1038-3549

International Herbage Seed Group

Newsletter

Number 36 **July 2003**

President:
Dr. William C. Young III, PhD
Professor and Extension Seed Production Specialist,
Department of Crop & Soil Science
Crop Science Building, Room 127
Oregon State University
Corvallis, OR 97331-3002
Phone: 541-737-5859
Fax: 541-737-1589
E-mail:William.C.Young@orst.edu

Newsletter Editor:
Dr Athole H. Marshall
Institute of Grassland and Environmental Research, Plas Gogerddan
Aberystwyth, SY23 3EB
United Kingdom
Phone: +44 1970 823171
Facsimile: +44 1970 828357
E-Mail: athole.marshall@bbsrc.ac.uk

IHSG Conference Approaches

The 5th International Herbage Seed Group conference is rapidly approaching. It will be held at the University of Queensland, Gatton Campus (Brisbane, AUSTRALIA) from November 23-29, 2003. The conference will be a mix of oral and poster presentations with plenty of time for discussion. There will also be a post-conference tour of temperate herbage seed production (in central and northern Victoria). As many previous conferences will testify the conference tours have been very enjoyable and informative. Further details of the scientific programme and post confernce tour are included inside.

This is the 2nd edition of the newsletter to be produced entirely on the web. Please continure to send in news articles or short papers for publication.

Remember- its your newsletter.

****
****
****

Contents

President's Column

Welcome to the second issue (No. 36) of the electronic-only edition of the International Herbage Seed Group newsletter. Again, those reading it have received notice via e-mail that it was recently posted on the IHSG web site (http://cropandsoil.oregonstate.edu/ihsg/default.htm). Those astute readers may have noticed that the URL for the IHSG web site has changed since our last newsletter. This change was also announced via e-mail to all members on May 14. If you have bookmarked the old address (http://www.css.orst.edu/ihsg/default.htm), now would be a good time to update this.

I must tell you that a lot of energy has been poured into coordinating the sundry details for the upcoming International Herbage Seed Conference in Australia this November. There is much more to be said about this on the subsequent pages of this newsletter. In addition, those of you who were pre-registered for the conference have seen additional communiqués sent via e-mail. Of most importance is the need to send your registration fee prior to July 31 in order to receive the best price for attending the conference (A$550 vs. A$700 late registration). In addition, the conference committee has requested that papers for the published proceedings also be submitted by July 31. Please don't delay if you are planning to attend the conference.

Let me personally say that the IHSG has been an important part of my life, and I suspect it has been an important part of many of yours, too. It is a vital mechanism for professional education, growth, and fellowship. I would like to encourage all reading this message to consider participating in the discovery of new professional opportunities by forging friendships within our diverse membership. My experience has lead me to believe that as a group we are small enough and flexible enough to accommodate an array of interests dealing with all aspects of herbage seed. The IHSC in Australia will be a wonderful opportunity to experience this. Please join us!

Bill Young

****

A comparison of the quality of alfalfa leafcutting bee cocoons at three North American laboratories

Daphne T. Fairey[1], Nigel A. Fairey[2], Karen Strickler[3] and Dale Lundahl[4]

Abstract

There is generally a surplus of leafcutting bee (*Megachile rotundata*) cocoons for the pollination of alfalfa (*Medicago* spp.) in western Canada. In contrast, in the Pacific Northwest USA, a deficit of cocoons generally exists. Quality analyses of alfalfa leafcutting bee cocoons are conducted at three laboratories in North America, one in Canada and two in the Pacific Northwest USA. This report compares the assessments made at these three laboratories for 20 batches of cocoons, in terms of the number of live bee larvae per kilogram of cocoons, and the proportions of cocoons in various categories (live larvae, parasitized larvae, pollen balls, and miscellaneous). The development of a standardized assessment protocol by these three laboratories could be beneficial for international trade in alfalfa leafcutting bee cocoons.

Introduction

Seed production of leguminous forage crops requires insects for effective pollination. In many parts of North America the leafcutting bee (*Megachile rotundata*) is the pollinator of choice for alfalfa (*Medicago* spp.)[2,12]. In the process of collecting pollen and nectar to nourish its offspring, the leafcutting bee transfers pollen from flower to flower. The leafcutting bee is also an effective pollinator for crop species such as alsike clover (*Trifolium hybridum*), red clover (*Trifolium pratense*)[7,4,5] and canola (*Brassica campestris*)[4].

