Prairie Seeds

Saskatchewan Forage Seed Development Commission

Volume II, Issue I

Fall 2009

Inside this issue:

Success Hybrid Brome Grass developed by Bruce Coulman and named by Julie Soroka both shown in the photo from 2008 SFSDC Field day.

Saskatchewan Forage Seed Development Commission Seeks New Board Members.

Nancy Gray, P.Ag. – SFSDC Executive Director

The Saskatchewan Forage Seed Development Commission is looking for people interested in becoming board members.

If you sell forage seed of any type you are a member of the Saskatchewan Forage Seed Development Commission (SFSDC). We are currently looking for two board members who are producers to come onto our board and also an industry representative. The position involves two conference calls per year, an annual meeting and emails to talk about what research incentives are needed by you, the grower.

The Saskatchewan Forage Seed Development Commission (SFSDC) was created in 2005 to provide for the research and development needs of all forage, turf and amenity crops, **with the exception of alfalfa.** Alfalfa seed producers have participated in their own commission, the SASPDC, since 1997. Since 2005, all forage grass and legume seed produced in Saskatchewan has been subject to a development levy, or check-off. The check-off is collected in the same manner as all other producer check-offs, at first point of sale. All grades and crops of forage seed (except alfalfa) are subject to the check-off. Seed buyers, who are often the processors as well, are responsible to collect the levy from the producer, and submit the funds to the Commission. This is a refundable levy, so producers can request a refund of their check-off funds if they choose.

The purpose and intent of the SFSDC is to assist the development of the forage seed industry in Saskatchewan and the check-off funds will be used for that purpose. Forage seed agronomy and production research has been identified as the greatest need. Currently the funded research is in weed and insect control issues, including methods of applications, economic tolerances, and minor use registrations of pesticide products. Other major production issues were fertility, stand establishment, and harvest management. Several new research projects were initiated in 2007, including evaluation of herbicides in seedling and established red clover and grass seed fields, and a survey of insect pests of forage seed crops in northeastern Saskatchewan. In 2008, fertility of forage seed grasses and a harvest manual were put forward for funding. Research results will be disseminated to producers, processors and other industry partners when that information becomes available.

Our board consists of 6 forage seed producers and 5 industry/research representatives. This structure provides a much needed balance to ensure the best interests of everyone involved are moved forward and prioritized accordingly.

For further information please feel free to contact the SFSDC at: ngray@sasktel.net

Perennial Ryegrass Seed Production

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Perennial ryegrass is a bunchgrass with a shallow, fibrous root system that is used for forage and turf around the world. In Western Canada, it is grown primarily for seed in the Black and Gray Wooded soil zones and irrigated areas. Perennial ryegrass is adapted to these areas because of its high moisture requirement.

Growing perennial ryegrass for seed in Saskatchewan has gained in popularity the last few years. Producers like growing it for seed for a number of reasons including early harvest, an increase in soil organic matter, and strong economic returns. For example, the long-term average seed yield is approximately 700 lbs/acre with yields of over 1000 lbs/acre not uncommon and prices typically range from $0.40 to $0.60/lb.

No special equipment is needed to grow perennial ryegrass for seed but some important agronomic points to consider include: field selection, establishment, fertility, harvest, residue management, and stand termination.

Perennial Ryegrass photo by Maxi Millipede www.flickr.com

Fields used for seed production of perennial ryegrass must be free of residual herbicides or germination and development of seedlings may be affected. Fields with troublesome weeds such as quack grass, wild oats, coarse grasses (i.e. bromegrass) and cleavers should be avoided as well. In-crop herbicide options are available for wild oats, cleavers, and other troublesome weeds; however, no in-crop herbicides are available for quack grass and coarse grass control. Perennial ryegrass prefers soils that are well-drained with medium to high fertility.

Establishing perennial ryegrass is fairly easy with most producers preferring to seed it with a cereal crop such as wheat and oats. Typically, perennial ryegrass and the cereal crop are seeded in two operations and at right angles to each other. This reduces competition between them allowing the ryegrass a better chance of establishing.

Fertilizer is applied to the cereal crop at seeding as needed. Extra P, K, and S are applied at this time if soil levels are low to ensure adequate levels for the perennial ryegrass crop the following year. Nitrogen is applied to perennial ryegrass in the fall after the cereal crop is harvested, in the spring before the ryegrass begins growing, or preferably as a split application.

Harvest of perennial ryegrass seed begins in late July to early August when the crop is ready to swath and is usually combined seven to ten days later. The seed is dried immediately after harvest using aeration.

Straw management is dependent on the type of perennial ryegrass grown for seed. The straw from forage-type varieties can be baled and used for feed and the regrowth can be grazed in the fall. However, turf-type varieties produce a toxin that is harmful to livestock and straw should be tested to determine the level of toxin before using as feed.

Stand termination occurs after the first seed harvest. At this time perennial ryegrass has produced a sod that usually requires a combination of tillage and glyphosate to terminate. However, some producers have had success direct seeding annual crops into the perennial ryegrass stand after is has been sprayed with glyphosate.

Source: Perennial Ryegrass Seed Production in Western Canada, http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex8345.

