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FIELDMANS VARIETY INFORMATION SHEET

Explanation of Diploid and Tetraploid Plants

Under normal conditions in nature all plant cells contains specified numbers of chromosome sets. Most plants contain two chromosomes in each set and are referred to as diploid types. Modern plant breeders have found methods of doubling the number of chromosomes in each set. This results in a plant with four chromosomes in each set and these are referred to as tetraploid types. In short, diploids contain sets of two chromosomes while tetraploids contain sets of four chromosomes.

In general, tetraploid types are larger plants, producing more forage and are adapted to a wider range of climatic conditions. However, seed production may be slightly reduced because of seed sterility problems.

Our experience would suggest the seed yield of tetraploids is equal to that of diploid plants in Alsike. When placing tetraploid Alsike or Red Clover varieties, never place on land which has ever grown common varieties of these crops before.



INFLUENCE OF ISOLATION ON SEED SET OF TETRAPLOID CLOVERS

(with Adequate Pollination)

	% SEED SET TETRAPLOID ALSIKE
Tetraploid Alsike grown alone	71
Tetraploid Alsike grown in close proximity to common Diploid Alsike	23

Alfalfa

Alfalfa is adapted to a wide range of climatic and soil conditions. It is best adapted to deep loam soils with porous subsoils. However, it also produces well on sandy and heavy clay soils. Good drainage is essential. It is relatively tolerant to alkaline soils, but does not do well on either highly alkaline or acidic soils. For seed production moderate moisture levels are required for best results, yet it can withstand drought conditions. The basic problem in seed production is the need for bees to cross-pollinate the flower. Honeybees are not satisfactory. Leafcutter bees are used successfully in the hotter climate of Southern Alberta, but can only be recommended in special situations in the Peace where higher temperatures are obtained in isolated areas along river banks, etc. Wild Bumblebees are effective pollinators but are only located along fence lines, river banks, and near wooded areas.

We wish to encourage the production of Alfalfa seed in the Peace. Try to select long narrow fields next to areas where native bumblebees may be found.

- 2. Beaver - A Canadian variety. Resistant to bacterial wilt, Winter hardy. Outyields Vernal in Saskatchewan and Alberta, equal in Manitoba and British Columbia. Hardier than Vernal (of primary importance in forage use).
- 3. Grimm - The original winter hardy variety in Western Canada but susceptible to wilt. Now replaced by other varieties.
- 3. Ladak - Good winter hardiness. Outyields Grimm. Slow recovery after cutting. Partially resistant to bacterial wilt. Losing popularity.
- Vernal - An American variety. Less winter hardy than Beaver but more so than Rambler. Recovers after clipping better than Ladak and Rambler. Most winter hardy of the U.S. wilt resistant varieties. In Western Canada it equals Beaver and Rambler in yield but generally exceeds these varieties in Eastern Canada. This variety is in high demand in Eastern Canada and the U.S.
- Rambler - A Canadian variety from Swift Current with a creeping root system. Exceptionally winter hardy and drought resistant partly due to a low crown. Withstands spring flooding and is partially resistant to bacterial wilt and winter crown rot. An important variety in dry areas. May be superseded partly by Roamer.
- Roamer - A Canadian variety from Swift Current also with a creeping habit. Hay production equal to Rambler and Beaver. Better seed yields than Rambler. More resistance to bacterial wilt than Rambler hence better adapted to use in irrigation. Recovers slowly after cutting. Appears more winter hardy than Ladak or Vernal.

WHITE CLOVER

White Clover is probably the most nutritious and palatable of all the legume species and is widely used throughout the world in pasture mixtures. It is well adapted to seed production on clay and silt soils but requires ample rainfall for best results. White Clover is divided into three general types: (1) the large represented by Ladino, (2) the intermediate or white Dutch type, represented by S-100, and most New Zealand pasture strains, and (3) the low-growing represented by Kent wild white. Under good management successful crops of White Clover can be raised in the Peace and other parts of Alberta. Because of its low-growing habit a level, stone-free land with a finely prepared seed bed is essential. The seed crop is easily pollinated by honeybees and, with adequate rainfall, excellent yields are possible. Selecting a low area with a high water table will ensure adequate moisture.