In north-western Canada, 50,000 adult leafcutting bees are recommended for each hectare of alfalfa seed crop[11]. The adult bees die before the end of the growing season but, under favorable conditions in the Peace River region of north-western Canada, as many as 250% of the original number of bees may be recovered as dormant larvae at the end of the growing season[4]. Such successful multiplication often results in an excess of bees for the subsequent seed crop, so the superfluous cocoons can be made available to other seed growers in Canada, the USA or overseas.

In the Pacific Northwest USA, the stocking rate of leafcutting bees for an established stand of alfalfa is 100,000 per hectare[1], twice that utilized in the Peace River region of north-western Canada[11]. The recovery rate of dormant larvae at the end of the growing season in the Pacific Northwest USA is generally no greater than 50% because of the high incidence of chalkbrood, *Ascosphaera aggregata*[12]. Until 1973, there was a low incidence (< 1%) of chalkbrood disease in western North America but bee losses rose to 20% by 1974 and to 40% by 1976[9]. Although chalkbrood was first confirmed in western Canada in 1985 and, based on annual surveys, has been detected in the principal alfalfa seed growing regions, the leafcutting bees produced in the Peace River region have remained free of the disease, at least until the 1995 growing season when the latest survey was conducted[6].

After each growing season, beekeepers can have samples of their leafcutting bee cocoons analyzed for a range of quality characteristics. The analyses provide information to assist in the sale of superfluous cocoons and for the subsequent management of the pollinators. Three laboratories analyze the quality of leafcutting bee cocoons in North America: the Canadian Cocoon Testing Centre of the Canadian Alfalfa Seed Council at Brooks, Alberta, Canada (Brooks); the Parma Cocoon Testing Laboratory of the University of Idaho Research and Extension Center at Parma, Idaho, USA (Parma); and the Laboratory of the Montana Department of Agriculture at Helena, Montana, USA (Helena). The analysis common to these laboratories is an X-ray evaluation of a representative sample of the bee cocoons. This report compares assessments made by these three laboratories, in terms of the number of live bee larvae per kilogram of cocoons, and the proportions of cocoons in various categories (live larvae, parasitized larvae, pollen balls, chalkbrood-infected, and miscellaneous).

Materials and methods

During the winter of 1994-95, we obtained 250g of alfalfa leafcutting bee cocoons from each of 20 batches of cocoons saved from the 1994 growing season by producers in the Peace River region of north-western Canada. We sent a 75g sub-sample of each batch of cocoons to each laboratory (Brooks, Parma and Helena). The cocoons were stored in a refrigerator (2-7°C) for up to one week before using a Faxitron model 43804n (or an equivalent replacement model 43855A) to make an X-ray image of all the cocoons in 50g of each sub-sample. Kodak Industrex M film was used with the following X-ray machine settings: a voltage of 20 kv and a current of 2.9 ma for 60 seconds at Brooks; 21 kv with a current of 2.9 ma for 60 seconds at Parma; and 30 kv with a current of 2.0 ma for 30-seconds at Helena. Each X-ray image was assessed visually to assign the contents of each cocoon to one of the categories defined in Table 1. In cases where a technician had significant doubt about the identity of a specific cocoon from its X-ray image, the cocoon was dissected to confirm its contents.

The differences between laboratories were determined for each experimental characteristic using an analysis of variance. Prior to analysis, a transformation was used, if necessary, to en-

[1] Formerly Beaverlodge Research Farm, Agriculture & Agri-Food Canada, P.O. Box 29, Beaverlodge, Alberta, Canada T0H 0C0

[2] Beaverlodge Research Farm, Agriculture & Agri-Food Canada, P.O. Box 29, Beaverlodge, Alberta, Canada T0H 0C0

[3] Formerly University of Idaho, Parma Research and Extension Center, 29603 U of I Lane, Parma, Idaho, United States 83660

[4] Formerly Montana Department of Agriculture, P.O. Box 200201, Helena, Montana, United States 59620-0201

sure that the values were distributed normally. A square-root transformation was used to normalize the distribution of the percentage of cocoons that contained parasitized larvae, and a logarithmic transformation was used to normalize the distribution of the percentage of cocoons that contained pollen balls.

