Know-how for Horticulture™

Potato cultivar accession and testing in Tasmania (cont'd PT605)

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University of Tasmania

Project Number: PT96005

PT96005

This report is published by Horticulture Australia Ltd to pass on information concerning horticultural research and development undertaken for the potato industry.

The research contained in this report was funded by Horticulture Australia Ltd with the financial support of the potato industry.

ISBN 0 7341 0765 X

Published and distributed by:
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Horticulture Australia Limited

Potato cultivar accession and testing in Tasmania

Final Report of Project Number PT96005 (PT605)
to Horticulture Australia Limited

September 2003

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Tasmanian Institute of Agricultural Research

Project Title: Potato cultivar accession and testing in Tasmania

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This report describes the work carried out by the project team between 1996 and 2003 during which time the initial three-year funding period of PT605 has been continued. While the data collected during that period has been published and provided to the industry stakeholders over this period in annual reports, this final report serves to provide a complete record of data accumulated throughout and to meet the requirements of the project's research contract with Horticulture Australia Limited.

Acknowledgements:

Members of the project team wish to acknowledge the following support:-

1. Horticulture Australia Limited (previously HRDC) for the financial support provided from matched potato industry levy funds.
2. The Tasmanian Institute of Agricultural Research for additional administrative and financial support and physical resources.
3. The numerous industry personnel and potato growers who have contributed to the work, in time and resources over its eight years of progress.
4. Lyndon Butler, Tasmanian Department of Primary Industries, Water and Environment and Shane Ranson, TAFE Tasmania, who have helped with field operations.
5. Dr Roger Kirkham, IHD

30 September 2003

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Media Summary

A national research and development program, managed by Horticulture Australia Limited, with the objective of breeding and selecting better potatoes has continued for ten years. The program has closely involved industry partners and has reflected the needs of regional potato industries. The Tasmanian part of this program has been carried out by the Tasmanian Institute of Agricultural Research, in collaboration with local potato industry personnel. It has concentrated on improving the types of potatoes needed for processing into French fries, as this is the focus of the Tasmanian industry.

In the Tasmanian program, new types of potato have been brought to Tasmania each year, both from the Australian potato-breeding program in Victoria and from overseas. These have been compared with standard commercial types of potato over the following three-year period, both for tuber yield and processing quality characteristics, with poorly performing types discarded each year. At the end of this three-year process, the best types have been passed to the major processing companies for further evaluation and development with their growers.

This report provides the collective results from the program's Tasmanian work between and including seasons 1996-97 and 2002-03. During this time, over five hundred new types of processing potato have been evaluated and some, notably Ranger Russet, have progressed through to commercial use.

Technical Summary

This report provides data collected in the Tasmanian part of the National Potato Introduction and Evaluation Scheme between and including the seasons of 1996-97 and 2002-03.

The work in Tasmania concentrated on improving the yield and qualities of potato genotypes for French fry production. Support was provided to the local fresh market potato industry in season 1998-99 with a trial of suitable lines and cultivars. For French fry production, a three-year schedule of selection and re-selection of introduced F3 lines and cultivars was employed, with new material received from the national breeding and introduction program at Toolangi, Victoria, each year. With supplies of F3 material limited, single-row, non-replicated plots were used for the comparison of material newly introduced into Tasmania and these were planted at Forthside Research Station, near Devonport. Check plots of the dominant commercial cultivar, Russet Burbank, were included in these plantings. This comparison was referred to locally as the Stage 1 assessment and the number of new lines and cultivars examined in a Stage 1 assessment varied between seasons. At harvest, both industry representatives and researchers, including the plant breeder from Toolangi, Victoria, made selections based on visual attributes of tubers. Those lines with significant tuber defects were discarded and remaining lines were subjected to tuber quality analyses, including size distribution, defect scores, specific gravity, colour and fry characteristics. These data were used to select again genotypes for a second season's investigation.

Those lines selected from the previous year's Stage 1 assessment again were compared with the current commercial cultivars in (usually) two field trials - at Forthside Research Station and at a commercial site in North-east or northern Tasmania. These trials (Stage 2 assessments) were replicated and plot size was usually eight square metres. Current commercial husbandry practices were used in the trials and minor modifications (for example, to planting density) were made where prior knowledge of the line recommended this. Tuber yield, its components and quality parameters indicative of the lines' French fry processing suitabilities were recorded. The number of lines or cultivars examined in a Stage 2 assessment usually varied between 25 and 40. Re-selections again were made by industry personnel and researchers.

Lines selected from the previous year's Stage 2 assessments again were compared with current commercial cultivars in large-scale plantings (Stage 3 assessments) within commercial processing potato crops at several (usually 3-5) sites. Plots sizes were determined by the availability of planting material and two rows were usually planted. Yield and quality parameters again were recorded. Re-selections based on these data were subjected, in subsequent seasons, to further testing in field and factory by processing companies and their growers.

The Tasmanian industry has benefited from the introduction and testing by the program of new commercial cultivars, such as Nooksack and Ranger Russet. In more recent seasons, the breeding program's increased focus on processing potato genotypes has led to a greater proportion of Australian-bred material flowing through to commercial development. The time-lines associated with the latter, however, dictate that these genotypes have yet to enter commercial use.

The variation in performance of genotypes between locations in North-west Tasmania and at Cressy in northern Tasmania has reflected the acknowledged differences in these potato production environments. Alternately, there has been consistency in those best performing genotypes across locations in North-west Tasmania.

Introduction

Potato genetic improvement through the breeding and evaluation of potato lines and cultivars has been seen to be an important part of Australia's potato research portfolio. The Horticultural Research and Development Corporation, in conjunction with the Australian Potato Industry Council, reviewed these areas of research in 1992 and recommended the support of a conventional breeding program, an integrated evaluation program across Australia's main production areas and the establishment of a committee with Corporation and Council representation to manage this National Potato Introduction and Evaluation Scheme. The work carried out in the initial three-year (1993-96) project under this scheme was continued through a successful project proposal addressing research and development in 1996-1999. Since 1999, the work has continued with annual extensions of funding support from Horticulture Australia Limited, whilst the program was further reviewed in the context of commercialisation and product ownership issues. Changes to both the potato breeding program and evaluation of lines and cultivars are being implemented at present as a result of this review and these have resulted in the conclusion of this current project.

In accordance with the Tasmanian industry's focus on French fry production, project activities during the period have subjected both F3 lines generated from the national breeding program, and cultivars introduced from overseas, to evaluation and selection criteria suiting this purpose through a three year protocol, which was renewed each year.

Industry involvement and research collaboration

Throughout the seven years of experimentation reported here personnel representing the two major French fry processing companies in Tasmania, J.R. Simplot Australia and McCain Foods Australia, together with leading growers, have been interested observers of the performance of introduced lines in field trials and have been instrumental in making selections for ongoing evaluation. Sites for experimentation were also jointly agreed. Whilst the major objective of the project was French fry cultivar improvement, a small field comparison of genotypes suitable for the local fresh market was carried out in one season, at the request of, and in collaboration with, fresh market potato merchants.

The work also involved close collaboration with Dr Roger Kirkham, who previously coordinated the national program and with other interstate and industry colleagues in the production of reports and topical articles.

General Methodology

In each year of the project, small quantities of seed tubers were received from the Toolangi breeding program and planted in one field comparison at Forthside Research Station, near Devonport. Three or four tubers only were received, from which between six and nine sets were cut, and which therefore restricted the plantings to single row observations of each line. New introductions from overseas breeding programs, particularly those in Aberdeen, USA and New Zealand were added to these Toolangi selections after necessary quarantine procedures and cultivars in current commercial use were added as checks. As trial product material was limited, tuber characteristics only were recorded. This comparison was referred to locally as the year's Stage 1 assessment. The number of new lines and cultivars examined in a Stage 1 assessment usually varied between 100 and 160.

In the same season, those lines selected from the previous year's Stage 1 assessment were again compared with the current commercial cultivars but in (usually) two field trials - at Forthside Research Station and at a commercial site in North-eastern or northern Tasmania. These trials were replicated three times and plots size was usually two rows, each five metres long. Plots were buffered and separated in-row by commercial and distinctively coloured tuber types and current commercial husbandry practices were used in the trials, with some minor modifications of planting density where prior knowledge of the line recommended this. Tuber yield and quality parameters indicative of lines' French fry processing suitabilities were recorded. These comparisons were referred to locally as the year's Stage 2 assessments and the number of lines and cultivars examined in a Stage 2 assessment usually varied between 25 and 40.

In the same season, those lines selected from the previous year's Stage 2 assessments were again compared with current commercial cultivars in non-replicated plantings within commercial processing potato crops at several (3-5) sites. Plots sizes were determined by the availability of planting material and two rows were usually planted. Yield and quality parameters were again recorded and further tuber samples used in factory testing procedures.

After commercial standard practices of land preparation, Stage 1 and 2 trials were planted by hand into open furrows formed by a Faun potato planter, with which (usually) 11:13:19 fertiliser at a rate of 1700 kg/ha was band placed. The seed tubers were covered in the row and plants were hilled at approximately 25 per cent row cover. Weeds were controlled with a pre-emergent application of Sprayseed® and a post-emergent application of metribuzin. Fungicides were applied as per usual local commercial practice. Stage 3 observations were planted with commercial machinery. Rows were usually spaced at 820 mm intervals.