Perennial & Annual Ryegrass

Written by Gerald Huebner P.Ag., Crop Specialist, Manitoba Agriculture

Origin

Ryegrasses originated in southern Europe, North Africa, and southwest Asia. Perennial and annual ryegrass are probably the most widely used of all grasses around the world for both forage and turf uses.

Description

Ryegrasses are in the *Lolium family* and are cool season grasses, they are bunchgrasses with a shallow fibrous root system. Both ryegrasses have good forage production potential from straw and fall growth offering a good fit in livestock production areas. Perennial ryegrass could be best described as a winter wheat alternative in viewing the perennial ryegrass seed production system with annual or Westerwold ryegrass being strictly an annual grass under Manitoba conditions. These grasses are utilized both as a forage crops and as turfgrasses with specific varieties available for both of these uses. Leaves are dense, dark green, glossy and folded when young. Ryegrass looks very much like quackgrass with the seed very similar. In perennial ryegrass a vernalization period of cool temperatures is required for induction of flowering. Straight or slightly curved spikes up to 30 cm long contain 5-40 spikelets. Each spikelet has 5-10 fertile florets. With seed similar to quackgrass, market demands seed free of quackgrass and wild oats

Perennial Ryegrass - *Lolium perenne L.*, - A Winter Wheat Alternative

Adaptation

Perennial ryegrass is used as a forage and a turfgrass in Europe, the British Isles and New Zealand with considerable use in North America for both forage and turf it's use in western Canada for forage is limited because of winterhardiness limitations. Perennial ryegrass performs well on soils with good moisture holding capacity and is particularly adapted to moist production areas. Under western Canadian conditions winter survival may be a problem so many producers are looking at it as a 1 year seed crop with the best option appearing to be seeded in late summer.

Perennial Ryegrass Seed Production System

Seeding Rate - 8 - 10 lb/ac

Seeding Date - Late August as clear seeded or in spring with a cover crop

Row Spacing - 12 inches

Seeding depth - max. 1/2 inch

Seed Value - $0.35 - 0.60/lb for certified seed

Expected Yield - 600 - 800 lb/ac to high of 1200 lb/ac

Years of Seed production - production as one seed crop

Fertility - 80 - 100 lb. N in fall after growth is halted

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Perennial & Annual Ryegrass

Written by Gerald Huebner P.Ag., Crop Specialist, Manitoba Agriculture

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Harvesting - Perennial ryegrass is a challenging crop to harvest because of it's indeterminate growth. The proper timing of harvest is critical in maximizing seed yield and seed quality. Perennial ryegrass is swathed, windrowed and allowed to dry for 5 to 10 days before threshing. The proper time to swath ryegrass is when 1-2 florets come off the head when pulled between fingers. Crop will be greenish with a seed head moisture of 45-48%. Direct combining should be avoided as the crop shatters very easily when mature. Seed is dried in the windrow to %12.

Seed Cleaning - Top screen 3/64 x 5/16, bottom screen 5/32

Varieties

many varieties available, varying yields and maturity dates

Cultivar	% of Norlea	Seed Yield (kg/ha)
Affinity	72	478
Aquarius	48	318
Norlea	100	667
PR186	83	554
Stallion Select	66	440
Mean		491

Manitoba 1996 variety performance test - location Arborg

Westerwold Annual Ryegrass - *Lolium multiflorum*

Description & Adaptation

Annual (Westerwold) ryegrass is used as a forage grass in many parts of the world due to it vigour and high yields. It performs well on soils with good moisture holding capacity and is adapted to moist production areas. Westerwold ryegrass is an annual crop that must be seeded very early in the spring with seed crop harvested in late August. Plant growth is very vigorous with the crop having excellent forage production potentials along from straw and fall regrowth along with seed crop. Markets demand and pay a premium for seed free of Wild Oats and Quackgrass.

Westerwold Annual Ryegrass Seed Production Notes

Seeding Rate - 12- 16 lb/ac

Row Spacing - 6 -12 inches

Seeding depth - max. 1/2 inch

Seed Value - $0.25-0.35 / lb for Certified Seed

Average Yield - 600-800 lb/ac to a high of 1200 lb/ac

Seed Production Life - 1 year

Soil Fertility - 80 lb of actual N and 30 lb. of actual P per acre should be incorporated before seeding

Harvesting - Annual ryegrass is usually swathed at about 45% seed head moisture and combined at about 35% seedhead moisture. As the seedhead moisture approaches 35% the crop is very vulnerable to shattering.

Variety Selection - a large number of varieties are available with variable seed yields and maturity. Pick an early maturing variety for Manitoba seed production

Variety - Westerwold Ryegrass	1996 Arborg Yld Kg/ha	1996 Carberry Yld Kg/ha
Barspectra	282	604
Wesley	291	584
Agraco	272	605
Elunaria	279	549
Tororo	490	690
Aubade	379	676

Arborg seeded June 8/96, Carberry seeded June 2/96 Forage Production - 1996 tests in Saskatchewan at the Melfort research station indicated very good forage production in a seed production system. Straw yields of 3 to 4 tons/acre with a protein level of 12% and fall regrowth of 1 ton/acre with protein levels of over 22% make this a very valuable component of production.