Results

No cocoons were observed to be infected with chalkbrood disease and a summary of the other quality characteristics, as assessed by each of the three laboratories, is shown in Table 2. The Helena laboratory reported a significantly greater percentage of cocoons containing live larvae than either the Brooks or Parma laboratories. Consequently, the number of live larvae per kilogram of cocoons was also significantly higher at the Helena laboratory than at either of the other laboratories. Compared to the other two laboratories, the Helena laboratory reported a significantly lower percentage of cocoons with parasitized larvae and with pollen balls. However, the percentage of cocoons with parasitized larvae was less than 1% at each laboratory.

Discussion

The results of this study indicate that the leafcutting bee cells produced in the Peace River region of Alberta and British Columbia were generally of high quality. Chalkbrood disease was not detected in any of the 20 batches of bees used for this study**.** The incidence of chalkbrood disease is a major anti-quality factor for leafcutting bees[10,12]. The absence of chalkbrood disease is in agreement with previous surveys of the quality of leafcutting bees produced in the Peace River region of north-western Canada[6]. In a review of the status of the leafcutting bee as a pollinator of alfalfa, Peterson *et al*. indicated that the incidence of chalkbrood disease in the Pacific Northwest USA was a major reason for the annual importation of cocoons from Canada[12]. Presumably the geographical isolation of the Peace River region has helped maintain its chalkbrood-free status. However, sustaining that status, and the biological and economic advantages it confers, will require vigilance as the disease can spread rapidly[9]. No surveys on the quality of leafcutting bees produced in the Peace River region have been conducted since 1995[6] so the current status of chalkbrood in the region requires confirmation.

The number of live larvae per kilogram of cocoons averaged 9725 and compares favourably with the 5-year (1991 to 1995) mean of 8327 (range of 5340 to 11280) for bees produced in the Peace River region, and with the Canadian mean of 8907 (range of 4678 to 11819) based on 249 samples from the 1995 growing season[6]. Similarly, the percentage of cocoons with live larvae, which averaged 78.2%, compares favourably with the Peace River region's 5-year average (1991 to 1995) of 69.3%, and the

Table 1. Descriptions of the five categories of alfalfa leafcutting bee cocoons used for quality assessment.

Category	Description of cocoon contents
Live larva	Healthy larva or pre-pupa
Parasitized larva	Larva with parasites, usually chalcids (*Pteromalus venustus*)
Pollen ball	A provisioned cell, or aggregations of pollen, without a larva
Chalkbrood	A dead larva or pre-pupa with sporulating or non-sporulating chalkbrood disease (*Ascosphaera aggregata*)
Miscellaneous	Any cocoon not included in the other four categories such as: an empty cocoon (possibly not provisioned, or the larva previously destroyed by parasites or disease); a mechanically damaged cocoon; a dead larva, pre-pupa (usually a second generation bee) or adult bee (usually a nesting female); or a cocoon destroyed partially by predators (such as checkered flower beetle) or by scavengers (such as smooth carpet beetle)

Table 2. Some quality characteristics of alfalfa leafcutting bee cocoons from the Peace River region of Canada as assessed at three laboratories in North America[z].

	Laboratory			
Characteristic[y]	Brooks	Parma	Helena	Mean
Live larvae (number per kg cocoons)	9580a	9463a	10133b	9725
Live larvae (% of total cocoons)	76.3a	75.7a	82.7b	78.2
Parasitized larvae (% of total cocoons)	0.7b	0.7b	0.3a	0.6
Pollen balls (% of total cocoons)	12.3c	10.0b	6.2a	9.1
Miscellaneous (% of total cocoons)	9.2a	12.3b	9.8a	10.4

[z] Values for each laboratory are means of 20 batches of bees and, within each measurement, means followed by the same letter are not significantly different from each other at the 5% level of statistical probability. [y] Percentages within a column do not sum exactly to 100 because of the back-transformation and rounding of some values.

Canadian average of 73.3% for the 1995 growing season[6].

The percentage of cocoons with parasitized larvae averaged 0.6%, a value lower than the regional 5-year (1991 to 1995) average of 1.3%[6]. Although the leafcutting bee has numerous natural enemies[3], the proportion of parasitism in commercial operations is maintained at a low incidence with the regular use of dichlorvos resin strips[8]. The percentage of cocoons with pollen balls and miscellaneous contents averaged 9.1 and 10.4%, respectively. The proportion of cocoons with pollen balls was lower than the 5-year (1991 to 1995) regional average of 16.8% (range of 14.6 to 17.8%)[6].