Selections were made from Stage 1 comparisons through joint observation and discussion between the plant breeder, Dr Kirkham, company potato production personnel and TIAR staff. Industry personnel, in consultation with Dr Kirkham and TIAR staff, led the genotype selection from Stage 2 and 3 comparisons.

Data collection consisted of both tuber yield and its components. Samples were graded by tuber weight into the following components: 0 to 80 grams, 80 to 250 grams, 250 to 650 grams, 650 to 850 grams and >850 grams. Numbers and weights

of misshapen cracked and diseased tubers were also recorded and combinations of the above components provided total, ware and waste grade yields.

With regard to tuber quality parameters, internal defects, bruising, specific gravity/ dry matter and fry colour were assessed.

For the determination of internal defects in each sample, ten tubers were cut from the largest size grade available. If any tubers were detected with defects (principally hollow heart) then another ten tubers from the next size grade were cut and results recorded. For the determination of the genotype's susceptibility to bruising, the following protocol was adopted: tube length = 60cm, ball bearing weight = 130gm, ball bearing diameter = 3cm. Five tubers were randomly selected from the 80-650 gram tuber weight range and four target spots were marked on each (two at rose end and two at stem end). The ball bearing was dropped once on each target spot, with the potato firmly placed under the tube to absorb full impact. The bruised tubers were stored at 20C for twenty-four hours, after which the target spots were peeled and bruising severity recorded as per score sheet (ratings 0=nil to 9=severe). An overall record of tuber shattering severity also was noted for each sample. The dry matter of five tubers was estimated by determination of their specific gravity (weight in water, weight in air method).

A French fry colour protocol was based on the methods used by the intake laboratory at the Ulverstone factory of Simplot Australia. One 10mm section French fry is cut from the centre of five tubers for each plot. These strips were washed and dried before cooking. Fries were then cooked for 150 seconds at a temperature of 190ºC in cottonseed oil. To maintain an acceptable commercial standard, the oil was changed after every fifty samples. Overall colour of each fry sample was scored as per the USDA 1988 French fry colour chart, a scale of 000,00,0,1,2,3 and 4 with 000 being white and 4 being dark gold. A score of 0 or less is acceptable. These ratings were then converted to a scale of 'one-seven' for statistical analyses. The percentage of "dark ends" (sugar accumulation and subsequent caramelisation after cooking) was noted for each sample.

Whilst the above reflects the methods generally employed in this project's investigations, minor variations in procedures occurred from year to year as a result of consultation with industry stakeholders. Therefore, specific methods are presented chronologically below, together with results, relevant discussion and a note of technology transfer activities.

1996-97

Materials and methods

One hundred and sixty lines were planted in single rows in the 1996-97 season's Stage 1 comparison. In a Stage 2 comparison at Forthside Research Station, forty-one lines and cultivars were planted, comprising 18 selections from the previous season's Stage 1, 15 introductions emanating from greenhouse tissue culture multiplication, four lines previously grown in replicated trials, but from which additional information was requested, and four check cultivars. A second Stage 2 comparison was carried out at Scottsdale, in North-eastern Tasmania, which evaluated 17 selections from the previous season's Stage 1 only. Four Stage 3 observational plantings were carried out: – at Scottsdale, Cressy in Northern Tasmania and Forest and Stowport in North-western Tasmania, including Kennebec, Russet Burbank and Shepody as check cultivars.

Results

Stage 1 lines with pronounced tuber defects were discarded and data on the remaining entries is shown in Table 1 below. Tables 2 and 3 show information collected on Stage 2 entries in Forthside and Scottsdale trials respectively and Tables 4-7 inclusive provide information on Stage 3 comparisons.

Discussion

Consultation among the stakeholders led to 22 lines being selected from Stage 1 comparisons in 1996-97, for further trial in the following season. Twelve lines were selected from Stage 2 trials for evaluation in the following year's Stage 3 comparison. From 1996-97 Stage 3, the cultivars Crop 9, Umatilla and Gladiator were considered worthy of further testing by processing companies in their own development activities.

Technology transfer

In addition to ongoing interaction with company staff and potato growers in Tasmania, the season's work was presented at an Open day at Forthside Research Station on 13 February 1997and at a school for growers arranged by Simplot Australia on 17 July 1997. Field days were held at Stowport and Forthside Research Station on 4 March and 5 June 1997 respectively. Results were included in the annual publication of national results, collated by Dr Kirkham.

Table 1. Tuber numbers, proportions of tubers in grades, specific gravity and crisp colour of lines grown in Stage 1 comparison, Forthside, 1996-97

