

FORAGE RESEARCH IN THE PEACE RIVER REGION : QUOTES FROM THE GOOD OLD DAYS.

by

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As in any walk of life, agricultural researchers may be here today and gone tomorrow. As this happens there is a tendency to overlook the knowledge already generated in order to pursue the "new" endeavours that we think are currently most important or professionally rewarding. However, looking back in time can be extremely interesting and the findings of the past may be just as relevant today as they were when originally reported. In fact, looking back through old Annual Reports from Beaverlodge Research Station for the years 1920 to 1960, I came to the conclusion that farming in the 1980's in the Peace River region might benefit more by utilizing the knowledge gained years ago than by becoming so increasingly pre-occupied with publically funded farm-income stabilization plans. Farming will probably always be subject to the vagaries of the weather - surely that's part of the challenge - so our production systems must be in tune with the natural environment in which we work. The agriculture of the past decade or so has tended to buck that approach and the maintenance of soil productivity has now become a major national concern.

The quotations below emphasize forage crops and are taken from past reports prepared under the direction of W.D. Albright (Superintendent 1919-45) and E.C. Stacey (Supertintendent 1946-62). They contain a wealth of information applicable to farming in the Peace River region. If you read them carefully, I think you will agree that they contain much "food for thought" for our present day agriculture.

From the 1922 report:

"The fundamental importance of forage crops as a means of providing conditions for successful livestock raising and developing therewith a fertility-conserving system of farm husbandry amply warrants the large amount of attention being concentrated on this line of investigation at Beaverlodge. Some of the difficulties are novel and stubborn. Broadly speaking, it is much easier to produce heavy tonnages of cereal than of fodder crops, notwithstanding the greater frost resistance of most of the latter class."

"The lesson the settler is gradually learning is to keep out of livestock until he has three essentials practically assured, viz: water, shelter and feed, with a reserve of the latter in sight against adversity. Far better to sell or hold over feed in a year of plenty than to buy in a year of dearth."

"In all cases by far the largest yields of hay are obtained by seeding without nurse crops, though whether more profitable or not it is too soon to say."

"Common perennial and biennial forage crops emerged in about the following order as to winter hardiness: (1) The grasses; (2) alfalfa; (3) White Dutch clover; (4) alsike clover; (5) sweetclover; (6) red clover.

In the matter of recuperative power the sweetclover excelled the other legumes."

"Inneculation has been shown to be a prime essential in the successful culture of the ordinary biennial and perennial legumes. With peas it has not been so vital, presumably because the preparatory tillage liberates a supply of soil nitrogen to carry the crop fairly well through one summer."

"Hay crops mature early in the season and consequently require their moisture and plant food early. In a district where April, May, and the early part of June are frequently dry and too cool for vital processes to be active in the soil, it stands to reason that grasses will be handicapped as compared with grains. Furthermore, their seeds furnish the seedling plants a scant fund of nutriment, and these are slower than grain plants in occupying the land. This factor in particular makes new seedlings of them very susceptible to infestation by prolific-seeding, fast-growing annual weeds, such as Lamb's Quarters, Buckwheat, Shepherd's purse, Mustard, and others, not to mention perennials like Couch grass, Sweet grass, and Rose briars. Thus it comes that land which would grow an apparently clean crop of grain will, when seeded down, produce a dirty crop of hay unless very special culture be given. If seeded alone the weeds grow like trees the first year. If seeded with a nurse crop the weeds compete all too successfully the ensuing spring."

"Generally speaking, the clovers wintered best on stands that did not reach full-blossom stage in the season of seeding. For the first time it was found that the clipped halves of the clover plots wintered more successfully than the unclipped."

"The hardier strains of alfalfa have exhibited but little tendency to winter killing at Beaverlodge, when vigorous inoculated stands were obtained. Weeds and long-continued drouth are greater drawbacks. Brief periods of dry weather are well withstood by the deep-ranging roots."