The differences observed among the three laboratories may be caused by the natural variation among the three sub-samples allocated to each laboratory from the 20 batches of bees, or by the interpretation made at each laboratory as to which category each specific cocoon belongs. In cases where a technician had doubt about the identity of a specific cocoon in the X-ray image, the cocoon would be dissected to confirm its contents. However, different individuals may have different levels of doubt about the identity of particular images, and the fewer the number of confirmations the greater is the likelihood that a cocoon's contents may be identified incorrectly. Thus, the differences observed for the Helena laboratory compared to the other two laboratories appear to be greater than would be expected from the natural variation among sub-samples from the same batch of cocoons. It is interesting to speculate whether some of the observations made at the Helena laboratory could be associated with the use of slightly different settings for the X-ray machine that resulted in an over-estimation of the proportion of live larvae and under-estimation of the proportion of heavier pollen balls. The X-ray images at Brooks and Parma laboratories used a voltage of 20-21 kvp and a current of 2.9 ma for 60 seconds whereas the Helena laboratory used a voltage of 30 kvp with a current of 2.0 ma for 30-seconds.

These results suggest that it could be beneficial for the three North American laboratories to standardize the protocol for the X-ray analysis of the quality of leafcutting bee cocoons, in order to improve the consistency of their assessments. This could be particularly helpful to bee brokers and producers in Canada and the USA. In addition to standardizing the X-ray machine protocol, it would be helpful for the technicians at each of the three laboratories to hone their skills by generating and interpreting X-ray images from common sub-samples of cocoons. The interpretations made at each laboratory could be compared to the actual content of each specific cell, as determined by manual dissection. The laboratory analyses should be as representative as possible of the batch of bees. Thus, it is also important to encourage bee producers to use appropriate procedures for drawing each sample of cocoons (e.g., procedures such as those posted on the world wide web at www.pollinatorparadise.com/samplingtxt.htm and at www.jwmleafcutters.com/sampling_methodsus.htm).

Acknowledgements

We thank the technical staff of the laboratories at Brooks, Parma and Helena for their timely processing of the samples, and the producers who provided the samples of leafcutting bee cells for this study. This project was partially funded by a Farming for the Future grant from the Alberta Agricultural Research Institute.

References

1. BAIRD, C R; BITNER, R M. (1982) Managing leafcutting bees with the loose cell method. *University of Idaho, College of Agriculture, Current Information Services* No. 588: 1-4.
2. BITNER, R M (1982) Current management practices with the leafcutter bee in Idaho, U.S.A. *Proceedings of the First International Symposium on Alfalfa Leafcutting Bee Management. University of Saskatchewan, Saskatoon, Canada* (ISBN: 0-88880-126-2). Pages 161-164.
3. EVES, J D; MAYER, D F; JOHANSEN, C A (1980) Parasites, predators, and nest destroyers of the alfalfa leafcutting bee, *Megachile rotundata*. *Washington State University, Cooperative Extension Service, Western Regional Extension Publication* 32: 1-15.
4. FAIREY, D T; LEFKOVITCH, L P (1991) Reproduction of *Megachile rotundata* Fab. foraging on *Trifolium* spp. and *Brassica campestris*. *Acta Horticulturae* 288: 185-189.
5. FAIREY, D T; LEFKOVITCH, L P (1993) Pollination of *Trifolium hybridum* by *Megachile rotundata*. *Journal of Applied Seed Production* 11: 34-38.
6. FAIREY, D T; LIEVERSE, J A C (1996) Quality of leafcutting bee cells produced in the Peace River region during the 1995 growing season. *Alberta Alfalfa Seed Producers' Association (Peace Branch) and Agriculture & Agri-Food Canada, Beaverlodge, Alberta,* Publication 96-01: 1-3.
7. FAIREY, D T; LEFKOVITCH, L P; LIEVERSE, J A C (1989) The leafcutting bee, *Megachile rotundata* (F.): a potential pollinator of red clover. *Journal of Applied Entomology* 107: 52-57.
8. HILL, B D; RICHARDS, K W; SCHAALJE, G B (1984) Use of dichlorvos resin strips to reduce parasitism of alfalfa leafcutter bee (Hymenoptera: Megachilidae) cocoons during incubation. *Journal of Economic Entomology* 77: 1307-1312.
9. KISH, L P (1982) Epizootiology of chalkbrood disease. *Proceedings of the First International Symposium on Alfalfa Leafcutting Bee Management. University of Saskatchewan, Saskatoon, Canada* (ISBN: 0-88880-126-2). Pages 91-97.
10. KISH, L P; WATERS, N D; HOMAN, H W (1979) Chalkbrood: A serious disease in the alfalfa leafcutting bee and what we can do about it. University of Idaho, College of Agriculture, *Current Information Series No.* 477: 1-2.
11. PANKIW, P; SIEMENS, B; LIEVERSE, J (1979) Alfalfa leaf cutter bees in northwestern Canada. *Agriculture Canada Publication NRG 79-10, Beaverlodge, Alberta,* p.1-11.
12. PETERSON, S S; BAIRD, C R; BITNER, R M (1992) Current status of the alfalfa leafcutting bee, *Megachile rotundata*, as a pollinator of alfalfa seed. *Bee Science* 2: 135-142.