Cultivar	Tuber no./ plant	0-100g.		100 - 280g.		280 - 450g.		>450g.		Mishapen		Green		Cracked		Rot		Specific Gravity	Crisp Colour
		No %	Wt %	No %	Wt %	No %	Wt %	No %	Wt %	No %	Wt %	No %	Wt %	No %	Wt %	No %	Wt %		
94-100-18	6.6	10.2	3.0	40.7	32.9	33.9	46.4	6.8	13.2	1.7	1.6	5.1	1.6	0.0	0.0	1.7	1.3	1.084	7
94-109-18	5.4	32.7	10.3	46.9	53.8	10.2	21.3	2.0	5.8	2.0	1.7	6.1	7.2	0.0	0.0	0.0	0.0	1.090	6
94-109-25	10.3	24.7	11.6	73.1	83.9	0.0	0.0	2.2	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.102	7
94-109-34	4.9	15.9	4.6	45.5	36.0	31.8	41.6	6.8	17.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.088	7
94-109-37	7.4	20.9	6.3	64.2	65.7	10.4	19.2	0.0	0.0	3.0	7.8	1.5	1.0	0.0	0.0	0.0	0.0	1.088	7
94-109-38	5.9	17.0	4.7	64.2	66.0	13.2	24.8	0.0	0.0	0.0	0.0	5.7	4.5	0.0	0.0	0.0	0.0	1.089	7
94-109-39	6.7	10.0	2.4	37.5	28.4	52.5	69.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.093	5
94-109-43	7.9	38.0	12.8	56.3	75.1	4.2	10.1	0.0	0.0	1.4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	1.084	6
94-109-44	11.2	27.7	11.2	68.3	81.0	2.0	5.1	0.0	0.0	1.0	2.0	1.0	0.7	0.0	0.0	0.0	0.0	1.077	5
94-109-58	7.1	14.1	2.5	60.9	56.1	20.3	30.6	4.7	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.074	3
94-109-68	8.8	34.2	16.8	58.2	64.8	6.3	15.9	0.0	0.0	1.3	2.5	0.0	0.0	0.0	0.0	0.0	0.0	1.091	8
94-109-72	5.2	14.9	4.8	68.1	62.9	12.8	21.6	4.3	10.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.094	8
94-113-22	10.2	30.4	11.8	59.8	68.9	6.5	14.7	0.0	0.0	0.0	0.0	3.3	4.7	0.0	0.0	0.0	0.0	1.087	7
94-113-26	10.1	28.6	9.3	40.7	41.9	8.8	16.2	3.3	10.0	3.3	3.0	15.4	19.7	0.0	0.0	0.0	0.0	1.084	8
94-113-27	8.9	25.0	12.5	62.5	68.9	3.8	8.7	0.0	0.0	0.0	0.0	8.8	9.9	0.0	0.0	0.0	0.0	1.080	9
94-113-28	12.6	29.2	13.3	68.1	81.6	1.8	4.2	0.0	0.0	0.0	0.0	0.9	0.8	0.0	0.0	0.0	0.0	1.075	7
94-113-29	7.8	28.6	7.5	64.3	72.9	4.3	8.6	1.4	6.9	0.0	0.0	1.4	4.2	0.0	0.0	0.0	0.0	1.074	8
94-113-31	11.1	25.0	7.7	53.0	55.7	12.0	21.0	3.0	8.0	2.0	2.9	5.0	4.7	0.0	0.0	0.0	0.0	1.094	8
94-113-33	9.6	15.1	3.8	59.3	58.0	16.3	25.7	2.3	5.3	1.2	0.6	5.8	6.6	0.0	0.0	0.0	0.0	1.076	8
94-115-25	6.6	13.6	4.4	50.8	38.2	25.4	39.1	6.8	14.7	1.7	0.8	1.7	2.7	0.0	0.0	0.0	0.0	1.095	7
94-115-8	6.3	21.1	5.3	57.9	52.9	12.3	21.1	7.0	17.8	0.0	0.0	1.8	2.9	0.0	0.0	0.0	0.0	1.085	8
94-117-2	9.3	16.7	4.1	45.2	37.9	25.0	36.7	8.3	18.4	0.0	0.0	4.8	2.9	0.0	0.0	0.0	0.0	1.103	4
94-121-4	7.2	44.6	21.6	46.2	52.4	4.6	11.8	3.1	11.3	1.5	2.8	0.0	0.0	0.0	0.0	0.0	0.0	1.092	5
94-128-1	4.8	20.9	3.7	27.9	18.7	20.9	26.8	27.9	48.8	0.0	0.0	2.3	2.0	0.0	0.0	0.0	0.0	1.070	8
94-129-2	5.9	26.4	10.7	64.2	72.9	5.7	11.8	0.0	0.0	0.0	0.0	3.8	4.6	0.0	0.0	0.0	0.0	1.097	6
94-30-17	7.2	32.6	13.6	55.8	64.8	9.3	19.1	0.0	0.0	2.3	2.4	0.0	0.0	0.0	0.0	0.0	0.0	1.104	5
94-33-2	9.7	6.9	2.1	65.5	54.9	17.2	26.3	3.4	8.6	3.4	5.3	3.4	2.8	0.0	0.0	0.0	0.0	1.107	7
94-37-1	10.2	39.3	12.7	39.3	45.1	16.4	35.3	0.0	0.0	0.0	0.0	3.3	4.2	0.0	0.0	1.6	2.7	1.079	8
94-42-10	9.8	23.7	4.8	50.8	50.3	20.3	34.7	3.4	8.7	0.0	0.0	1.7	1.5	0.0	0.0	0.0	0.0	1.115	4
94-44-10	7.3	15.9	6.9	77.3	79.8	4.5	7.9	0.0	0.0	2.3	5.4	0.0	0.0	0.0	0.0	0.0	0.0	1.086	7
94-44-18	10.5	38.1	10.5	42.9	47.5	14.3	31.4	0.0	0.0	4.8	10.6	0.0	0.0	0.0	0.0	0.0	0.0	1.082	7
94-44-3	18.2	73.4	5.1	16.5	39.6	7.3	37.8	1.8	15.9	0.0	0.0	0.9	1.6	0.0	0.0	0.0	0.0	1.095	8
94-44-5	9.2	14.5	3.8	43.6	34.3	29.1	41.6	7.3	15.3	1.8	3.1	3.6	1.9	0.0	0.0	0.0	0.0	1.109	7
94-47-2	11.3	29.4	8.9	47.1	49.5	14.7	26.7	0.0	0.0	7.4	13.5	1.5	1.4	0.0	0.0	0.0	0.0	1.089	9
94-47-5	7.0	40.5	15.8	57.1	78.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	5.8	0.0	0.0	1.083	8
94-47-8	10.7	34.4	12.1	53.1	64.7	9.4	20.1	0.0	0.0	0.0	0.0	3.1	3.1	0.0	0.0	0.0	0.0	1.082	9
94-51-4	12.7	22.4	6.5	53.9	43.4	5.3	10.5	5.3	18.0	13.2	21.6	0.0	0.0	0.0	0.0	0.0	0.0	1.087	8
94-5-25	6.0	22.2	4.5	52.8	47.1	22.2	39.8	2.8	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.092	4
94-53-1	11.2	22.4	9.2	77.6	90.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.085	7
94-53-9	9.2	14.5	4.6	61.8	57.5	18.2	30.6	1.8	4.2	3.6	3.1	0.0	0.0	0.0	0.0	0.0	0.0	1.088	7
94-5-4	8.0	8.3	2.1	64.6	57.9	25.0	38.6	0.0	0.0	0.0	0.0	2.1	1.5	0.0	0.0	0.0	0.0	1.095	6
94-54-3	3.2	13.8	3.3	69.0	67.4	13.8	20.9	3.4	8.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.096	6
94-54-9	8.7	15.4	5.1	67.3	66.3	15.4	25.9	0.0	0.0	0.0	0.0	1.9	2.7	0.0	0.0	0.0	0.0	1.082	6
94-5-5	9.5	28.1	12.0	64.9	75.4	5.3	11.4	0.0	0.0	0.0	0.0	1.8	1.3	0.0	0.0	0.0	0.0	1.102	6
94-56-3	8.8	28.3	8.0	41.5	41.4	20.8	38.9	1.9	4.2	0.0	0.0	7.5	7.5	0.0	0.0	0.0	0.0	1.086	5
94-66-4	7.2	13.8	2.7	61.5	53.9	23.1	39.0	1.5	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.087	4
94-67-1	14.1	49.6	30.6	48.8	65.2	1.6	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.109	2
94-67-4	7.8	34.3	8.4	50.0	67.3	11.4	18.4	1.4	3.8	1.4	0.8	1.4	1.3	0.0	0.0	0.0	0.0	1.077	6
94-68-4	6.1	25.5	8.3	60.0	61.1	10.9	21.4	1.8	4.6	0.0	0.0	0.0	0.0	1.8	4.6	0.0	0.0	1.080	4
94-68-7	2.1	21.1	4.3	52.6	60.2	10.5	19.9	0.0	0.0	5.3	6.2	10.5	9.4	0.0	0.0	0.0	0.0	1.077	6
94-76-7	8.9	23.8	5.9	56.3	59.0	17.5	32.9	0.0	0.0	0.0	0.0	2.5	2.2	0.0	0.0	0.0	0.0	1.102	7
94-78-33	7.6	13.2	2.5	42.6	32.2	23.5	32.2	8.8	22.3	5.9	4.2	5.9	6.6	0.0	0.0	0.0	0.0	1.092	8
94-79-6	7.8	41.4	15.8	41.4	48.4	15.7	34.5	0.0	0.0	1.4	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.074	8
94-94-8	9.4	24.7	7.4	31.8	30.4	20.0	32.6	8.2	18.2	2.4	1.4	12.9	9.9	0.0	0.0	0.0	0.0	1.092	7
94-99-7	10.0	21.1	6.4	55.6	55.4	14.4	25.2	3.3	8.5	2.2	1.6	3.3	2.9	0.0	0.0	0.0	0.0	1.098	nr
Atlantic 1	6.3	15.8	3.5	42.1	34.0	28.9	37.7	2.6	8.4	0.0	0.0	10.5	16.4	0.0	0.0	0.0	0.0	1.094	3
Atlantic 3b	5.7	11.8	2.6	52.9	41.7	20.6	29.7	8.8	20.1	0.0	0.0	5.9	5.9	0.0	0.0	0.0	0.0	1.100	4
Atlantic 8	7.0	26.2	7.0	47.6	45.9	14.3	19.6	9.5	26.3	0.0	0.0	2.4	1.3	0.0	0.0	0.0	0.0	1.085	4
Kenn 1	5.9	28.3	5.0	22.6	20.3	17.0	29.9	1.9	4.5	15.1	28.5	11.3	7.8	1.9	1.7	1.9	2.4	1.068	5
Kenn 1b	5.2	25.5	4.2	23.4	15.7	19.1	24.9	8.5	21.4	8.5	11.8	14.9	21.9	0.0	0.0	0.0	0.0	1.081	5
Kenn 3	4.9	25.0	4.4	25.0	16.5	13.6	18.5	2.3	6.0	22.7	45.9	11.4	8.7	0.0	0.0	0.0	0.0	1.084	4
Kenn 7	5.1	30.4	6.9	21.7	17.2	6.5	10.2	4.3	10.0	26.1	45.1	10.9	10.6	0.0	0.0	0.0	0.0	1.093	5
RB 1	10.0	17.8	5.0	61.1	56.6	16.7	29.5	2.2	5.5	1.1	2.2	0.0	0.0	0.0	0.0	1.1	1.1	1.102	6
RB 3	6.6	22.0	6.8	52.5	42.0	10.2	16.4	5.1	13.2	0.0	0.0	1.7	2.6	8.5	18.9	0.0	0.0	1.103	6
RB 5	12.1	36.7	13.6	48.6	57.2	6.4	14.8	0.9	2.9	6.4	10.9	0.9	0.6	0.0	0.0	0.0	0.0	1.099	4
RB 5b	11.2	14.9	5.3	69.3	67.9	12.9	21.6	1.0	2.5	2.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	1.106	6
RB 6	11.0	15.2	6.1	73.7	71.6	8.1	14.8	3.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.093	5
RB 7	6.6	13.6	4.7	71.2	68.9	15.3	26.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.104	6
RB 8b	10.1	38.5	19.7	47.3	47.8	6.6	14.8	1.1	3.2	2.2	5.2	2.2	3.4	2.2	5.9	0.0	0.0	1.099	5
Red Norland	9.8	38.6	15.8	56.8	70.6	1.1	3.8	0.0	0.0	1.1	5.8	2.3	3.9	0.0	0.0	0.0	0.0	1.062	7

Table 2. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Forthside Research Station in 1996-97.