"Where the object is the greatest possible crop of hay in the year following the seeding, it is certain to be produced by seeding alone, providing the weeds do not swamp it. Right here in the weed question is the real crux of the problem."

From the 1923 report:

"..... that under Peace River conditions the annual cereal crops are far more productive of tonnage than are the perennial hay crops. Meadows require liberal precipitation and need it earlier in the season than grain.

It does not follow, however, that hay crops have no place. Their virtue in conserving soil fertility; in supplying the conditions necessary for successful stock husbandry, their economy of labour, arising from the fact that one ploughing and seeding produces several crops, and their frost-hardiness warrant and will eventually demand their inclusion in cropping systems."

From the 1925 report:

"The Peace River country should be considered neither a ranching nor a straight grain-growing proposition. It is a mixed-farming proposition, but the type will not be that of Eastern Canada. The climate favours cereals more than perennial forage crops, though the latter must have a place for various reasons. Again the precipitation is irregular, hence crop production varies considerably, and the man who stocks his farm with enough animals to consume his average feed production would be entirely overstocked in off years and profits would vanish in ruinous liquidation."

From the 1927 report:

"Even in this favourable hay year, however, the perennial crops were again outyielded by the annuals, but the difference was less than usual and from the standpoint of economy the odds probably favoured the meadow crops as compared with the cereal hays, for there is a big economy in the crop that does not require annual preparation, providing it yields moderately well. Fertility is doubtless conserved, and certainly erosion is checked by clothing the land with hay and pasture crops, while the advantage to livestock of supplementing the customary cereal roughage with grass and legume hay is undeniable, so that meadow crops claim a place in our agriculture, although cereals will take the lead."

From the 1931-36 report:

"As in all other experiments, the first hay crop was much lighter after

a nurse crop than after non-nurse-crop seeding, but no great difference was evident in the second or subsequent crops.

The oats furnished much more than enough tonnage to compensate for the reduction in hay yields, yet there is much in favour of dispensing with the nurse crop if weeds can be controlled during the first season by grazing or by clipping. Of these alternatives, experience leads the sub-station to favour judicious grazing during the season of seeding where only edible weeds are to be controlled. The stock must be kept off when the land is soft and should be taken off finally about August 10 to permit a good autumn growth.

Nurse crop seedings came so weak, thin and weedy in the second season that in ordinary farm practice some of them would have been ploughed up."

"If a nurse crop is decided upon and a meadow mixture consisting of legumes and chaffy-seeded grasses is to be applied, a practicable method is to seed the former through a grass-seeder attachment casting ahead of the grain runs, the grass seed being mixed with the grain, which forces the feed."

"None but heavy rains enter more than a few inches into land persistently pumped by meadow crops. The moisture that enters merely the top layer is quickly evaporated by sun and wind supplementing the plants' eager demands."

"First-class alfalfa crops may be grown on the gray woodland soils where moisture is sufficient and effective inoculants are present."

"Artificial inoculation, when it does "take", may sometimes under drouthy conditions require two or more years to become fully effective."

From the 1937-47 report:

"In 1947 forage crops accounted for approximately 100,000 acres or roughly seven per cent of the cultivated land. The bulk of this was sown primarily for seed production. It is unfortunate that the use of forage crops for mixed farming has not increased with the same rapidity."

"..... An outstanding contribution of the Station has been the work with legumes, particularly the effect of the deep-rooted species such as alfalfa and sweetclover, on both black and grey wooded soils. The physical condition of the soil may thus be improved readily, and the subsoil made more adsorptive. When these are followed by grass-legume mixtures in rotation with grain crops a balanced form of agriculture is assured and soil erosion reduced to a minimum."

"The Peace River region is eminently suited to mixed farming, hence livestock will always constitute an important phase of its agriculture. It is not a ranching area, however, because of the relatively long winter feeding period. There is a place for unlimited hog production but for the most part cattle and horse raising should be incidental to the mixed farming enterprise. There is suitable range for small flocks of sheep but coyotes may cause heavy losses in wooded areas."