In Memory of: DR. DAPHNE FAIREY

I have recently received notice of the death of Dr. Daphne Fairey. I know many long-time IHSG (formerly IHSPRG) members will be saddened by this news. Dr. Fairy served as president of this organization from 1993-97. During her tenure, she co-edited (with Dr. John G. Hampton) the book Forage Seed Production Volume 1: Temperate Species, which was published in 1997 by the Commonwealth Agricultural Bureau International. Scientists and seed trade personnel from a number of seed growing regions of the world contributed to this monograph. Daphne also helped organize IHSPRG workshops in New Zealand and Canada that provided an opportunity for seed growers, trade and research personnel to exchange information on forage seed production and marketing.

Daphne Fairey was of British descent and was born in India in 1946, where she obtained a BSc in Botany and an MSc in Agriculture. Her Master's research was on assimilate translocation in wheat in relation to defoliation. After completion of her Master's degree, Daphne worked briefly with the wheat breeding program of the Rockefeller Foundation in India. She then moved to Australia where she obtained a PhD in Agronomy at Adelaide University, specializing in the environmental control of apical morphogenesis in wheat. Daphne came to Canada in 1972 as a Research Associate with the wheat breeding program at the University of Guelph in Ontario.

In late 1976, Daphne and her husband, Nigel, and baby son, Adrian, moved to Agassiz in the Lower Fraser Valley of British Columbia, where Nigel began working for Agriculture Canada. Their second son, Julian, was born in 1977, and Daphne spent her time nurturing her sons and working part-time on contract research projects with wheat and turf grass culture.

In 1981 the family moved to Beaverlodge, Alberta, where Daphne was appointed as a Research Scientist with Agriculture Canada. This was the start of her involvement with seed production and pollination of forage legume crops, and where her passion for the pollinating activities of leafcutting and bumblebees began to evolve. For many years, Daphne was responsible for breeder seed production of all the forage varieties bred at Beaverlodge, and coordinated this production with the Canadian Seed Growers' Association and numerous commercial forage seed companies. Through her research, Daphne contributed greatly to the Canadian and international forage seed industry, and her many research publications and appointments to both national and international organizations have advanced the science of forage seed production.

Dr. Fairey was a member of the Alberta Forage Seed Council, where she participated in a number of initiatives such as the establishment of a Forage Seed Commission for the Peace River region of Alberta and British Columbia. For many years, Daphne was the Scientific Advisor to the Alberta Alfalfa Seed Producers' Association, Peace Branch. Daphne conducted many research projects for this producer organization and represented them on the Canadian Alfalfa Seed Council and on the Advisory Board of the Canadian Leafcutting Bee Cocoon Testing Centre at Brooks, Alberta. In the mid-1990s, her efforts helped this group evolve into the Peace Region Forage Seed Association, which represented grass as well as legume seed crops.

Daphne left Agriculture Canada in 1997 and, in a private capacity, pursued her interests in forage seed production and pollination. In 2002, Daphne was recognized by the Canadian Seed Growers' Association for her contribution to the seed industry and Canadian agriculture by being made an Honorary Life Member.

Daphne passed away on 6 March 2003, following a 7-year battle with a cancerous brain tumor. Her husband, Nigel, and sons, Adrian and Julian, mourn her passing. If you would like to send condolences or a note with memories of your association with Daphne, address them to Nigel at: FaireyN@agr.gc.ca.