		Tuber yield (t/ha)												Quality		
Line or cultivar	In-row spac. cm	Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	Rank by fry grade	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Spec. grav.	% dry m'ter	* Fry col.
14981AC8-1 #	30.0	7.91	52.75	29.79	7.66	90.20	99.79	82.54	41.25	1	12.8	3.1	2.5	1.098	23.8	5.8
Agria	30.0	2.88	40.04	26.46	12.11	78.61	82.53	66.50	48.79	2	9.1	1.3	1.3	1.090	22.3	4.0
MacRusset #	30.0	3.65	35.25	25.58	8.23	73.06	78.87	64.83	53.42	3	10.3	4.5	3.6	1.100	24.3	4.7
93-90-12 #	27.5	4.17	35.00	23.36	6.90	65.26	77.14	58.36	46.38	7	8.4	4.8	2.5	1.096	23.5	3.8
Ranger Russet Amisk	30.0	4.22	39.50	22.88	7.81	70.18	76.35	62.38	43.72	5	9.5	6.0	4.1	1.098	23.9	7.3
TXAV657-27 #	30.0	3.99	33.86	21.04	7.42	62.32	75.93	54.90	45.46	12	9.0	4.8	4.0	1.096	23.4	4.3
A82119-3 #	30.0	2.46	33.50	27.48	9.96	70.94	75.56	60.98	52.88	4	8.2	5.8	4.5	1.100	24.2	5.0
93-122-4 #	22.5	6.77	44.25	18.42	2.43	65.10	74.99	62.67	31.88	9	8.0	4.8	2.6	1.086	21.4	4.3
91-158-6 #	30.0	5.76	40.04	19.21	6.71	65.96	74.49	59.25	39.32	6	10.4	2.0	1.5	1.092	22.6	3.0
Shepody	20.0	1.95	22.88	26.51	15.21	64.60	73.66	49.39	64.02	10	4.6	3.4	3.7	1.088	21.9	6.3
Umatilla #	30.0	4.47	33.98	16.67	4.96	55.61	71.74	50.64	38.51	17	8.9	3.8	4.3	1.097	23.5	6.3
A84180-8	30.0	3.99	41.40	15.34	6.70	63.43	71.62	56.73	34.66	11	9.0	3.1	3.0	1.087	21.5	8.5
Russet Burbank	30.0	6.35	35.71	16.17	4.59	56.46	71.35	51.87	36.65	15	10.0	5.8	3.9	1.092	22.7	5.0
Kennebec	20.0	2.37	15.42	27.82	16.19	59.43	70.35	43.24	76.50	13	4.8	4.8	4.0	1.084	21.0	6.2
Legend #	30.0	2.16	22.73	25.94	16.52	65.19	70.09	48.67	64.15	8	6.7	4.9	4.0	1.092	22.5	5.3
Itasca	30.0	3.76	19.25	9.13	7.06	35.44	69.73	28.38	46.01	30	7.2	2.3	2.4	1.087	21.6	6.7
93-115-11	27.5	4.95	40.25	14.17	3.49	57.91	69.28	54.42	30.73	14	7.7	4.6	4.6	1.081	20.2	8.2
93-105-21 #	30.0	10.67	34.30	11.25	2.32	47.86	67.46	45.54	38.07	21	13.4	2.2	1.7	1.096	23.4	4.0
93-51-8 #	25.0	4.78	30.35	16.46	4.27	51.08	62.45	46.81	40.40	18	6.7	4.6	3.8	1.091	22.4	2.8
93-56-29	27.5	2.52	21.67	21.10	13.65	56.42	61.86	42.77	61.40	16	5.7	1.8	1.2	1.083	20.7	9.0
93-25-9 #	30.0	7.19	39.14	8.82	1.60	49.56	59.28	47.97	21.15	20	9.6	3.2	1.6	1.086	21.4	3.8
93-113-9	22.5	3.65	16.63	19.09	8.30	44.00	56.82	35.71	61.86	24	4.8	6.3	4.6	1.101	24.4	5.7
93-56-44	25.0	1.78	18.44	17.92	14.38	50.74	55.52	36.35	63.45	19	4.3	1.9	2.0	1.091	22.3	8.3
93-56-3	25.0	2.34	18.92	19.84	8.04	46.79	55.13	38.75	59.65	22	4.6	2.1	2.3	1.087	21.6	7.3
93-27-5	22.5	4.99	23.04	8.25	5.74	37.04	54.13	31.30	35.78	28	5.5	5.1	3.1	1.078	19.7	9.3
93-8-5	32.5	5.07	26.00	13.52	6.29	45.80	52.13	39.52	43.25	23	7.6	3.4	2.0	1.091	22.5	7.7
93-105-6	30.0	5.09	38.27	4.44	0.00	42.71	49.87	42.71	10.29	25	9.0	3.1	1.2	1.086	21.4	5.8
93-117-9	22.5	3.82	25.50	9.66	5.20	40.35	48.02	35.15	36.78	27	4.8	4.9	2.3	1.090	22.1	3.7
93-56-34	25.0	2.11	27.63	11.51	1.92	41.05	43.63	39.13	32.38	26	4.8	1.9	3.9	1.079	19.9	7.5
93-86-8	25.0	3.96	20.67	10.52	2.55	33.73	42.68	31.18	38.27	31	8.0	4.4	4.4	1.078	19.7	7.0
93-88-3	27.5	4.46	31.13	5.08	0.00	36.20	41.96	36.20	13.12	29	6.0	6.1	5.6	1.088	21.9	4.0
93-114-9	22.5	2.11	18.92	9.41	2.60	30.92	33.99	28.33	38.97	32	5.7	6.5	7.0	1.109	25.8	2.3
LSD P=0.05		1.25	11.38	6.29	6.44	13.12	13.28	12.11	15.88		0.9	1.6	1.4	0.008	1.6	1.3
LSD P=0.01		1.66	15.13	8.36	8.57	17.44	17.66	16.11	21.12		1.2	2.2	1.8	0.010	2.1	1.8

NOTES: Entries marked # have been selected for further evaluation
Planted: 22 October 1996
Harvested: 7 April 1997
Soil type: Krasnozem
Spacing: between rows: 800mm
Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark
NR = not recorded

Table 3. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Scottsdale in 1996-97.

		Tuber yield (t/ha)											Quality		
Line or cultivar	In-row spac. cm	Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	Rank by fry grade	Bruise rating stem end	Bruise rating rose end	Spec. grav.	% dry m'ter	Fry col.
93-90-12 #	27.5	3.45	45.69	20.06	3.31	69.06	74.30	65.75	33.54	1	6.6	3.9	1.112	24.8	3.7
93-105-21 #	30.0	9.93	43.54	6.09	0.64	50.26	66.92	49.63	13.53	6	4.3	4.1	1.093	22.7	5.7
93-56-29	27.5	2.79	28.79	21.50	9.65	59.95	66.71	50.29	52.02	2	3.4	1.9	1.087	21.6	10.0
Kennebec	20.0	4.09	19.58	23.88	12.88	56.34	64.36	43.46	64.96	3	4.2	3.9	1.081	20.4	4.3
93-56-44	25.0	3.65	34.77	16.92	3.96	55.64	61.34	51.69	37.48	4	3.6	2.3	1.097	23.7	7.7
93-113-9	22.5	3.6	27.90	17.71	6.42	52.02	59.70	45.60	46.45	5	6.5	5.2	1.101	24.4	6.3
Shepody	20.0	2.79	19.92	19.11	8.70	47.72	56.93	39.02	58.25	8	3.2	2.4	1.085	21.1	8.0
93-8-5	32.5	4.71	27.35	15.75	6.74	49.85	56.01	43.11	45.15	7	6.4	3.8	1.100	24.2	7.3
Russet Burbank	30.0	5.88	37.15	7.08	1.29	45.52	55.89	44.23	18.27	9	5.6	3.0	1.097	23.6	4.0
93-56-3	25.0	2.67	23.44	14.37	6.79	44.60	49.51	37.81	46.04	10	3.2	2.4	1.090	22.3	8.7
93-122-4 #	22.5	11.88	34.88	2.21	0.00	37.08	49.42	37.08	5.28	13	4.2	1.3	1.085	21.2	3.7
93-51-8 #	25.0	3.81	23.63	11.80	5.38	40.80	48.39	35.43	42.10	11	5.6	4.9	1.085	21.2	3.0
93-115-11	27.5	3.05	25.32	11.50	1.44	38.25	44.84	36.81	33.81	12	5.7	5.5	1.094	22.9	6.7
93-25-9 #	30.0	7.18	28.63	5.26	0.49	34.38	42.21	33.89	16.89	16	4.1	1.3	1.088	21.8	4.7
93-56-34	25.0	4.22	31.15	4.94	0.61	36.70	41.46	36.09	14.61	14	2.2	3.0	1.082	20.5	9.0
93-86-8	25.0	4.23	26.58	8.25	1.02	35.85	41.30	34.83	25.82	15	5.2	3.5	1.081	20.2	7.0
93-114-9	22.5	2.39	20.31	6.67	2.90	29.88	35.00	26.98	32.01	17	6.2	5.7	1.107	25.1	4.7
93-105-6	30.0	7.38	22.68	2.09	0.00	24.77	32.83	24.77	7.01	18	4.0	3.5	1.095	23.2	4.0
93-117-9	22.5	2.73	13.45	5.51	0.84	19.79	26.12	18.95	31.35	19	5.8	3.0	1.090	22.2	5.3
93-88-3	27.5	9.1	14.50	0.39	0.00	14.89	24.55	14.89	1.74	20	5.8	4.0	1.093	22.8	4.3
LSD P=0.05		1.61	7.66	4.46	3.66	8.65	7.67	7.93	11.38		1.3	1.3	0.012	1.6	0.8
LSD P=0.01		2.15	10.25	5.97	4.90	11.57	10.26	10.62	15.23		1.8	1.7	0.016	2.2	1.0