"Brome at eight pounds and alfalfa at six pounds per acre makes an excellent combination."

"Seeding sweetclover with the brome-alfalfa mixture has merit. A seeding mixture of six pounds each of brome, alfalfa and sweetclover has been found very commendable."

"Pure alfalfa stands for hay have never been popular in the Peace River region ..... The forage is subject to loss from defoliation and in wet seasons is difficult to cure. While alfalfa equals brome in yield of hay it does not surpass a brome-alfalfa mixture."

"Indications are that the addition of creeping red fescue to a brome-alfalfa mixture is also an excellent means of improving summer pasture. .... It does not winter-off but retains a moderately high feeding value after freeze-up."

"The Beaverlodge Station is on the alert for species of plants that may have agricultural value to the Peace River region. .... Perhaps the most significant result of the work is the confirmation of the dependability of standard material regardless of claims attributed to new material."

"Green Manuring Often Wasteful. - With the recognition of the beneficial effects of sweetclover on grey wooded soils the practice of using this crop as a green manure was soon adopted. Heavy yields of forage have been ploughed under on the assumption that the lush mass of green material

would add large quantities of organic matter to the soil. Experimental evidence has indicated, however, that the good wrought by sweetclover on the soil is mainly through its roots and that the benefit brought about by turning under the top growth is usually of secondary importance.

A twelve-year experiment was conducted on a greyish soil on the Station to investigate this matter. There was very little difference whether the sweetclover was green-manured or whether its stubble was ploughed as soon as feasible after haying."

"Crop Rotations Can Be Modified to Suit Conditions. - In a properly designed rotation the component crops should be subject to change without defeating the purpose of the rotation. Thus the sequence and even the duration of the rotation may be flexible."

"A Suggested Rotation. - For the established farm the following six-year rotation is recommended:

1. Fallow
2. Grain (seeded to grass and legumes)
3. Hay or pasture
4. Hay or pasture (break and fallow for the remainder of the season)
5. Grain
6. Grain

This rotation (1) possesses balance between grain, sod land, and fallow, (2) permits various crops to be sown under conditions suited to their growth,

(3) ensures that fibre and humus are maintained in the soil, thereby serving to control erosion, (4) allows for the use of leguminous crops, (5) provides a reasonable measure of control for weeds, insects and disease and (6) can be so laid out that only two permanent cross fences are necessary."

"Type of Nurse Crop Important in Seeding Meadows. - Of more importance (than date of seeding or harvesting the nurse crop) in seeding forage crops is the type of nurse crop employed. The merits of flax in this respect are, of course, well known. Olli barley and all varieties of wheat even when seeded at the usual rate have functioned as satisfactory nurse crops, while oats, seeded at reduced rates, has served only moderately well."

"Forage Crops Essential in Erosion Control. - Forage crops are essential in any soil conservation program. They offer the only practical means by which fibre and humus can be restored to the soil. They are the only crops that adequately protect the soil surface from the action of wind and water, while alfalfa and sweetclover have root systems which effectively open up the impervious subsoil. .... It is recommended that at least thirty per cent of the cropped land must be occupied by forage crops if a permanent system of agriculture is to be effected."

"Method of Growing Alfalfa. - For a number of years alfalfa was grown in rows and in broadcast stand in an effort to determine the relative merits of the two methods for hay production. In all cases the broadcast stands have produced considerably more hay than have the rowed stands. Moreover, they were easier to cut and there were fewer weeds to contend with."

From the 1948-52 report:

"Deep-Rooted Legumes Do Not Respond to Commercial Fertilizer: - Limited trials indicate that established legumes do not respond to applications of commercial fertilizer. Soil surveys suggest that available phosphorus is present in the upper subsoil in adequate amounts for good plant growth and that once established, the deep-rooted legumes are able to feed upon this supply. Since legumes are capable of fixing nitrogen, this plant food is not required. However, it has been observed that legumes establish themselves better when a phosphatic fertilizer such as 11-48-0 is applied in the year of seeding."