- Nora - Intermediate type. A hardy, high-yielding Swedish variety with a good seed production record.
- Kivi - Intermediate type of Swedish origin. Winter hardy. Vigorous and good seed prospects.
- S-100 - Intermediate type of English origin. Very vigorous and good seed prospects; relatively long stems and upright growth.
- Blanca - Intermediate type of Belgian origin. Winter hardy.
- R.v.P. - Vigorous and good seed prospects.
- Kent - Low-growing type of English origin. Very persistent and long-lived. Small leaved. Very winter hardy. Excellent seed prospects but difficult to harvest due to short-growth habit.
- S-184 - Low-growing type of English origin. Very persistent and long-lived. Leaf is a little larger than Kent and slightly more vigorous and competitive. Very winter hardy; somewhat prostrate but dense growth. Excellent seed prospects but difficult to harvest due to short-growth habit.

Birdsfoot Trefoil

Birdsfoot Trefoil is prized as a pasture legume because it does not cause bloat and grows well on poorly drained and infertile soils. Trefoil is very drought resistant being equal or even superior to Alfalfa in this respect. Unlike Alfalfa, it is very tolerant to wet feet or moisture retaining soils. Although Trefoil will grow over a wide range of soil, fertility, and acidity conditions where other legumes will not grow, it will make best results on fertile soils with adequate moisture. Trefoil is slow to germinate and is a weak competitor against other crops and weeds. As a result it should be seeded on well prepared land without a nurse crop early in May. Spraying or clipping may be necessary in the year of seeding in order to control weeds. Harvesting of Trefoil is very difficult because the seed ripens unevenly and shatters readily when ripe. It is generally recommended to harvest when the first pods are showing color. Some growers are endeavoring to harvest the pods and artificially dry the seed. Other are considering the use of foliage sprays to mechanically dry the crop before harvest. Only experienced growers should be encouraged to try Trefoil and then only limited acreages because of risk involved.

Empire - An American variety from Cornell. Essentially a pasture type on account of long weak stems. Poor seedling vigor. Slow spring start and slow recovery. Late in floral initiation and intermittent in flowering. Good seed producer.

Viking - An American variety from Cornell. An upright Hay type. Early floral initiation and intermittent flowering. Less winter hardy and flood tolerant than Empire. Seed on higher land. Good seed producer.

Leo - A Canadian variety from MacDonald College. Developed from Russian stock. More erect than Empire, similar to Viking. Seed yields may exceed those of Empire and Viking. Similar to Viking in spring growth but slower in recovery. Early dormancy. Regarded as the coming variety for western Canada. Eastern Canada has not accepted it as yet mainly due to a poor supply of seed. Indications are that it will be accepted as soon as seed production in quantity is guaranteed.

Creeping Red Fescue

Creeping Red Fescue is a temperate zone plant with a wide distribution used extensively for the production of turfs. Open, sandy loam type soils high in fertility appear to produce constitutently higher yields. The seed buds are initiated in the late autumn on tillers which have completed one full season of uninhibited growth because of this fertilizer application should be made in the autumn. Adequate soil moisture is necessary at this time to realize optimum yield potential the following year. We recommend seeding without a nurse crop to allow maximum development of the seedling the first year to ensure a seed crop in the second year. After the first seed crop the aftermath may have to be slipped and removed and fertilizer applied for adequate seed yields in the second crop.