NOTES: Entries marked # have been selected for further evaluation
Planted: 28 October 1996
Harvested: 12 May 1997
Soil type: Krasnozem
Spacing: between rows: 810mm
Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark
NR = not recorded

Table 4. In-row spacing, tuber yield and quality data of cultivars evaluated in the Stage 3 trial at Cressy in 1996-97.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)					Rank by fry grade	Tuber no. per plant	Quality	
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g			% dry m'ter	* Fry col.
Russet Burbank	30	5.85	23.31	4.78	3.72	31.82	6	7.6	21.8	4.5
Crop 9	30	7.46	31.63	3.41	1.19	36.22	4	11.6	24.3	5.0
Umatilla	30	3.10	19.84	12.53	2.74	35.10	5	7.1	21.8	4.5
Nooksak	20	2.37	21.72	12.31	8.19	42.22	2	5.0	22.0	3.5
Shepody	20	1.89	14.22	15.79	7.40	37.41	3	3.8	20.7	4.5
Kennebec	20	2.57	11.34	16.09	18.98	46.42	1	4.9	20.3	4.5

NOTES: Planted: 1 November 1996
Harvested: 17 April 1997
Soil type: Sandy loam
Spacing: between rows: 810mm
* Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark

Table 5. In-row spacing, tuber yield and quality data of cultivars evaluated in the Stage 3 trial at Forest in 1996-97.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)					Rank by fry grade	Tuber no. per plant	Quality	
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g			% dry m'ter	* Fry col.
Russet Burbank	30	3.99	21.10	16.08	6.50	43.68	3	7.2	20.5	5.0
Crop 9	30	2.43	19.32	22.70	9.04	51.06	1	9.3	19.3	5.5
92-69-1	30	2.27	7.03	9.30	15.35	31.68	5	4.5	19.7	3.5
92-76-4	30	0.98	5.74	8.84	10.47	25.05	6	6.7	19.7	3.5
92-92-5	30	0.52	2.44	1.81	9.83	14.08	7	6.0	17.6	8.0
Shepody	20	1.34	7.48	14.27	23.93	45.69	2	4.3	19.1	6.5
Kennebec	20	4.10	8.74	9.43	23.91	42.08	4	6.4	18.7	5.5

NOTES: Planted: 19 November 1996
Harvested: 20 May 1997
Soil type: Krasnozem
Spacing: between rows: 810mm
* Samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark

Table 6. In-row spacing, tuber yield and quality data of cultivars evaluated in the Stage 3 trial at Scottsdale in 1996-97.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)					Rank by fry grade	Tuber no. per plant	Quality	
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g			% dry m'ter	* Fry col.
Russet Burbank	30	5.45	28.00	10.81	1.18	40.00	7	8.3	21.8	4.0
Crop 9	30	3.91	33.56	19.03	9.19	61.79	2	12.3	22.2	5.5
Umatilla	30	3.83	24.69	12.50	2.03	39.22	8	7.2	19.5	5.5
Gladiator	20	3.95	43.47	18.78	6.10	68.35	1	8.7	24.3	5.0
Shepody	20	1.63	25.22	17.84	5.48	48.54	5	4.9	20.1	7.0
Kennebec	20	3.14	16.94	15.94	10.17	43.04	6	5.0	21.1	5.5
MacRusset	30	2.09	26.53	23.19	10.06	59.78	3	7.2	23.2	4.0
Legend	30	1.77	16.94	23.72	18.97	59.62	4	6.5	23.0	7.5

NOTES: Planted: 29 October 1996
Harvested: 13 May 1997
Soil type: Krasnozem
Spacing: between rows: 810mm
* Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark

Table 7. In-row spacing, tuber yield and quality data of cultivars evaluated in the Stage 3 trial at Stowport in 1996-97.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)					Rank by fry grade	Tuber no. per plant	Quality	
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g			% dry m'ter	* Fry col.
Russet Burbank	30	6.47	34.97	9.66	0.90	45.53	8	10.9	20.9	6.0
Crop 9	30	3.87	43.19	29.27	8.12	80.57	1	13.4	18.7	6.5
Umatilla	30	3.78	27.58	18.11	2.25	47.94	6	10.0	19.7	5.5
92-81-8	30	2.49	16.89	15.39	14.22	46.50	7	7.6	20.3	4.5
92-92-5	30	0.69	3.25	3.24	24.66	31.14	9	4.2	20.3	6.5
Shepody	20	2.05	18.52	26.84	20.27	65.63	3	6.2	18.9	7.0
Kennebec	20	3.22	15.53	17.09	25.47	58.09	4	6.2	18.0	4.0
Russet Ruen	30	11.22	42.06	8.09	0.94	51.10	5	NR	23.8	5.0
Russet Victoria	30	7.97	57.94	10.41	1.53	69.88	2	NR	22.6	5.0

NOTES: Planted: 21 October 1996
Harvested: 23 April 1997
Soil type: Krasnozem
Spacing: between rows: 810mm
* Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark

1997-98

Materials and methods

Ninety-five lines were planted in single rows in the 1997-98 season's Stage 1 comparison, including six check plots of Russet Burbank. In-row spacing was adjusted between 200mm and 300mm for different lines, in accordance with advice from the plant breeder. Nineteen lines and cultivars, selections from the previous season's Stage 1, were planted at Forthside Research Station and 14 lines on a commercial property at Cressy, together with check cultivars, in Stage 2 comparisons. Three Stage 3 observational plantings were carried out - at Cressy in northern Tasmania, and Stowport and Burnie in North-western Tasmania. Between six and 12 selections were planted at the sites depending on which were considered suitable for the area and check cultivars were selected from Kennebec, Russet Burbank and Shepody.

Results

Stage 1 lines with pronounced tuber defects were discarded and data on the remaining entries is shown in Table 8 below. Tables 9 and 10 show information collected on Stage 2 entries in Forthside and Cressy trials respectively. The line 66107/51 yielded extremely well at Forthside Research Station and also exceeded (P=0.05) check cultivar yields at Cressy. Tables 11-13 inclusive provide information on Stage 3 comparisons, where several cultivars and lines outperformed check cultivars.

Discussion

Consultation among the stakeholders led to 18 lines being selected from Stage 1 comparisons in 1997-98, for further trial in the following season. Nine lines were selected from Stage 2 trials in 1997-98 for evaluation in the following year's Stage 3 comparison. From 1997-98 Stage 3, the cultivars Umatilla, MacRusset and Legend were considered worthy of further testing by processing companies in their own development activities. The use of the cultivar Ranger Russet, an earlier selection from the program, was also expanded, with about 3000 tonnes planned for processing in the 1998-99 season.

Technology transfer

The season's work was presented at an Open day at Forthside Research Station and field days were also held during harvest operations at Forthside Research Station, Stowport and Burnie. Results again were included in the annual publication of national results.

Table 8. Tuber grades, numbers per plant and quality characteristics from lines and cultivars compared in Stage 1, Forthside Research Station, 1997-98