"The value of farm manure cannot be over-emphasized. .... the commercial fertilizer affected only the crop to which it was applied, while the single application of manure had a marked beneficial effect on subsequent crops."

"Crop rotations are easy to establish. They serve to promote better cropping practices and ease of management, and make farming itself more stable."

"The following rotation is suggested for all soil types, whether black, degraded black or grey wooded, and is intended for established farms producing grain and livestock: fallow, grain (seeded to alfalfa, sweetclover, brome or creeping red fescue), hay or pasture, hay or pasture, hay or pasture (break in midsummer), grain, grain, grain (optional)."

"Cultivated pastures are especially valuable in this region because of the low nutrient value and the uncertain carrying capacity of native pastures."

"Rotational Grazing Ensures Best Use of Pastures: - An aged stand of brome and alfalfa was utilized in an experiment with sheep over a 2-year period employing heavy rotational, heavy continuous, and moderate continuous grazing. The results indicate the advantage of heavy rotational grazing. Much more efficient use could be made of present farm pastures if they were divided into two or more sections and rotational grazing practised."

"Many Peace River farmers are alert to the destructive forces of erosion and realize that the systematic use of forage crops provides a satisfactory means of control. In some localities the Station's recommendation that one-third of the land be seeded down is practised. Throughout the region about 9 per cent of the cultivated acreage is in forage crops but the advantages of grassland farming are becoming so well understood that the acreage is rapidly increasing."

"Creeping red fescue derives its local popularity from some excellent seed crops sold to good advantage. A secondary consideration is the enormous mass of finely divided roots produced and the effect of these in improving soil structure. A third and possibly the most significant consideration is its ability to provide abundant pasture. It blends well with alfalfa for summer pasture and unlike other species flourishes throughout the autumn months. The herbage remains fresh under the snow throughout the winter, when it is relished by livestock."

Thus creeping red fescue should be a constituent of all pasture mixtures. A mixture of creeping red fescue, brome and alfalfa at 6, 3 and 3 pounds per acre, respectively, gives a nutritious, high-yielding pasture where soils are adequately drained and a pronounced hardpan is not present. Creeping red fescue seeded alone at 10 pounds per acre, or at 6 pounds per acre in a mixture with alfalfa at 4 pounds, provides pasture swards suited to better-structured soils. For poorly-structured soils where hardpan is a problem, a pasture mixture of brome, alfalfa, and sweetclover is recommended. An alsike-timothy mixture is adapted to low-lying land subject to spring flooding."

From the 1953-57 report:

"An experiment on mixed Degraded Black soils of the Albright and Hythe series at the Brainard Illustration Station proved that land that had become temporarily impoverished was capable of carrying, with improved management, up to seven head of sheep for three months during the summer and producing upwards of 250 pounds of lamb per acre."

From the 1958-61 report:

"Increased cattle production in the Peace River region prompted the initiation of studies on problems that are unique to the north. Of primary concern was the long wintering period with its demands for housing and feed. The need for adequate intake of vitamin A and certain minerals is recognized, but minimum feed requirements for wintering are not well

understood, especially where the winter feeding period is exceptionally long."

"Preliminary work indicated that beef cows could winter satisfactorily on relatively cheap nutrients without adverse effect or decrease in the calf crop. Cows were maintained as well on oat straw plus 5 pounds daily of a 2:2:1 mixture of oats, barley and legume seed screenings as on hay and oat straw in the ratio of 3:2. Both groups of animals received recommended levels of vitamin A and minerals and had free access to water."

As the agriculture of the Peace River region continues to develop, let's not ignore the lessons of the past. Today we are questioning the sustainability of many of our current agricultural practices because of the increasing incidence of soil degradation, the high cost of inputs, the unpredictable returns for all commodities, etc. Perhaps it may be an opportune time for farmers to capitalize on the stability conferred by diversity. This same trend is also becoming more popular with manufacturing companies as well.