despite the painstaking care given to the plots. It took several growing seasons to determine that all the painstaking care given to the crested wheat grass plants was the root of the problem as explained by Gray:

We lost four or five years in our testing before we discovered that this was a grass that had to be treated rough, Dr. Kirk recalled. Only the minimum moisture was required to get the seed started. Then it did best when it was left alone by both man and nature. It could fend for itself in the struggle for survival with annual weeds. When its top turned brown and seemed to die in mid-summer, its root system was going deeper and deeper in search of moisture. It took a great deal of restraint on Kirk’s part to leave it alone for, when the weather turned hot and dry,

¹Crested wheat grass was first imported into the United States in 1898 from its native Russia (Kirk, 21).

it turned brown and was the deadest-looking grass imaginable. ...Then, when the fall rains came, it came back to life and by the following summer took care of most of the annual weeds with which it had to compete. (99)

4. Drought Resistance and Winter Hardiness

In the 1932 University of Saskatchewan's Agricultural Extension Bulletin No.54 entitled *Crested Wheat Grass*, Kirk defined drought resistance as "the ability of a grass to endure long periods of continuous drought without any permanent injury, and also its ability to get from the soil enough water to grow when other cultivated grasses could make little or no growth" (6). In the same publication, Kirk reported that test plots of crested wheat grass and western rye grass showed markedly different results under extreme dry conditions. "...the plots of crested wheat grass which were seeded in 1928 produced sufficient herbage for a very good pasture in the spring of 1931. Practically no rain fell until July, and the soil was so dry that even western rye, a native grass of the plains area, was permanently injured to the extent of 75 per cent dead plants in drilled plots," explained Kirk (6).

The fact that crested wheat grass "can utilize small amounts of subsoil moisture and that it is exceptionally successful in competition with weeds under conditions of limited moisture," is due to its spectacular and extensive root system (Kirk, 8). In an excavation of four year-old crested wheat grass and western rye grass plants by researchers at the University, "Weights of these samples showed that crested wheat grass possessed more than twice as much dry matter, the main root mass extended twice the depth, and the system of fibrous roots was much more extensive" (Kirk, 8). The caption for a photo of a two-year old crested wheat grass plant, in *Seeding Crested Wheat Grass For Hay and Pasture*, Farmers' Bulletin No. 28, reports an astounding spread of 48 inches and a maximum depth of 97 inches (6).

Winter conditions in Saskatchewan can be extreme. Crested wheat grass has proven its ability to thrive under adverse winter temperatures. According to Kirk, "During the sixteen years that it has been growing in experimental plots at Saskatoon, there has never been any indication of the slightest injury due to frost, even with temperatures as low as 50 degrees below zero, and little snow covering" (4).

5. Fairway

Kirk vigilantly examined the new strains of the grass which were continually developing due to cross-pollination. One plant caught his eye due to its lush leafiness and bushy habit, which are particularly desirable characteristics for a pasture grass. As luck would have it, this particular strain was determined to be a self-pollinator and would breed true under field conditions. This strain was christened "Fairway" by Kirk, and he set out to multiply the seed stocks for distribution. Thankfully sufficient seed could be gleaned from other sources after a 1925 fire ravaged the warehouse where the seed was stored (Gray 101-02). Fairway has the designation of

being the first cultivar of crested wheat grass released in North America (Elliott and Bolton, 1970 as cited in Asay).

6. Reclamation and Community Pastures

“When drought conditions struck [in the 1930s] and vast areas of cultivated native rangelands began to blow, crested wheat grass was a solution to a virtual ecological disaster,” as explained in Bruynooghe et al. (Yearlings and Crested Wheatgrass). Crested wheat grass was a savior to abandoned fields and exhausted pastures on the prairies during the 1930s and beyond (Stevenson et al., 12). Between 1937 and 1941 alone, over 260,000 acres of drifting land in the Palliser Triangle was stabilized by sowing crested wheat grass by the Prairie Farm Rehabilitation Administration (Gray, 108).

In Men Against the Desert, James H. Gray asserts that, “There can be little doubt that the whole Community Pastures program was made possible by the ability of crested wheat grass to take root and prosper on abandoned land once the soil blowing was stopped” (105). Crested wheat grass is a nutritious pasture grass which is amenable to the palates of livestock. Importantly, it does well under grazing pressure and provides “...pasture available at both ends of the season [summer] when it is needed most” (Kirk, 12). An article, which appeared in the August 12, 1939 edition of the *Regina Leader Post*, sang the praises of what crested wheat grass had done for depleted lands in the Battleford area:

There is a project undertaken by the P.F.R.A. that is attracting much attention these days, because of the success of the venture. It has renewed hope in the hearts of thousands of that section of Saskatchewan, that within a short time, man will be able to produce his sustenance, establish a home, and make for permanence in an area, that a few short years ago was turning to wind-blown sand dunes. ...The desert blooms, and this is literal, for where not even pasture grass could be found for livestock, there is now being harvested crested wheat grass that will give a ton to the acre, that will bring back humus and fibre to the soil, and make it possible for ranchers to again grow good cattle. (Saskatchewan News Index)

In a 1952 report entitled Government of Canada Community Pastures, written by P.F.R.A. Superintendent of Pastures Raymond Youngman, spoke of the instrumental role that crested wheat grass played in the community pasture program. He wrote:

In accordance with recommendations following surveys by the technical staff of the Swift Current Experimental Station, an intensive regrassing program has been carried out throughout the years and we are now regrassing approximately 15,000 acres per year. As a result, our carrying capacity has been practically tripled. Crested wheatgrass has been used almost exclusively in our regrassing operations and has undoubtedly been a major factor in the successful operation of our

pastures as it is suited to our climate, stands exceptionally heavy grazing in the early Spring, and is the main source of hay requirements for our pastures. (384)

7. Seed Distribution

Prior to the formation of the P.F.R.A. the development of seed stocks was slow during the depression years, and they had to rely on American suppliers and standard varieties to fill their wholesale orders. Small samples of crested wheat grass were distributed to local Agricultural Improvement Associations by the P.F.R.A. (Agriculture Canada). Kirk was confident that domestic seed production of the superior Fairway strain would be a boon to prairie farmers suffering from successive crop failures. Kirk's predictions were correct, the production of crested wheat seed became a "reliable cash crop for hundreds of farmers"(Gray, 107). Kirk's conversation with James Rugg of Elstow, Saskatchewan planted the seeds for a new industry. As reported in Gray, Kirk's instructions to Rugg went as follows:

Here Jimmy, he said, I want you to take this and seed it exactly as I tell you. Then I want you to handle it exactly as I tell you to. There is going to be almost unlimited demand for this seed for many years to come. If you will follow my instructions, this seed can become the basis for the best and most profitable crops you will ever grow. (108)

8. Legacy of Crested Wheat Grass

Crested wheat grass was more than a depression-era solution. Fields of Fairway planted in the 1930s are still productive today (Bruynooghe et al.). During Kirk's eight year appointment with the FAO, "his experience with highly adaptable crops like crested wheat grass [...] found application in many under-developed countries" (Gray, 108).

9. References

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