Line or cultivar	Percentage of total plot weight							No. of tubers / plant	% fry grade >100g	% 100 - 450g	Waste %	% of Fry Grade >280 g	Spec grav	% dry matter	% fry col.
	0-100g	100-280 g	280-450 g	>450 g	Mis-shapen	Cracked	Rot								
93-A27-A	3.8	46.3	26.9	19.9	0.0	0.0	3.2	5.7	93.1	73.2	3.2	50.3	1.087	21.6	9.0
94-76-8	1.0	29.3	42.3	19.6	5.0	0.0	2.7	4.9	91.2	71.6	7.7	67.9	1.100	24.3	3.0
95-102-1	13.1	73.6	11.2	0.0	0.0	2.0	0.0	9.9	84.9	84.9	2.0	13.2	1.096	23.4	3.0
95-102-13	4.1	63.7	30.8	0.0	1.5	0.0	0.0	6.8	94.5	94.5	1.5	32.6	1.107	25.7	3.0
95-102-2	3.9	68.5	22.7	3.2	0.0	0.0	1.8	8.8	94.4	91.1	1.8	27.5	1.104	25.1	5.5
95-102-22	9.4	70.1	19.3	0.0	0.0	0.0	1.2	8.0	89.4	89.4	1.2	21.6	1.077	19.5	8.0
95-105-1	4.2	37.8	40.2	17.2	0.0	0.0	0.5	9.1	95.3	78.1	0.5	60.3	1.106	25.5	6.5
95-105-5	2.9	61.9	32.8	0.0	0.0	0.0	2.3	7.8	94.8	94.8	2.3	34.6	1.087	21.6	3.0
95-106-3	6.1	84.0	9.9	0.0	0.0	0.0	0.0	9.2	93.9	93.9	0.0	10.5	1.104	25.1	4.0
95-109-2	28.4	67.9	2.3	0.0	0.0	0.0	1.4	13.2	70.2	70.2	1.4	3.3	1.090	22.2	3.5
95-110-15	7.8	60.9	25.2	5.0	0.0	0.0	1.1	11.2	91.1	86.1	1.1	33.2	1.091	22.4	5.5
95-110-8	5.7	47.4	37.4	9.4	0.0	0.0	0.0	12.2	94.3	84.9	0.0	49.7	1.102	24.7	6.5
95-112-3	20.0	74.9	4.3	0.0	0.0	0.0	0.8	13.0	79.1	79.1	0.8	5.4	1.084	20.9	7.0
95-17-3	4.6	45.4	29.6	18.0	2.3	0.0	0.0	8.2	93.0	75.0	2.3	51.2	1.117	26.3	7.0
95-17-4	11.1	62.0	21.2	5.7	0.0	0.0	0.0	12.1	88.9	83.2	0.0	30.3	1.108	25.9	7.0
95-20-12	2.2	67.5	17.2	13.0	0.0	0.0	0.0	8.1	97.8	84.7	0.0	30.9	1.101	24.5	4.0
95-22-1	7.4	68.8	22.1	0.0	1.7	0.0	0.0	5.0	90.9	90.9	1.7	24.3	1.078	19.7	5.0
95-23-1	17.5	67.5	15.0	0.0	0.0	0.0	0.0	5.6	82.5	82.5	0.0	18.2	1.077	19.5	4.0
95-27/28-2	14.5	49.9	35.6	0.0	0.0	0.0	0.0	11.6	85.5	85.5	0.0	41.7	1.090	22.2	7.0
95-33-1	8.4	61.4	27.0	0.0	0.0	3.2	0.0	8.2	88.4	88.4	3.2	30.5	1.096	23.4	8.0
95-37-12	10.7	80.2	5.3	3.9	0.0	0.0	0.0	9.2	89.3	85.5	0.0	10.3	1.091	22.4	3.0
95-37-15	5.9	51.9	30.5	11.7	0.0	0.0	0.0	6.9	94.1	82.4	0.0	44.8	1.079	19.9	9.0
95-39-12	5.0	30.9	50.4	9.8	3.9	0.0	0.0	10.0	91.1	81.3	3.9	66.0	1.099	24.1	7.5
95-39-8	1.5	12.2	29.2	45.3	6.4	5.4	0.0	5.7	86.7	41.4	11.8	85.9	1.103	24.9	7.0
95-40-1	2.5	32.0	44.2	12.1	3.4	5.8	0.0	6.3	88.3	76.2	9.2	63.8	1.081	20.3	8.5
95-43-17	8.6	56.1	24.5	10.7	0.0	0.0	0.0	8.2	91.4	80.6	0.0	38.5	1.087	21.6	5.5
95-5-14	3.0	50.8	28.4	17.8	0.0	0.0	0.0	11.6	97.0	79.2	0.0	47.6	1.091	22.4	6.0
95-51-11	3.9	48.6	22.7	15.2	9.6	0.0	0.0	6.4	86.5	71.3	9.6	43.8	1.094	23.0	6.5
95-62-1	2.8	66.7	30.5	0.0	0.0	0.0	0.0	7.0	97.2	97.2	0.0	31.4	1.087	21.6	5.5
95-67-4	15.7	70.2	4.1	0.0	8.6	0.0	1.3	12.0	74.3	74.3	10.0	5.5	1.091	22.4	8.0
95-76-16	13.4	72.9	12.5	0.0	1.3	0.0	0.0	6.7	85.3	85.3	1.3	14.6	1.081	20.3	4.0
95-79-24	2.7	33.8	36.4	24.2	2.8	0.0	0.0	8.8	94.5	70.2	2.8	64.3	1.108	25.9	7.0
95-80-4	9.0	58.0	30.1	3.0	0.0	0.0	0.0	9.8	91.0	88.0	0.0	36.3	1.093	22.8	8.0
95-80-9	15.9	45.8	20.8	8.7	0.0	8.8	0.0	9.8	75.3	66.6	8.8	39.2	1.106	25.5	2.5
95-81-1	0.8	49.5	40.6	9.1	0.0	0.0	0.0	8.2	99.2	90.1	0.0	50.1	1.101	24.5	2.0
95-81-11	9.6	73.4	13.8	0.0	0.0	0.0	3.2	9.9	87.2	87.2	3.2	15.8	1.093	22.8	4.0
95-81-13	3.6	20.1	32.5	43.8	0.0	0.0	0.0	7.0	96.4	52.6	0.0	79.1	1.092	22.6	6.0
95-82-2	13.0	70.4	14.8	0.0	1.7	0.0	0.0	9.6	85.2	85.2	1.7	17.4	1.096	23.4	6.0
95-82-5	5.3	58.7	31.8	4.3	0.0	0.0	0.0	6.2	94.7	90.4	0.0	38.1	1.082	20.5	7.0
95-85-3	7.4	71.8	13.4	7.4	0.0	0.0	0.0	8.4	92.6	85.2	0.0	22.5	1.095	23.2	4.0
95-86-9	7.1	37.5	28.3	20.1	6.9	0.0	0.0	9.7	86.0	65.8	6.9	56.3	1.115	26.3	4.5
95-95-11	2.2	54.4	29.5	4.4	1.8	1.6	6.0	6.4	88.4	83.9	9.4	38.4	1.075	19.1	4.0
RB2	5.3	38.7	30.4	21.9	3.7	0.0	0.0	7.7	91.0	69.1	3.7	57.5	1.095	23.2	6.0
RB3	8.4	57.6	20.4	9.1	0.0	3.2	1.2	9.7	87.1	78.0	4.4	33.9	1.096	23.4	5.0
RB4	10.5	61.8	18.7	4.8	0.0	4.2	0.0	8.8	85.3	80.5	4.2	27.6	1.093	22.8	4.0
RB5	11.1	61.5	15.3	5.1	2.4	4.1	0.6	13.7	81.9	76.8	7.0	24.9	1.093	22.8	4.0
RB6	12.7	62.1	17.8	0.0	7.3	0.0	0.0	11.2	79.9	79.9	7.3	22.2	1.099	24.1	4.0
RB7	10.2	72.5	8.8	0.0	8.5	0.0	0.0	9.8	81.3	81.3	8.5	10.8	1.094	23.0	3.0

Table 9. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Forthside Research Station in 1997-98.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Quality			
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste					Spec. grav.	% dry m'ter	* Fry col.	% scab
94-117-2 **	22.5	4.0	34.7	34.8	18.9	88.4	94.3	69.6	59.9	1.9	1	8.1	7.0	5.1	1.102	24.8	5.3	very slight
66107/51 #	30	3.4	38.7	27.1	18.4	84.2	99.2	65.9	54.0	11.6	2	10.8	4.7	2.7	1.080	20.1	9.0	nil
Kennebec	20	3.2	32.0	35.8	13.2	81.0	85.7	67.8	59.9	1.5	3	6.9	6.0	5.7	1.095	23.2	5.2	slight
94-42-10 **	25	2.3	32.0	22.4	13.2	67.5	72.4	54.4	52.6	2.6	4	7.5	4.4	2.7	1.105	25.4	6.7	very slight
94-54-3	25	4.3	39.6	20.3	7.1	67.0	71.9	59.9	40.7	0.6	5	9.0	4.1	1.5	1.086	21.4	6.7	nil
94-76-7 # **	25	2.9	32.0	21.6	9.5	63.1	68.3	53.6	49.3	2.3	6	6.6	5.4	5.1	1.086	21.4	5.0	nil
93-123-19 **	30	4.2	43.8	15.5	3.5	62.8	67.0	59.4	30.2	0.0	7	9.3	4.2	3.2	1.101	24.5	3.0	very slight
Shepody	20	2.1	27.6	23.0	11.7	62.2	66.3	50.5	55.7	2.0	8	5.2	4.1	2.9	1.090	22.3	6.5	very slight
Russet Burbank	30	4.3	40.7	15.5	3.1	59.2	72.6	56.2	31.0	9.2	9	8.4	6.3	4.5	1.098	23.8	5.5	nil
94-66-4	27.5	5.1	40.2	16.4	2.5	59.1	65.4	56.7	31.7	1.2	10	9.0	5.5	3.0	1.095	23.2	3.5	very slight
92-27-1	27.5	4.6	40.7	13.9	3.0	57.6	63.1	54.6	29.3	0.9	11	8.0	5.9	3.2	1.096	23.5	7.0	very slight
94-109-38 # **	25	5.7	37.6	16.8	2.5	56.8	64.5	54.3	33.8	2.0	12	8.3	6.1	3.1	1.099	24.1	6.0	nil
94-5-5	32.5	6.1	41.3	13.2	2.2	56.6	62.9	54.5	27.0	0.2	13	10.5	6.4	2.9	1.111	25.9	5.7	very slight
94-44-5 **	25	5.4	25.1	20.4	10.8	56.3	63.7	45.5	61.0	2.0	14	7.9	6.6	5.3	1.105	25.2	6.7	very slight
78069-17	30	2.3	30.9	18.1	6.3	55.3	60.2	49.0	42.9	2.6	15	8.2	4.0	2.6	1.087	21.5	6.7	nil
A8495/1 **	30	5.2	38.9	13.6	2.7	55.2	60.7	52.5	29.2	0.3	16	9.8	6.0	4.1	1.090	22.2	5.3	nil
94-109-34 # **	22.5	1.7	18.2	27.3	8.7	54.3	56.2	45.5	66.4	0.2	17	5.4	5.7	2.1	1.085	21.1	6.0	nil
W1005RUSP89 **	30	6.0	43.5	9.6	1.2	54.2	60.5	53.1	19.5	0.3	18	10.0	7.2	6.0	1.107	25.6	3.3	nil
Itasca	27.5	7.4	40.5	9.5	3.8	53.9	78.5	50.1	25.2	17.2	19	11.2	5.7	4.1	1.098	23.8	5.5	very slight
94-109-44 #	25	7.9	40.7	12.1	0.0	52.8	60.9	52.8	23.0	0.2	20	9.8	6.8	4.0	1.085	21.1	5.5	nil
94-109-18	27.5	4.9	36.1	12.9	2.4	51.4	57.7	49.0	30.1	1.4	21	10.1	6.8	5.2	1.091	22.3	5.0	very slight
94-119-14 **	27.5	2.5	34.0	13.3	3.9	51.2	55.6	47.3	33.6	1.9	22	6.4	6.7	5.9	1.100	24.3	4.3	nil
LSD P=0.05		1.9	11.4	6.5	6.0	13.8	14.9	11.6	14.3	2.9		1.3	1.0	1.4	0.007	1.3	0.8	
LSD P=0.01		2.5	ns	8.7	8.1	18.6	20.0	15.6	19.3	3.9		1.8	1.4	1.9	0.009	1.8	1.1	