Red Clover Seed Weevils infecting the red clover plants by Nipawin.

Forage & Grass Seed Production Guide 2002

by Gerald Huebner P. Ag. , Manitoba Agriculture

Species	Seeding Rate (kg./ha)	Row Spacing (cm)	Avg. Value $ / lb Certified Seed	Average Yield (high yield) (kg/ha)	Seed Production Life (years)	Soil Fertility	Adaptation & Production Notes
Alfalfa *Medicago sativa*	1 - 2	30 – 60	$0.45 - 1.00	275 (800)	3 - 6	-inoculate seed at seeding - 40 kg/ha 12-51 at establishment	- widely adapted, preferred are well drained soils - pollination is required for optimum production, leafcutting bees prefered and effiicient pollinator, limited plant populations important in maximizing seed production, field must be free of other legumes. Monitoring and control of insect pests essential throughout the season including prior to flowering. Crop should be descicated and direct harvested. - weed control in establishment year important for stand life
Birdsfoot Trefoil *Lotus corniculatis*	1 - 2	15 - 30	$1.00 - 1.50	150 (450)	3 - 4	as above	- non- bloating legume - widely adapted, preferred are well drained soils - shatters easily, harvest challenging, must be done with dew on the pods to avoid shattering
Sweet Clover *Melilotis Officinalis*	2 - 4	15 – 30	$0.15 - 0.20	450 (1100)	1 (biennial)	as above	- biennial growth nature, widely adapted , Established as an underseeded crop with an annual in 1st year. Yields better with good moisture, do not plant in land intended for other legumes as it will be a major problem as a weed in other crops. Seed is used as a plowdown legume crop in final markets. - readily pollinated by honey & leafcutting bees, may volunteer for many years
Red Clover (single and double cut) *Trifolium Repens*	2.5 - 3	15 – 30	$.90 -dbl. cut $.35 -sgl. cut	200(500) dbl. 300(500) sgl.	1 - 2	as above	- adapted to moister regions with consistent snow cover, adapted to poorly drained sites, will tolerate some spring flooding - performs well as a biennial crop, underseeded in yr 1 and then 1 seed crop taken in 2nd year
Alsike Clover *Trifolium hybridum*	1.5 - 2	15 - 30	$.40	350 (600)	1-2	as above	- adaptation similar to red clover, - may volunteer for many years - very short under dry conditions
Sainfoin *Onobrychis viciifolia*	5-8	30 – 45	$.55	350 (800)	3-4	as above	- bloat safe legume, likes sandy soils, will not tolerate flooding or salinity - seeded with hull on , may winterkill on peat soils - shatters easily, unusual processing problems - alfalfa coils and volunteer cereals difficult to clean out
Timothy *Phleum pratense*	1-1.5	15 – 30	$.40 - 0.50	250 (700)	4 - 5	75 kg/ha N per /yr apply in fall	- cool season grass adapted to wetter areas, will tolerate and thrive in moderate spring flooding - must seed shallow, slow to establish - shattered easily, may lose yield in swath under wet harvest conditions
Meadow Bromegrass *Bromus riparius*	3.5 - 4	30 – 60	1.10	250 (700)	2 - 3	as above	- long lived plant but short reproductive life, very rapid regrowth after cutting, good forage production potential along with seed - not adapted to areas that are prone to flooding - large chaffy seed difficult to clean - susceptible to silvertop
Smooth Bromegrass *Bromus inermis*	3 - 3.5	30 – 60	0.75 - .80	250 (700)	4 - 5	as above	- widely adapted, creeping rooted, seed production drops as stand fill in - isolation from ditches very important