Bill Young

****

Scientific Programme - 5th International Herbage Seed Conference 23rd-29th November 2003

Theme:

Herbage Seed Markets in the New Millenium - New Markets, New Products, New Opportunities

Sessions topics:

1. Regional, Global & Environmental Issues

2. Genetics & Breeding

3. Seed Crop Physiology & Management

4. Seed Harvesting & Processing

5. Seed Quality

6. Endophytic & Symbiotic Relationships

PROVISIONAL PROGRAM FOR 5TH INTERNATIONAL HERBAGE SEED CONFERENCE - 2003

Sunday 23 November 2003

Registration and (evening) welcoming cocktails

Monday 24 November 2003

9:00-10:30 am:	Official Conference opening Michel Nas (Barenbrug International) - A Global perspective on Future Trends and Opportunities in Herbage Seed Markets Dr Kevin Boyce (Seed Quality Management Australia- Overview of the Australian Herbage Seed Industry
11:00-12:30 pm:	Oral presentations (topics 1 & 3)
1:30-2:00 pm:	Oral presentations (topics 1 &3)
2:00-3:00 pm:	Poster presentations
3:30-5:00 pm:	Tour of Gatton Campus and facilities
Evening:	BBQ

Tuesday 25 November 2003

9:00-10:30 am:	Dr Wayne Hanna (University of Georgia) - progress in Apomixis Breeding and Its Implication for Herbage Seed Production Oral presentations (topics 2 & 4)
11:00-12:30 pm:	Oral presentations (topics 5 & 6)
1:00-6:00 pm:	Tour to Brisbane (herbage seed marketing at Heritage Seeds, Rocklea, and amenity grass research at Redlands Research Station)
7:00-10:30 pm:	Conference dinner

Wednesday 26 November 2003

9:00-10:30 am: Dr Jean Hanson (International Livestock Research Institute) - Meeting the Need for Herbage Seeds in Developing Countriestrends in herbage seed markets in developing countries

Oral presentations (all topics)

11:00-11.30 am Oral presentations (all topics)

11.30-12:30 pm: Poster presentations (all topics)

1:30-6:00 pm: Tour to Toowoomba (seed company visits)

Thursday 27 November 2003

(am) Air travel Brisbane - Melbourne
(pm) Post- Conference tour of temperate herbage seed production in central & northern Victoria

Friday 28 November 2003

Post conference tour of temperate herbage seed production (central & Norther Victoria **(Details on page 9)**

Saturday 29 November 2003

Completion of post-Conference tour

Sunday 30 November 2003

Departure from Melbourne Tullamarine Airport

********** **********

5th International Herbage Seed Conference

Post-Conference Tour of Temperate Herbage Seed Production

(central & northern Victoria, southern NSW)

Thursday 27 November 2003

(am) Air travel Brisbane-Melbourne

(pm) Valley Seeds, Yaarck

Valley Seeds has been breeding ryegrass since 1975, principally for improved winter growth and drought tolerance, and now has several registered varieties of annual and perennial ryegrass for forage and turf use. Plots of new ryegrass varieties, including typical pasture blends, will be on show, as well as a small area of turf grass varieties maintained under both irrigated and non-irrigated conditions.

All Breeders and Basic seed is produced and cleaned on-site. As well as a large commercial seed processing plant, the company has a packaging plant where seed for approximately 40% of Australia's home garden lawn seed market is packed.

Overnight: Albury Manor House

Friday 28 November 2003

(am) Heritage Seeds, Howlong

This is Heritage Seeds main research farm. Visitors should be able to see breeding and evaluation trials on a wide range of forage crops, grasses, and alfalfa.

(pm) Native Seeds, Corowa

Australia's native grasses have growing markets, mainly for amenity, environmental and revegetation purposes, but are among the most difficult seeds to produce and process. Native Seeds has taken up this challenge, and is growing seed crops of wallaby grass, wheat grass, kangaroo grass, and other native grasses at Corowa.

Overnight: Albury Manor House

Saturday 29 November 2003

(am) Parkseeds, Mansfield (to be confirmed)

Parkseeds is Australia's largest producer of temperate grass seeds.

(pm) StrathAyr Turf Systems, Seymour

As well as a functioning turf farm with grassesranging from tall fescue to bermudagrass, the tour will see some of the innovative engineering (e.g. turf replacement systems, drop-in wickets) that has seen StrathAyr awarded construction contracts for stadiums, racecourses, etc, around the world.