- Olds - Developed from stocks imported from Europe in the 1920's. Has a good record of seed production in the Peace but the name is virtually unknown elsewhere. Where it has to compete with locally produced varieties developed for specific conditions. In effect it does nothing extra for a turf mixture.
- Boreal - A Canadian variety developed at Beaverlodge by a selection of stocks descended from Olds. More uniform and outyields Olds by about 15%. Will replace Olds and commercial stocks of Creeping Red Fescue because of its better yield but may have difficulty in finding a wide market at a premium price again due to no added turf value - only seed yield.
- Duraturf A Canadian variety from Ottawa which produces seed well in Eastern Canada and has a good record with a limited number of growers in the Peace. Compares favorably with Olds.
- Pennlawn An American variety from Pennsylvania with good density and tolerance to leafy diseases. Spreads rapidly recovers quickly and stands close clipping.. May be somewhat less hardy than some varieties. Yields are more variable than Olds, but has a definite market advantage for turf use.
- Reptans - A very vigorous variety from Sweden. Beaverlodge reports it yields a little less than Olds however our contract fields appear to have done as well as or better than Olds - Has increased value for turf use.
- Cottage - A French variety.
- Dawson - A Dutch variety. Finer leaved than most Fescues - developed for fine turf of golf and bowling greens. This variety shows high vigor and seed-yielding ability.
- S-59 - An English variety, somewhat later than Boreal. Long spindle leaves and growth habit. Probably will require special fertilization and management to obtain maximum seed yields.

Creeping Red Fescue (cont'd.)

Oasis - A Dutch variety. Somewhat less vigorous and tillering characteristics. Will require special fertilization and management to obtain maximum seed yields.

Ericka - A Dutch variety.

CHEWINGS FESCUE

Closely related to Creeping Red Fescue, but is not as vigorous; hence it is susceptible to adverse weather and nutrition conditions. Occasionally yields adequate seed crops in Western Canada but the results are often disappointing. Chewings Fescue is preferred in many regions for turf purposes as it makes finer growth.

Highlight - A very winter hardy and a good yielder. The best of the Chewing Fescues.

Golfrood - An excellent Fescue for Dutch use, but unsuitable for local seed production. A poor seed setter with weak stalks. Requires advanced management for successful seed production.

MEADOW FESCUE

Meadow Fescue is a cool-season bunchgrass from Europe. It is a short-lived perennial, which develops quickly and has some drought tolerance. However, for best results it prefers a rather heavy fertile moist soil. With good care and adequate fertilization, it will do well on light soils with only a moderate supply of water. Because of its scant root system, the stems are easily broken and support excellent cereal crops. In Western Europe it is recognized as an excellent pasture grass in some areas. At present world stocks of Meadow Fescue are in a surplus position.

Barenza - A Dutch variety. May not be quite as good as Mimer.

Melle - Satisfactory yielder.

Mimer - A Swedish variety. Best variety in Ontario - leafy, resistant to leaf rust.

Sceempter - A Dutch variety. Satisfactory yield.

S-53 - An English pasture type. Slow to establish and susceptible to competition in the seedling stage but, once established, has dense, high-tillering characteristics. Should be given every opportunity to establish properly the first year by fertilizing at seeding-time and reducing the nurse crop competition.

Ensign - An Ottawa variety with good basal leaf growth. Good seed and hay production.

Trader - An Ottawa variety. Later than common. Good basal growth and recovery. Has some resistance to leaf rust.

Bergamo - A pasture type from Holland. Has a slightly more prostrate growth habit than some varieties. Excellent seed-yielding characteristics.

SMOOTH BROMEGRASS

Smooth Brome grass is adapted to a wide range of moisture and temperature variations. It makes best growth on deep fertile soils of well-drained silt loam and clay loam. Seed stands should be fertilized with nitrogen in the fall or early spring. Two types of Brome grass are recognized in Canada. The Northern type introduced from Germany, which spreads more slowly and produces a more open soil. The Southern type introduced from France and Hungary produces a more aggressive sod-forming habit. Has increased seedling vigor and is more drought tolerant. The Southern type is in very high demand in these market areas and will replace all Northern types. Possibly the lower seed yield can be balanced by the higher price plus the aftermath use. The newer varieties are equal in seed yield to the Northern types - Baylor, Magna.