NOTES: Entries marked ** were selected for further evaluation
Planted: 4 November 1997
Harvested: 28 April 1998
Soil type: Krasnozem
Spacing: between rows: 800mm
Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark
NR = not recorded

Table 10. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Cressy in 1997-98.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Quality			
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste					Spec. grav.	% dry matter	* Fry col.	% scab
78069-17	30	5.1	32.3	13.5	2.6	48.4	58.9	45.8	33.2	5.4	1	8.6	1.7	3.4	1.083	20.7	7.0	very slight
92-27-1	27.5	2.9	30.2	13.3	2.4	45.9	50.9	43.5	34.3	2.1	2	6.3	4.7	4.5	1.091	22.4	3.5	severe
94-117-2 #	22.5	4.7	29.1	11.3	4.9	45.3	53.3	40.4	35.7	3.3	3	6.0	4.9	4.0	1.085	21.1	3.0	very severe
94-119-14	27.5	4.9	30.8	10.0	3.4	44.2	51.1	40.8	30.3	2.0	4	7.3	5.3	7.2	1.081	20.3	1.5	very slight
66107/51 #	30	2.4	20.7	10.1	6.5	37.2	48.5	30.8	44.5	8.8	5	5.9	6.5	3.6	1.079	19.9	6.0	slight
RB	30	4.1	24.9	8.9	1.9	35.7	43.7	33.8	30.2	3.9	6	6.8	5.0	4.8	1.088	21.8	2.5	mod/ severe
94-66-4	27.5	3.9	22.4	9.8	2.7	35.0	38.8	32.3	35.9	0.0	7	4.9	6.3	1.6	1.084	20.9	2.0	severe
W1005RUS P89 #	30	4.4	24.7	9.2	0.6	34.5	38.9	33.9	28.4	0.0	8	6.3	4.4	5.0	1.084	20.9	2.5	Moderate
94-42-10 #	25	6.9	25.1	7.5	0.5	33.2	40.8	32.7	24.3	0.7	9	6.2	3.1	2.6	1.086	21.4	4.0	very severe
A8495/1 #	30	7.6	26.2	3.6	0.0	29.8	39.7	29.8	12.1	2.3	10	7.8	5.0	2.8	1.088	21.8	2.5	mod/ severe
Shepody	20	2.2	13.5	8.8	6.8	29.1	31.3	22.3	53.6	0.0	11	2.4	3.3	2.3	1.078	19.7	7.0	very severe
93-123-19 #	30	6.2	24.7	4.2	0.0	28.9	36.9	28.9	14.5	1.8	12	6.9	2.6	1.9	1.088	21.8	3.0	slight
94-5-5	32.5	7.3	21.5	6.3	0.6	28.3	41.2	27.8	24.1	5.6	13	8.1	6.0	3.7	1.096	23.4	2.5	slight/ mod
94-44-5 #	25	3.3	14.3	4.5	2.1	21.0	26.9	18.8	31.7	2.6	14	3.4	7.8	6.4	1.090	22.2	4.0	severe
Itasca	27.5	4.8	13.8	2.5	0.0	16.4	28.0	16.4	15.5	6.7	15	4.6	2.4	2.5	1.078	19.7	6.5	mod/ severe
94-109-18	27.5	2.3	10.0	5.2	0.7	15.9	20.0	15.2	37.3	1.7	16	2.8	7.7	5.8	1.086	21.4	5.5	mod'ate

NOTES: Results are from one replicate only
Entries marked # were selected as prospects for further evaluation
Planted: 22 October 1997
Harvested: 31 March 1998
Soil type: Sandy loam
Spacing: between rows: 810mm
Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark
NR = not recorded

Table 11. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 large plot comparison at Burnie in 1997-98.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Quality			
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste					Spec. grav.	% dry m'ter	* Fry col.	% scab
Spey	30	2.4	30.7	43.9	25.5	100.1	105.7	74.6	69.2	3.2	1	10.1	1.5	2.8	1.088	21.8	8.0	nil
A82119-3 #	30	1.8	20.9	30.3	37.3	88.5	91.1	51.2	76.3	0.8	2	7.6	4.6	4.2	1.089	21.9	4.5	nil
Mac Russet #	30	2.0	19.1	27.3	37.0	83.5	89.0	46.5	76.9	3.5	3	7.3	4.6	4.0	1.087	21.6	3.0	nil
Legend #	30	1.0	13.0	25.7	44.1	82.7	84.3	38.6	84.3	0.6	4	6.0	3.5	5.2	1.085	21.0	4.0	nil
93-105-21 #	30	9.3	46.7	27.0	4.7	78.4	95.5	73.7	40.4	7.8	5	14.6	2.9	3.7	1.089	22.0	4.5	nil
Shepody	20	1.3	14.7	27.3	34.1	76.1	80.7	42.0	80.6	3.4	6	4.9	1.3	2.8	1.083	20.7	7.0	nil
93-90-12	30	3.5	22.2	28.1	23.0	73.3	91.0	50.3	69.5	14.3	7	9.1	4.4	4.2	1.097	23.5	4.0	nil
93-122-4	30	3.3	27.7	27.7	17.1	72.5	76.0	55.5	61.8	0.1	8	8.4	5.0	1.6	1.081	20.3	6.0	nil
91-158-6 #	30	3.1	20.9	24.2	17.7	62.8	66.8	45.1	66.7	0.9	9	7.5	2.7	0.3	1.086	21.4	3.5	nil
TXAV657-27 #	30	3.2	33.0	16.3	7.5	56.8	63.1	49.3	41.3	3.1	10	8.6	5.8	5.3	1.090	22.2	6.5	nil
Umatilla #	30	2.8	26.0	22.2	8.6	56.8	79.1	48.2	54.6	19.6	11	8.1	5.4	4.6	1.090	22.1	6.0	nil
93-51-8 #	30	3.3	25.2	17.7	10.3	53.2	58.8	42.9	52.8	2.3	12	6.9	4.1	4.1	1.079	19.9	3.5	v.slight
RB	30	3.6	28.3	17.6	4.3	50.1	77.3	45.9	42.3	23.5	13	9.2	5.1	4.4	1.089	21.9	3.5	slight /mod
93-25-9	30	8.4	42.1	2.7	0.6	45.4	54.4	44.8	7.1	0.6	14	12.6	5.0	1.0	1.093	22.7	2.0	slight /mod

NOTES: Entries marked # were selected for further evaluation
Planted: 6 October 1997
Harvested: 27 April 1998
Soil type: Krasnozem
Spacing: between rows: 810mm
* Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark
NR = not recorded