Overnight: Tullamarine Airport Motor Inn

Sunday 30 November 2003

Departure from Melbourne Tullamarine Airport

****

The **Fifth International Herbage Seed Conference** will be held on the Gatton Campus of the University of Queensland from 23 to 26 November 2003. This is located in the heart of the Lockyer Valley, an intensive farming region a little over an hour's drive from Brisbane International Airport. Gatton is the main centre for the University's seed technology courses, and is strategically located close to most of the subtropical seed houses in Australia.

The Conference theme "New Markets, New Products, New Opportunities" reflects the on-going need to take stock of the ever-changing markets for herbage seed as we enter the new millennium.

WHO SHOULD ATTEND

The International Herbage Seed Conference provides an excellent forum for formal and informal discussions of the many important issues associated with herbage seed production, including genetics and plant breeding, physiology, pathology and endophytes, seed crop management and harvesting, seed processing and testing, and marketing trends and environmental concerns.

Field excursions to research sites and commercial seed operations are also planned.

As such, the Conference will benefit all researchers, students and commercial seedsmen engaged in herbage seed research or the extension and application of such research.

CONFERENCE PROGRAM

The Conference will start with registration and welcoming activities on the evening of Sunday, 23 November 2003. The morning program over the next 3 days (24-26 November) will be given over to the presentation of delegates' papers either in oral or in poster form. During the afternoon sessions, short trips will be made to see a range of herbage seed related activities in south-east Queensland.

A more detailed program will be posted on the IHSG website http://www.css.orst.edu/ihsg/.

REGISTRATION

The Registration fee has been set at A$550.00 if paid by the closing date of 31 July 2003. For registrations received after that date, a late fee of A$700.00 will apply.

The Registration fee covers single entrance to all Conference sessions and field tours, Conference proceedings, and all meals including the Conference Dinner, but not accommodation (see below).

PRESENTATION OF PAPERS

Formal sessions during the Conference will include four invited presentations on special topics, 20 volunteer oral presentations, and an unlimited number of poster papers.

Registrants are asked to indicate their preference regarding oral or poster presentation of submitted papers. However, the final decision regarding the form of presentation for each paper will be taken by the Organising Committee, and communicated to the main author by 31 August 2003 (one month after the closing date for registration and the final submission of manuscripts).

SUBMISSION OF MANUSCRIPTS

Please indicate on your Registration form the proposed title(s) of paper(s) you intend to submit for the Conference, together with your preference for oral or poster presentation.

The closing date for the submission of full manuscripts is 31 July 2003. These should be prepared in accordance with the guidelines prepared for authors of Conference papers. A copy of the Instructions for Authors will be forwarded to all those who indicate on their registration form that they will be submitting a paper, and can also be downloaded from the IHSG website http://www.css.orst.edu/ihsg/.

ACCOMPANYING PERSONS

The Registration cost for accompanying persons is A$275.00. This covers incidental costs and all meals including the Conference Dinner, but not accommodation (see below).

Daily excursions will be organised at a small additional charge to cover vehicle costs and any entrance fees applicable.

ACCOMMODATION

Because the Conference is being held during the University summer vacation, on-Campus accommodation is available to house Conference delegates in single rooms in one of the halls of residence. The current cost is A$33.00 per night payable through a deposit for one night with your registration to secure a room and the balance due in full during the Conference.

TRANSPORTATION

Please note that conference participants are responsible for their own transportation to and from the conference venue. For those travelling by car, Gatton is approximately 1 to 1½ hours drive from Brisbane Airport west of the city on the road to Toowoomba.

From Brisbane Airport, the Airport Flyer coach service departs at regular 2- or 3-hourly intervals on Sunday (but does not run on Saturday) at a cost one-way of A$35.00 to A$40.00.

POST-CONFERENCE TOUR

In response to the many requests from North American and European members of IHSG, the post-Conference tour (27-29 November) highlights the varied production of temperate seeds in southern Australia. Because Australia is a big country, this will involve travelling more than 2000 km by air to Melbourne to begin the tour. Over the next two and a half days, delegates will be able to see seed crops of mainstream grasses (ryegrass, fescue, etc), Australian native grasses, legumes, and other crops. Visits will also be made to commercial premises, seed cleaning plants and a private seed research farm. The tour will be returning to Melbourne.