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Species	Seeding Rate (kg/ha)	Row Spacing (cm)	Avg. Value $ / lb Certified Seed	Average Yield (high yield) (kg/ha)	Seed Production Life (years)	Soil Fertility	Adaptation & Production Notes
Kentucky Bluegrass *Poa pratense*	2 - 3	15 – 30	0.40 - .70	200 (600) irrigated up to 1000 kg.	4 - 5	100 kg/ha N per year in early fall	- cool season grass, adapted to moist areas, creeping rooted - special care needed in seeding, slow to emerge - fall renovation essential, burning preferred - very susceptible to silvertop - must be wild oat / quack grass free
Creeping Red Fescue *Festuca rubra rubra*	1 - 2	30	0.55	300 (700)	2 - 3	75 lkg/ha N in fall	- cool season grass with very strong creeping nature, will become unproductive as rows fill in, renovation the required - very susceptible to silvertop
Slender Creeping Fescue *festuca rubra trichophylla*	1 - 2	15 – 30	0.6 - 0.8	250 – 400	1	80 kg/ha N in fall	- cool season turf grass - seed without cover crop in early summer - plan as a biennial with only 1 seed crop harvested in 2nd year - Poast / Fusilade can be used - must be wild oat / quackgrass free
Hard & Chewings Fescue *Festuca ovina (hards) duriascula & (chewings) commutata*	1 - 2	30 – 45	0.60	300	2 - 3	75 kg/ha N in fall	- cool season, sod forming - less creeping than creeping red fescue - renovation key after harvest
Sheeps Fescue *Festuca ovena*	4 - 6	15 – 30	0.80	200	2 - 3	75 kg/ha N in fall	- cool season bunchgrass - more drought tolerant than Chewings and hard fescue
Tall Fescue *Festuca arundinacea*	2 - 3	30 – 45	0.35	500 (1200)	3 - 4	75 kg/ha N in fall	- deep rooted bunchgrass, short underground stems - high seed yield potential, likes cool moist conditions - both forage and turf types available, csn produce lots of forage - winter hardiness will vary by variety, markets can be volatile
Meadow Fescue *Festuca elatior*	2 - 3	30	0.50	400 (700)	2 - 3	75 kg/ha N in fall	- shorter growing and finer than tall fescue, adapted to moist conditions, high seed yield potential, will withstand more heat & drought than timothy, slow to establish, winter injury can occur, can lodge severely, susceptible to leaf rusts
Creeping Bentgrass *Agrostis stolonifera*	0.5 - 1.5	15 – 30	1.75	150 (300)	2 - 3	75 kg/ha N in fall	- cool season creeping rooted grass, used primarily on golf greens - very small seed, difficult to harvest - adapted to moist areas, irrigated production preferred - renovation following harvest very important
Orchardgrass Cocksfoot *Dactylis glomerata*	4 - 5	30	0.45	250 (500)	3 - 4	75 kg/ha N in fall	- cool season bunchgrass, dense deep fibrous root system - variable winterhardiness between cultivars - also known as "cocksfoot" in Europe - more drought tolerant than Timothy

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Forage & Grass Seed Production Guide 2002

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Species	Seeding Rate (kg/ha)	Row Spacing (cm)	Avg. Value $ / lb Certified Seed	Average Yield (high yield) (kg/ha)	Seed Production Life (years)	Soil Fertility	Adaptation & Production Notes
Annual Ryegrass *Lolium multiflorum westerwoldicum*	10 – 15	15 – 30	0.25 - .35	600 – 800 (1200)	1	80 kg/ha N	- annual crop to be seeded in the very early spring, with seed crop harvested in late August. Plant growth is very vigorous with the crop having excellent forage production potentials along from straw and fall regrowth along with seed crop. - Market needs seed free of Wild Oats and Quackgrass
Perennial Ryegrass *Lolium Perenne*	8 – 10	15 – 30	0.35 - 0.45	600 – 800 (1200)	1	75 kg/ha N in fall	- short lived perennial, grown as a biennial , bunchgrass shallow fibrous root system - adapted to moist, hardiness poor except as a juvenile plant through 1st winter - both forage & turf types available, forage types offer good forage crop along with seed, straw and crop regrowth good production and
Crested Wheatgrass *Agropyron cristatum*	2.5-4	30	0.55 - .65	300 (900)	4-5	75 kg/ha N in fall	- extremely long lived bunch type grass, deep fibrous root system with excellent drought tolerance - widely adapted except for peaty or flooded areas, poor regrowth after hay cutting - isolation from ditches important
Intermediate Wheatgrass *Agropyron Intermedium*	3-3.5	30 – 45	0.60	300 (900)	4 - 5	As above	- widely adapted, best on heavier soils - short lived sod forming, deep feeding root and creeping root stalks - appearance similar to quackgrass - seed size similar to Oats
Slender Wheatgrass *Agropyron trachycaulum*	4	30 – 45	1.00 - 1.15	400 (750)	4 - 5	As above	- short lived native bunch grass - high seed yield for 2 years - saline and flood tolerant
Russian Wild Ryegrass *Elymus junceus*	2.5 – 3	60	1.20	150 (700)	5 - 8	As above	- long lived large bunchgrass, fibrous roots, - difficult to establish but very competitive once established - very tolerant to drought , cold and salinity - adapted to well drained sites, can be straight cut
Dahurian Wild Ryegrass *Elymus daburicus*	3 – 4	30 – 60	1.00	400 (900)	3 - 4	As above	- shallow rooted, quick to establish - aggressive and vigorous - shatters easily - some tolerance to salinity
Italian Ryegrass *Lolium multiflorum*	8 – 10	15 – 30		800 (1200)	2	80 kg/ha N	-requires vernalization to set seed, will not set seed in year of seeding - winterhardiness an issue in Canada - crop should be swathed at 35% seed head moisture - requires good moisture, heavy soils prefered
Reed Canarygrass *Phalaris arundinacea*	1.5 – 2	30 – 45	0.60 - 1.25	300 (600)	2 - 3 then renovation	75 kg/ha N fall or early spring	- tall cool season grass, able to grow in very wet conditions - creeping rooted, shatters easily - remove straw immediately after harvest, - do not burn

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Forage & Grass Seed Production Guide 2002 *(Continued from page 8)*

NOTE : For details on markets, contracts and prices contact Seed Trade firms for current applicable information. For contact see Industry Contacts This table is intended for general reference only.