- Carlton - A Canadian variety from Saskatoon. Higher seed yield than common. Susceptible to the same diseases as Common Brome grass.
- Magna - A Canadian variety released from Saskatoon this year. Southern type. Almost as much seed yield at Saskatoon as Carlton. In Ontario compares favorably with Saratoga. Very limited seed stocks.
- Redpatch - A Canadian variety of the Southern type. Somewhat lower seed-yielding in Western Canada but of good hay quality. In Eastern Canada hay yield is similar to Saratoga and slightly higher seed-yielding. Three to four days earlier than Saratoga at Ottawa.
- Saratoga - An American variety of the Southern type. Reported 108% of common for hay, and 61% of common for seed yield at Saskatoon. Recovers quickly after cutting. More aftermath. High seedling vigor. Some resistance to leaf-spot disease.
- Baylor - Licensed in Canada. An American variety of the Southern type. Higher forage and seed yield than Common Brome grass. It displays quick recovery, seedling vigor, leafiness, and is disease-resistant. Highly recommended for seed production.
- Blair - An American variety of the Southern type. Selected for leafiness; is disease-resistant; has seedling vigor and hardiness. Excellent forage yields but slightly lower seed yields than Baylor.

TIMOTHY

Timothy is a major cool-season crop. Originally most timothies were bunchgrasses, which we will refer to as hay and pasture types. Recently a creeping type has been introduced and we will refer to it as a turf type.

The hay type Timothy is best adapted to wet, meadow, or lowland areas. Heavy applications of nitrogen fertilizer in the early spring are essential for high seed yields. Timothy is easily hulled. Slow cylinder speeds are suggested to prevent excessive hulling. The newer varieties of Timothy are very leafy.

The recently introduced turf type Timothy with creeping roots is used for playing-fields and erosion control, etc., in Europe. In Western Canada it is comparatively short and low-yielding. Best seed yields have been obtained on sandy loam soil under high fertilization. Threshing is difficult. Be careful to plant these creeping timothies where they will not be easily mixed or contaminated with Common Timothy. Because of the premium paid, it has been a profit crop for most growers. However, it requires extra care.

Early hay types (Similar to Climax in maturity)

- Climax - An early hay type of Canadian origin; very tall, lacks leafiness of most European varieties. High seed yields. Seed-shattering can be a problem.
- Champ - A Canadian variety. Will replace Climax in Canadian markets, although some foreign types are equal.
- Erecta - A Belgian variety where it is very winter hardy. Guelph reports it as similar to Climax. Erect, early, persistent. Beaverlodge reports it as leafy later than Kaempe with irregular heading.
- Topaz - A medium early variety from Denmark. Equal to Climax in hay and seed yields.
- S-352 - An early variety from England. Very leafy. Seed yields similar to Climax.
- Eskimo - An early hay type from Holland. Similar to Climax in maturity and growth habit, but higher seed-yielding.
- Astra - A Swedish variety. Licensed in Canada. Leafy. In parts of Canada not quite equal to Kaempe II but it averages out well.
- Kaempe II - A Swedish variety. Leafy. Equal to Climax.

Medium late hay types (Approximately 2 weeks later than Climax)

- Pecora - Medium late variety from France. Short-strawed, leafy, hay type. Slightly lower seed yielder than Climax, but much less susceptible to seed-shattering.
- S-51 - A medium late variety from England. Leafy, short-strawed type. Seed yields similar to Pecora, slightly below Climax.

Timothy(cont'd.)

Late hay types (Approximately 3 to 4 weeks later than Climax)

- S-48 - A late variety from England. Matures 3 to 4 weeks later than Climax. Excellent hay type with heavy bottom growth. Seed yields equal to or better than Climax.
- Sceempter - A late hay and pasture variety from Holland. Matures 3 to 4 weeks later than Climax. Needs a reasonably long growing season and adequate fertilization for best seed results.
- Bounty - A Canadian variety. To date has found little domestic acceptance. Late.

Creeping or Turf Timothy

- Evergreen - A Swedish variety. Vigorous. Must be planted early in the spring and without a nurse crop for best seed yields. High level of fertilization in the late fall or early spring is required for optimum seed prospects. Almost no seed-shattering. Must be cured in the swath to thresh easily.
- Sport - A French variety. Somewhat shorter and more uniform in growth than Evergreen. Less vigorous than Evergreen but requires the same management practices to obtain optimum seed yields.
- S-50 - An English variety. Very similar to Sport in growth habits, seed yields and management required.