The tour cost of A$660.00 includes a one-way group air ticket Brisbane-Melbourne, bus hire, and all meals and twin-share accommodation for the 3 days 27-29 November.Registrants intending to depart Australia at the completion of the Post-Conference Tour should schedule their flights from Melbourne for 30 November or late evening on 29 November. Please advise the organisers of your travel arrangements to ensure that you make your connection at the end of the tour.

Registrants staying on in Australia after the Post-Conference Tour will need to schedule domestic travel from Melbourne to their next destination.

REGISTRATION

Complete the registration form and mail together with a bank draft (payable to “Seeds Event”) to cover your registration and accommodation deposit to:

Fifth International Herbage Seed Conference
c/- Organisers Australia
PO Box 1237
Milton, Q 4064
AUSTRALIA

For additional information, contact the Organising Committee on:

+61 7 3286 1488, fax +61 7 3286 3094, or
email: Donald.Loch@dpi.qld.gov.au

Fifth International Herbage Seed Conference

Please return your registration form with payment by 31 July 2003. Registrations and/or payments received after this date are subject to the late registration fee (A$700.00). You will receive additional information on the Conference and Post-Conference tour after receipt of your registration. One registration form per participant; photocopies are acceptable.
Please print or type:

Name _____ (Preferred name on badge)

Agency _____

Address_____

City_____ **State/Country** _____ **Zip/Post Code**_____

Phone#_____ **Fax#**_____ **Email** _____

Please check preferred form of presentation: **Oral** **Poster**

Proposed Title of Presentation_____

_____

Final manuscript due by 31 July 2003. Information on scheduling and form of your presentation will be sent prior to the conference.

Optional information, if available:

I will be arriving in Brisbane on_____ on flight _____

I will be departing from _____ on flight_____on _____

PAYMENT SUMMARY

FEES		**AMOUNT $**
Registration Fee – up to 31 July 2003 (A$550.00)		$_____
Late Registration – after 31 July 2003 (A$700.00)		$_____
Accompanying Persons Registration (A$275.00)		$_____
Accommodation deposit / payment – Gatton Campus (	nights x A$33.00)	**$-_____**
Post-Conference Tour (A$660.00)		**$_____**
TOTAL REMITTED		$_____

(NB: Please make cheques payable to: "Seeds Event")

Credit Card Payments (Visa, Mastercard and Bankcard only) Please debit my credit card with the total amount owing on this form

• Bankcard • Mastercard • Visa

Account Number Expiry Date Signature

Conference Notes

The **1st European Conference on the Co-existence of Genetically Modified Crops with Conventional and Organic Crops** will be held in Denmark 13-14 November 2003. Further information can be obtained from Birte Boelt (Birte.Boelt@agrsci.dk)

The **XX International Grassland Congress 'Grasslands- a Global Resource'** will be held from Sunday 26th June -Friday 1st July, 2005 in Dublin, Ireland. Four Pre-Congress tours are available (starting on Thursday 23 June, concluding 25 June). The opening ceremony will be on Sunday 26 June with scientific sessions on the 27, 28, 30 June and 1 July (mid - congress tour on the 29th June. There willl also be a choice of 5 post-congress satellite workshops. Further information can be obtained at www.igc2005.com or from nmeenan@conferencepartners.ie

25th EUCARPIA Fodder Crops and Amenity Grasses Section Meeting and 15th EUCARPIA Medicago spp. Group Meeting

This meeting on "Biodiversity and Genetic Resources as the Bases for Future Breeding" will be held in Brno, Czech Republic, from Monday September 1st - Thursday September 4th 2003. Topics will include current state of genetic resources, methodology of breeding for resistance and quality, genetic markers for genetic resources characterisation and breeding and ecological role of grasses and legumes. The meeting will include oral presentations, poster presentations and a field trip to research institutes and plant breeding stations working on medicago, clovers forage and amenity grasses. Further details can be found at http://www.vupt.cz or email eucarpia@vupt.cz

British Grassland Society 7th BGS Research Conference
1st-3rd September 2003 to be held at the University of Wales, Aberystwyth,UK. Further information on this conference is available from the BGS Office at the following address, PO Box 237, University of Reading RG6 6 AR, UK. Telephone +44 1189 318189, fax +44 01189 666941 or email:bgs@patrol.i-way.co.uk

****

****

International Herbage Seed Group,
c/o Institute of Grassland and
Environmental Research,
Plas Gogerrdan, Aberystwyth,
United Kingdon SY233EB

****