This table is compiled as a general reference guide to the production of forage and turf crops for seed including grasses and legumes. Prices and yields used are average prices in Canada. Forage seed prices can change rapidly, and vary depending on contract specifications, seed quality and purity and seed class. For before making production decisions and for specific and up to date forage seed price information contact seed trade firms for more information. Wherever possible production practises have been modified from Canadian production systems to provide for differences that will be experienced in eastern European production. It should be noted that all of the information relates to seed production management versus management for forage or turf, the management under these systems may differ significantly. Crop and even variety specific seed production production systems will be required to ensure optimum seed production. This information is compiled for reference only.

Red Clover—Trifolium pratense by Maxi Millipede www.flickr.com

Sweet Clover

Alfalfa
www.swcoloradowildflowers

Harvesting Guidelines

by Alberta Agriculture

Grass	When to Harvest*	Harvest Methods	Comments
Bentgrass			
Colonial Creeping Velvet	Late July or early August. Seed separates from seed head when rubbed in the palm of the hand	- Mower with windrow attachment. - Air should be off as seeds are very small and light	Does not shatter easily.
Bluegrass			
Canada Kentucky	July or early August. Heads will be yellow or brown and seed firm. Seed head moisture content 45-50%.	-Swath or straight combine, may have to be run through combine twice - Carefully adjust air intake. - Some growers have had success with rotary or axial flow combines	Does not shatter easily. Cottony filaments at base of seed may cause problems.
Bromegrass			
Meadow Smooth	Late July or early August. Heads will be brown and upper stems turning brown. Seed head moisture content 50-55%	- Swath (may be an advantage to straight combine light crops). - Can be combined when seed moisture content is about 14%, about 10 days after swathing. - Cylinder speed 100-200 rpm slower than for wheat, concaves closed more than for wheat on rub-bar cylinders and sieves wider than for wheat, air off	Meadow brome is about a week earlier than smooth brome and shatters more easily. 10-20% dockage can be expected.
Canarygrass			
Reed	Mid-late July. About 1/2 of the seeds will be brown or grey. Seed head moisture content 50-55%	- Swathing reduces shattering. If straight combining, raise table to avoid basal leaves. - Cylinder speed should be slowed and air intake reduced. - Concaves should be adjusted so seeds are not dehulled.	Shatters very easily. High winds can mean total crop loss. For top grade 55% of the seed must be viable.
Fescue			
Creeping Red	Early August. Seed head moisture content 35-40%	- Swath. Can straight combine, but only if there is not much green material. - Cylinder speed slower than for wheat, clearance between cylinder and concaves should be as wide as possible.	Seed shatters easily if harvest is delayed. Swath in evening or early morning if shattering is a problem.
Meadow Tall	Early August. Heads will be brown with a slight tinge of green (5-15% of seeds immature). Seed head moisture content 45-50%	- Swath. Start with settings for barley and then adjust. - Concave and rub bars should be in good condition to thresh the slippery strawed crop properly	Seed shatters easily if harvest is delayed. Swathing too early results in shrunken, light seed.
Foxtail			
Creeping Meadow	Seed ripens over time in early July. Seed head moisture content 55-60%	- Strippers and specialized machinery. - If combining, set cylinder speed to about 900 rpm. Adjust concave spacing to about 1/4 inch (6 mm). Open top sieve 2/3 to 3/4 and bottom sieve about 1/2. Adjust as needed. Remove all screens. Shut off all air.	Growers are urged to investigate production and handling techniques before growing these grasses.

Grass	When to Harvest*	Harvest Methods	Comments
Orchard Grass			
	Mid-July to early August. Heads will look light brown, some will be greenish, stem turning yellow to brown. Seed head moisture content 35-40%	- Set swather to cut 12-18 inches (30-35 cm) high to avoid basal leaves - Air intake should be cut down. Set cylinder speed and concave so seed is not dehulled.	Seed shatter. Straight combining is not recommended.
Ryegrass			
Italian	Crop will be on greenish side with a seed moisture content of 45%.	- Swath and combine from swath when dried to about 35% seed moisture. - Avoid direct combining as shattering losses can be high.	Shatters very easily. Not usually winter hardy.
Perennial	1-2 florets will come off the head when pulled between fingers. Crop will be greenish with seed head moisture of 50-55%.	- Swath and combine. - Avoid direct combining, as shattering losses can be high."	Shatters easily when mature - not usually winter hardy.
Timothy			
	Early to mid-August. Heads will be grey with brownish tinge and are gold colored at the base. Seed head moisture content 40-50%.	- Swath when 50-60% of head is ripe. Can straight combine when tips of the head show slight shattering. - Cylinder speed about 600-800 rpm, adjust concave 3/16 to 3/8 inch (5-10 mm) in front and 1/16 to 1/8 inch (1.5-3 mm) at back.	Easily dehulled. Seed shattering, dehulled seed and maturity can vary with the variety grown.
Wheatgrass			
Crested	Late July to early August. Heads will be brown, stems a bit green. Seed head moisture content 35-40%.	- Swath. - Concave clearance closed enough to break up spikelets into single seeds. - Straw breakage should be kept to a minimum. - Reduce cylinder speed of spike-toothed combines to one-half and replace concaves with blanks.	Shatters very easily, especially Fairway and Parkway.
Intermediate Pubescent	Late August. Seed head moisture content 50-55% for intermediate, 60-65% for pubescent.	- Swath. - Cylinder speed of 1200-1400 rpm and concave spacing of 3/8 to 1/2 inch (10-13 mm).	Shatters easily. Matures about 3 weeks later than smooth bromegrass.
Northern Slender Streambank	Mid-July. Seed head moisture content 40-45%.	- Swath. - Cylinder speed of 1200-1400 rpm and concave spacing of 3/8 to 1/2 inch (10-13 mm).	Shatters easily.
Tall	Late August-September. Heads brown and stems a bit green. Seed head moisture content 50-55%.	- Swath. - Cylinder speed 1200-1400 rpm and concave spacing of 3/8 to 1/2 inch (10-13 mm).	Shatters easily.
Western	Mid-August. Heads will be brown and stems a bit green.	- Swath. - Cylinder speed 1200-1400 rpm and concave spacing of 3/8 to 1/2 inch (10-13 mm).	Shatters easily.
Wildrye			
Altai Russian	Mid-late July. Straw will be just turning golden yellow. Seed head moisture content 40-45%.	- Swath. Start with a combine setting for wheat and adjust. Use a rub bar cylinder - slow fan and combine speed, set sieves at 1/3 to 1/2 open.	Shatters very easily. Altai does not shatter as readily as Russian.