RED CLOVER

Red Clover is the most widely grown of all true clovers. European pasture requirements are built around the use of Red Clover. With this market in mind we must try to produce the varieties they require.

Red Clovers are ideally suited to areas where summer temperatures are moderately cool to warm, and adequate moisture is available throughout the growing season. They grow well on all soil types and have been especially productive on much of the heavy grey-wooded soils of the north. The greatest problem for the successful production of seed is cross-pollination. Bumblebees are the best pollinators. Honeybees will work Red Clover; however, they must be given special management. First, the honeybee hives must be distributed throughout the field rather than in a group at one end. The field must be located so that the presence of more attractive nectar-producing plants, such as Sweet Clover, White Clover, Alsike Clover, or Rape, does not distract the honeybees from the Red Clover.

In North America Red Clovers can be grouped into two divisions: (1) Early flowering, and (2) Late flowering. The early type is characterized by producing two hay crops per year and having a biennial or short-lived perennial growth habit. The late flowering is a perennial, producing one crop of hay, plus an aftermath. The late flowering types are used extensively in northern Europe, Sweden, Norway and Finland. The early flowering types seem to be preferred in the Southern latitudes of Central Europe, Eastern Canada and the United States.

Late flowering types

- Altaswede - This is a relatively late flowering diploid type developed at the University of Alberta about 1920. It has a good record of production in Western Canada but is discounted heavily elsewhere; hence over-production quickly reduces pricing. As this variety is losing favor we do not recommend its production.
- Molstad - This is a late flowering diploid type from Norway. Matures a little later than Altaswede. It is capable of making good seed yields but its record in the Peace has been poor because of our short-growing season.
- Tammisto - This is a late flowering diploid type from Finland. Matures late and yields poorly in the Peace. Very winter hardy. Our experience with this variety in the Peace has been unsuccessful, and we are not contracting it there now.
- Weiristenta - This is a relatively late flowering diploid from Germany and Southern Sweden. It is earlier than Tammisto, Molstad or Rea, and has a relatively high seed yield potential. In Germany and Southern Sweden it is a standard variety, having about the same place there as Altaswede has with us.

Red Clover (cont'd.)

Rea - This is a relatively late flowering tetraploid type from Sweden. It has some resistance to clover nematodes and clover root rot. Carries some sterility and yields have not been very good, but it is reported that succeeding generations carry less sterility. A satisfactory variety where it will mature. This variety is probably more suitable in Central and Southern Alberta because of the longer growing season.

Early flowering

- Lakeland - An early flowering diploid type from the U.S. It is as hardy as Ottawa and Dollard. Highly resistant to powdery mildew and northern anthracnose. This is an OECD variety which has a good record in Eastern Canada.
- Ottawa - An early flowering diploid type. A Canadian variety. Replacing Lasalle on all domestic markets, and in high demand in Eastern Canada.
- Dollard - An early flowering diploid type from Quebec. It is hardy and has resistance to northern anthracnose, mildew and root rot. It is adapted to Eastern Canada.
- Lasalle - An early flowering diploid type which is a mechanical mixture of Dollard and Ottawa. Has been discontinued by the Forage Seed Project and no further production is recommended.
- Redhead - An early flowering tetraploid type from Holland. It indicates good seed potential in seed trials at Lacombe.
- Lembkes - This is a very early flowering diploid type from Germany. Seed trials at Beaverlodge and observation in our contract field in 1967 suggest it has an excellent potential.
- Sapporo - This is a very early flowering diploid type from Japan. Similar to Lembkes. Our contract field and trials in 1967 indicate it has excellent potential.
- Hungarapoli - This is an early flowering tetraploid type with an outstanding record of performance in Poland and Hungary. High yielding.
- Odenwalder - This is an early flowering diploid type from Germany. Good seed-producing ability.
- Steinacher - An early flowering diploid type from Germany. Good seed-producing ability.
- Reichersberger - An early flowering diploid type from Austria. Good seed-producing ability.
- Rotonde - An early flowering diploid type from Denmark. Good seed-producing ability.