(Harvesting Guidelines continued on page 12)

Harvesting Guidelines

by Alberta Agriculture

(continued from page 11)

- *Moisture content for entire seed heads established by research at Agriculture Canada, Beaverlodge. You can use a commercial moisture tester or a home oven set at 180oF (82oC). Use a scale to determine before-and-after drying weights. Allow about 4 hours for drying to reach a stable weight when using the home oven method.*

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Source: Agdex 127/50-1.

Post-Harvest Management of Grass Seed Crops

Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Beaverlodge Research Farm, Lacombe-Beaverlodge

Introduction

The perennial growth habit is an important characteristic of many of our amenity and forage grasses. It allows us to enjoy the fruits of a one-time establishment for many years into the future -- in our lawns, golf courses, sports fields, pastures, etc. Most seed growers would also like to take advantage of that perennial growth habit but the production of several, successive, seed crops of most grass species presents a number of major challenges, particularly with respect to the maintenance of economic yields of high-quality seed. Post-harvest crop management therefore becomes an important aspect of the seed production of any grass crop.

Objectives

To conduct a study in the Peace River region of north-western Canada:

- To compare the effects of a diverse set of post-harvest management (PHM) treatments on the yield and quality of three, consecutive, seed crops of 'Boreal' creeping red fescue (**CRF**), 'Safari' and 'Tomahawk' tall fescue (TF) and 'Midnight' Kentucky bluegrass (**KBG**).
- To identify strategies for enhancing and maintaining the seed productivity and quality of each grass over three harvest years (HY).

Post-Harvest Management treatments

1. The removal of all crop/straw residue at a height of 8-10 cm with a flail-type forage harvester immediately after seed harvest (**Standard**) and again, about mid-October just prior to winter, if regrowth was excessive (**Control**);

2. Standard + single burn at 3 kph with a propane burner (Rear's Manufacturing Company, Eugene, Oregon, USA; 3-m wide with nozzles spaced 15 cm apart) (**Single Burn**);

3. Standard + double burn at 3 kph with the propane burner, the first burn being scheduled on the same day as the single burn treatment and the second 2-4 days later (**Double Burn**);

4. Standard + 2.8 kg/ha Karmex DF herbicide (80% diuron) in 250 L/ha water sprayed in early spring the following year, after snow-melt but before greening-up of the grass (**Diuron**);

5. Standard + mechanical stand conditioning with a power harrow immediately after the seed harvest and removal of crop residue (**Power Harrow**). The Power Harrow treatment was applied using a 3-m wide Amazone KG30 with a tine rotor speed of 145/minute driven at a forward speed of 3 kph and a working depth for the vertical tines of 3-5 cm; these settings were selected in order to clean out crop residue and volunteer/weed seedlings from around the plants of each grass, and deter the excessive creeping of the rhizomatous grasses (creeping red fescue and Kentucky bluegrass) while leaving the plants of the bunch-grasses, the two tall fescues, basically intact.

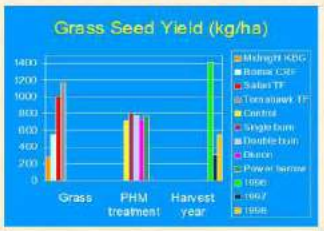
The PHM treatments were applied to the full area of each plot, i.e. 3 x 30 m, immediately after the seed harvest in 1996 (14-19 Aug) and 1997 (8-14 Aug) or in the subsequent spring for the Diuron treatment (29 Apr., 1997, and 16 Apr., 1998). Each treatment was replicated three times.

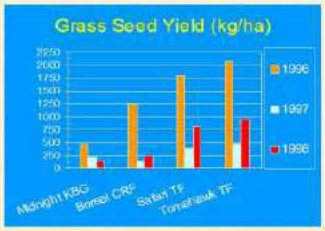
Results

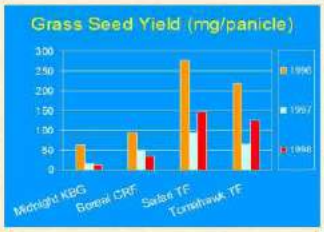
The treatment effects were determined for 10 characteristics of seed yield and quality of the four grass seed crops (GSC). The GSC x PHM x HY and the PHM x HY interactions were not statistically significant (P=0.05) for any characteristic, with the exception of a PHM x HY interaction for specific seed weight. The GSC x HY interaction was significant (P=0.05) for each of the 10 characteristics and the GSC x PHM interaction was significant (P=0.05) for the seed yield of individual panicles, harvest index, seed dockage and thousand-seed weight but not for whole-plant or grass seed yield (per unit land area), panicle density, time of seed maturity, specific seed weight or germination capacity. Furthermore, the main effect of PHM was only statistically significant (P=0.05) for specific seed weight and germination capacity but the differences among the PHM means were small and of no agronomic importance, viz. 24.3-26.1 kg/hL for specific seed weight and 76.8-81.0 % for germination capacity.

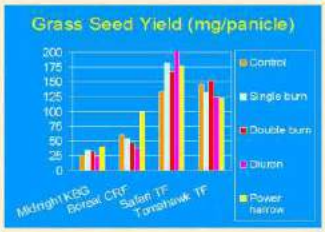
Results continued

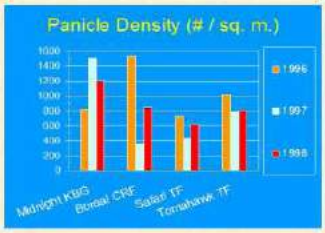
Of particular note, among the characteristics for which the GSC x PHM interaction was statistically significant (P=0.05), was the relatively large increase in seed yield per panicle with the Power Harrow treatment for Boreal CRF, the relatively high thousand-seed weight for Midnight KBG with the Control treatment, and the relatively low harvest index and high seed dockage for Tomahawk TF with the Power Harrow treatment. Some treatment effects on seed yield and panicle density are shown below.











Conclusions

1. Over three consecutive harvest years, the seed yield and quality of Midnight KBG, Boreal CRF, and Safari and Tomahawk TF were only marginally influenced by the diverse set of post-harvest management treatments.
2. The effect of the harvest year on seed yield and quality characteristics differed among the four grasses, primarily because of the differential responses of the bluegrass as compared to the fescue grasses.
3. Seed yield of Midnight KBG was limited in the first harvest year by its inability to colonise the land area between the 30 cm wide rows and produce a high density of panicles. In the subsequent two harvest years, despite a higher density of panicles than the other three grasses, its seed yield per panicle and per unit land area were lower than that of the other three grasses.
4. The mechanical thinning of Boreal CRF increased the seed yield of individual panicles (to 165% of the control) but decreased their density such that seed yield per unit land area was not increased.
5. Averaged over three consecutive harvest years and five PHM treatments, the annual seed yield of the two TF cultivars was approximately twice that of Boreal CRF and four times that of Midnight KBG.
6. In this northerly latitude, the effects of any post-harvest crop management practice on the seed productivity of grasses may be limited by the short period of environmental conditions, between seed harvest and the onset of winter, that are conducive to vegetative and reproductive tiller development.

Canada

Acknowledgement: The conduct of this study was assisted by the financial support of Turf-Seed Inc., Hubbard, Oregon, USA.

Selecting A Grass Seed Crop

Crop	Ease of establish-ment	Years of Pro-duction	Ease of Pro-duc-tion	Salinity Tolerance	Drought Tolerance	Moisture Requirement	Flooding Tolerance
Kentucky Bluegrass – *Poa Pratense*	**difficult**	**4 – 5**	**6**	**Poor**	**Very poor**	**Very High**	**Excellent**
Creeping Red Fescue – *Festuca rubra rubra*	**Moderate - easy**	**2 – 3**	**5**	**Moderate**	**Moderate**	**High**	**Good**
Slender creeping fescue *Festuca rubra trichophylla*	**moderate**	**1 – biennial**	**7**	**Excellent**	**Moderate**	**High**	**Good**
Chewings fescue *Festuca rubra commutata*	**moderate**	**2 – 3**	**4**	**Moderate**	**Good**	**Moderate**	**Good**
Sheeps fescue *Festuca ovena tenuifolia*	**Difficult**	**2 – 3**	**5**	**Poor**	**Good**	**Moderate**	**Good**
Hard Fescue *Festuca ovina duriuscula*	**Difficult**	**2 – 3**	**5**	**Poor**	**Good**	**Moderate**	**Good**
Tall Fescue Festuca arundinacea	**Easy**	**3 – 4**	**2**	**Good**	**Good**	**Moderate**	**Good**
Annual Ryegrass – Westerwolds *Lollium Multiflorum westerwoldicum*	**Easy**	**1 – annual**	**1**	**Moderate**	**Poor**	**High**	**Good**
Itallian Ryegrass *Lollium Multiflorum*	**Easy**	**1 – 2**	**2**	**Moderate**	**Poor**	**High**	**Good**
Perennial ryegrass *Lollium Perenne*	**Easy**	**2 – 3**	**3**	**Moderate**	**Poor**	**High**	**Poor**
Timothy *Phleum pratense*	**Easy**	**4 – 5**	**3**	**Poor**	**Poor**	**High**	**Very good**
Meadow bromegrass *Bromus riparius*	**Easy**	**4 – 5**	**3**	**Moderate**	**Moderate**	**Moderate**	**Very good**
Smooth bromegrass *Bromus inermus*	**Easy**	**4 – 5**	**3**	**Moderate**	**Good**	**Moderate**	**Good**
Reed Canarygrass Phalaris Arundinacea	**Moderate**	**4 – 5**	**5**	**Poor**	**Poor**	**High**	**Excellent**
Orchardgrass – Cocksfoot Dactylis Glomerata	**Easy**	**3 – 4**	**3**	**Poor**	**Moderate**	**Moderate**	**Good**
Alfalfa – Lucerne Medicago sativa	**Easy**	**4 – 5**	**6**	**Poor**	**Moderate**	**Moderate**	**Poor**
Birdsfoot trefoil Lotus corniculatis	**Moderate**	**3 – 5**	**7**	**Poor**	**Moderate**	**Moderate**	**Poor**
Red Clover *Trifolium pratense*	**Easy**	**1 – 2**	**4**	**Poor**	**Poor**	**Moderate**	**Poor**
Alsike clover Trifolium hybridum	**Easy**	**2**	**4**	**Poor**	**Poor**	**Moderate**	**Poor**

NOTE : For details on markets and available contracts contact Seed Trade firms for current applicable information. This table is intended for general reference only.

2009 Manitoba Herbicide Trials in Grass Seed Crops; we will report the findings as they are available.

Options for Chemical Weed Control in Perennial Ryegrass and,Timothy

Control of Japanese and Downy Brome in Perennial Ryegrass and control of Night Flowering Catch-Fly in Timothy are seen to be priorities in the grass seed industry. MFSA is investigating control measures in the form of herbicides.

Trials will be carried out using the MFSA bike sprayer in 3m by 6m plots, following a random complete block design with 4 replicates. Two PRG sites have been chosen around Beausejour, two Timothy sites were chosen around Arborg and Fisher Branch. The products and rates used can be found in the tables below.

Table 1. Perennial Reygrass herbicide trial - Products and rates.

Treatment	Product	Rate
1	**Sencor 1X**	111 g/ac
2	**Sencor 2X**	222 g/ac
3	**Axial 1X**	243 mL/ac
4	**Velocity MC 1X**	
	Velocity	0.2 L/ac
	Velocity 2	0.33L/ac
5	**Velocity MC 2X**	
	Velocity	0.4 L/ac
	Velocity 2	0.66 L/ac
6	**Infinity 1X**	0.33 L/ac
7	**Infinity 2X**	0.66 L/ac

NOTE: All treatments will be sprayed using 40 L solution/ac.

Table 2. Timothy herbicide trial - Products and rates.

Treatment	Product	Rate
1	**Thumper 1X**	0.4 L/ac
2	**Thumper 2X**	0.8L/ac
3	**Buctirl M**	0.4 L/ac
4	**Sencor**	111 g/ac
5	**Estprop Plus 1X**	0.71 L/ac
6	**Estaprop Plux 2X**	1.42 L/ac
7	**Velocity MC 1X**	
	Velocity	0.2 L/ac
	Velocity 2	0.33L/ac
8	**Velocity MC 2X**	
	Velocity	0.4 L/ac
	Velocity 2	0.66 L/ac
9	**Infinity 1X**	0.33 L/ac
10	**Infinity 2X**	0.66 L/ac

NOTE: All treatments will be sprayed using 40 L solution/ac.

Trials will be monitored after spraying and rated for crop tolerance and weed control efficacy at 7, 14 and 21 days after spraying. The samples will be harvested when mature, threshed and cleaned, then analyzed for yield comparisons.

Acknowledgments: We would like to thank all of the producers who have agreed to let us conduct these trials on their land. The MFSA could not carry out our research without the generous donations of our producers. Further, the MFSA would like to thank the chemical companies that have generously donated sample product for our 2009 trials: thank you to Bayer Crop

The SFSDC Annual Field Day 2009

Thanks you to AG-Vision Seeds Ltd for the wonderful field and plant tours and for providing lunch to the participants. Thank you to Pickseed for the field tour also.

Ag-Vision field tour of a Crested Wheat production field

Norm from Ag-Vision Seeds Ltd gives us a over-view of field fertility and herbicide applications.

Julie Soroka sweeping forage grass seed crop for pests.

Ag-Vision Seeds Ltd operations at Carrot River

Ag-Vision Seeds Ltd New Ware-house AMAZING!!!

Pickseeds 'Success Hybrid Brome field with Clayton Myhre and Bruce Coul-man

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