Table 12. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 large plot comparison at Stowport in 1997-98.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Quality			
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste					Spec. grav.	% dry m'ter	* Fry col.	% scab
Mac Russet #	30	1.3	34.4	45.3	20.9	100.6	102.8	79.6	65.8	0.9	1	9.6	6.1	5.4	1.092	22.5	6.8	nil
Spey	30	1.7	21.7	32.1	36.3	90.2	93.4	53.8	75.9	1.5	2	8.0	3.4	3.3	1.082	20.5	5.0	nil
Kennebec	20	2.2	21.3	30.9	33.0	85.1	90.0	52.1	75.0	2.6	3	5.1	6.6	7.7	1.078	19.7	3.5	v. slight
Legend #	30	0.6	9.6	17.4	51.3	78.3	81.1	27.0	87.5	2.2	4	5.6	5.9	6.2	1.085	21.1	4.5	nil
Umatilla #	30	1.3	15.5	29.8	30.1	75.5	85.9	45.4	79.4	9.2	5	6.8	5.8	6.1	1.089	22.0	6.8	nil
93-105-21	30	8.3	55.3	16.0	2.9	74.2	85.8	71.3	24.9	3.3	6	14.2	2.1	2.7	1.083	20.7	4.8	nil
RB	30	2.6	33.6	26.4	13.3	73.3	81.1	60.0	53.9	5.2	7	9.1	5.8	5.8	1.090	22.1	3.8	nil
Shepody	20	0.6	13.5	24.7	34.7	72.9	74.9	38.2	81.5	1.4	8	3.8	4.0	5.9	1.078	19.7	6.0	nil
93-90-12	30	1.7	11.6	20.3	37.2	69.1	78.2	31.9	82.6	7.3	9	6.5	4.1	1.9	1.090	22.2	5.5	nil
TXAV657-27	30	2.6	31.1	21.7	11.4	64.2	70.1	52.8	49.9	3.3	10	9.0	5.6	5.9	1.084	20.9	4.5	nil
93-51-8	30	3.3	25.2	17.7	10.3	53.2	58.8	42.9	52.8	2.3	11	6.9	4.1	4.1	1.079	19.9	3.5	v. slight
93-25-9	30	6.8	34.8	5.0	0.0	39.7	47.6	39.7	12.6	1.1	12	8.2	5.4	1.5	1.102	24.7	4.5	nil

NOTES: Entries marked # were selected for further evaluation
Planted: 20 October 1997
Harvested: 6 April 1998
Soil type: Krasnozem
Spacing: between rows: 810mm
Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark
NR = not recorded

Table 13. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 large plot comparison at Cressy in 1997-98.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Quality			
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste					Spec. grav.	% dry m'ter	* Fry col.	% scab
Kennebec	20	2.8	28.6	39.4	23.7	91.7	96.5	68.0	68.8	2.0	1	5.8	3.6	5.5	1.076	19.2	3.8	mod/severe
Umatilla #	30	2.4	21.8	28.9	12.3	63.0	69.3	50.7	65.3	3.9	2	6.7	3.0	3.4	1.087	21.5	3.8	slight
RB	30	4.8	36.5	17.3	2.8	56.6	66.2	53.8	34.9	4.9	3	9.0	3.6	3.7	1.089	21.9	4.3	moderate
93-122-4	30	5.1	36.9	10.0	1.0	47.8	54.6	46.8	22.8	1.6	4	8.5	3.8	2.4	1.077	19.4	5.3	very severe
Spey	30	1.9	14.3	14.0	12.5	40.8	45.2	28.3	65.1	2.6	5	4.5	1.5	2.2	1.083	20.7	4.8	severe
Legend #	30	1.2	18.3	16.8	5.6	40.7	42.5	35.1	54.9	0.6	6	4.7	5.1	4.9	1.085	21.0	4.0	slight
93-90-12	30	8.5	31.8	3.7	0.6	36.1	46.8	35.5	11.6	2.2	7	9.4	3.0	3.4	1.100	24.2	4.0	very severe
Mac Russet #	30	5.3	23.9	8.4	3.1	35.3	41.3	32.3	32.1	0.7	8	6.6	4.4	4.8	1.096	23.3	5.5	mod/severe

NOTES: Entries marked # were selected for further evaluation
Planted: 21 October 1997
Harvested: 31 April 1998
Soil type: Sandy loam
Spacing: between rows: 810mm
Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark
NR = not recorded

1998-99

Materials and methods

Forty-three accessions from the Toolangi breeding program were planted in single rows in the 1998-99 season's Stage 1 comparison, together with eight check plots of Russet Burbank. In addition, ten overseas accessions, in the form of tissue-cultured plantlets, were planted for observation and multiplication. In-row spacing again was adjusted between 225mm and 300mm for different lines, in accordance with advice from the plant breeder. The 18 lines selected from Stage 1 comparisons in 1997-98 were planted in Forthside Research Station's Stage 2 trial, together with four variants of the cultivar Gladiator, and the cultivar Kiwitea and the line 511/1. Gladiator had performed well in previous work but stolon retention through processing was problematic. These variants were planted to see whether this characteristic could be improved. Eighteen selections were planted at the Stage 2 site at Cressy, together with Russet Burbank, Shepody and Kennebec as checks. Eight re-selections were planted in Stage 3 observations at Burnie and Stowport in 1998-99, and nine at Cressy, in addition to check cultivars.

In this season, assistance was also provided to local, fresh-market potato merchants, who wished to gain more information on new fresh market genotypes. Twenty-eight new and standard cultivars and new lines were planted in a randomised block experiment with three replicates, using a plot size of 5m by 2 rows net.

Results

Stage 1 lines with pronounced tuber defects were discarded and data on the remaining entries is shown in Table 14 below. Fry colours of Russet Burbank check plots were greatly improved when compared with the previous season. Tables 15 and 16 show information collected on Stage 2 entries in Forthside Research Station and Cressy trials respectively. Three lines significantly out-yielded Russet Burbank at Forthside Research Station, although one of these exhibited a high incidence of hollow heart. Tables 17 - 19 inclusive provide information on Stage 3 comparisons.. In this season's observations at Burnie and Stowport, no selection returned a higher yield than the standard Russet Burbank cultivar.

Results of the field trial to compare fresh market genotypes are shown in Table 20. A wide range in total yields was found (118.5 – 60.2 t/ha) and the marketable yield of White Delight was significantly (P=0.05) greater than the Sebago standard.

Discussion

Twenty-eight lines from Stage 1 comparisons in 1998-99 were selected for re-examination in the following season. Eight lines were selected from Stage 2 trials in 1998-99 for evaluation in the following year's Stage 3 comparison. From the 1998-99 Stage 3 observations, processing industry personnel selected the following lines for further evaluation on a semi-commercial basis: A8495/1, W1005PRUS89, 94-109-34, 94-117-2, 94-42-10, 94-109-38 and 94-119-14.

Industry personnel involved in fresh market sales discussed results and acknowledged the support of research staff in obtaining the information they had sought. They indicated interest in pursuing the development locally of specific cultivars.

Technology transfer

The season's work again was presented at an Open Day at Forthside Research Station and field days were also held during harvest operations at all trial locations, some of which were conducted with the potato breeder, Dr Kirkham. Results again were included in the annual publication of national results and a topical article was published in the "Tasmanian Country" weekly newspaper on 14 April 1999.

Table 14. Tuber grades, numbers per plant and quality characteristics from lines and cultivars compared in Stage 1, Forthside Research Station, 1998-99

Line or cult	% 0-100 g by wt	%100 -280 g by wt	% 280-450 g by wt	% > 450 g by wt	% mis-shapen by wt	% crack'd by wt	% rot by wt	Tuber no. / plant	Spec. grav.	% dry matter	Fry results			Days to ma'ty
											Colour	SEB	Vasc. ring	
96-113-2	13.5	70.3	12.7	3.5	0.0	0.0	0.0	10.9	1.113	26.3	6	1		171+
96-125-24	4.0	33.5	35.3	27.2	0.0	0.0	0.0	8.3	1.116	26.3	7		2	171+
96-125-27	0.7	14.9	39.8	42.6	2.0	0.0	0.0	7.3	1.096	23.4	6		1	171+
96-125-47	11.1	79.5	9.4	0.0	0.0	0.0	0.0	14.4	1.106	25.3	6			171+
96-125-56	9.7	69.9	20.4	0.0	0.0	0.0	0.0	10.3	1.081	20.3	4			164
96-128-13	3.8	48.3	36.0	6.5	0.0	0.0	5.3	7.9	1.111	26.3	7		2	171+
96-13-1	16.5	67.0	10.3	0.0	2.3	0.0	3.9	8.6	1.104	25.1	5	4		171+
96-130-7	15.6	66.1	14.5	3.8	0.0	0.0	0.0	11.6	1.101	24.5	4			171+
96-131-17	11.9	54.5	16.6	12.8	2.4	0.0	1.8	9.0	1.096	23.4	7	2		164
96-131-36	19.5	69.3	10.2	0.0	0.9	0.0	0.0	12.1	1.091	22.0	5		1	157
96-131-48	12.2	79.5	8.3	0.0	0.0	0.0	0.0	9.4	1.092	22.0	6		1	164
96-131-6	24.4	70.2	3.6	0.0	0.0	0.0	1.8	12.8	1.091	22.0	7	4		171+
96-133-7	9.6	70.8	18.6	0.0	1.0	0.0	0.0	10.0	1.093	22.0	2			171+
96-134-6	15.0	67.2	16.1	0.0	0.0	0.0	1.7	10.0	1.101	24.5	7			171+
96-139-22	37.9	62.1	0.0	0.0	0.0	0.0	0.0	21.8	1.102	24.7	5		1	171+
96-139-24	1.7	37.3	51.2	9.8	0.0	0.0	0.0	4.6	1.101	24.5	6			171+
96-139-28	14.2	78.1	7.7	0.0	0.0	0.0	0.0	10.9	1.091	22.0	6	3		171+
96-139-29	8.3	66.4	16.4	8.9	0.0	0.0	0.0	9.8	1.082	20.5	7	2		157
96-141-4	4.8	46.5	24.4	21.0	0.0	0.0	3.4	7.1	1.107	25.3	4	1		171+
96-145-13	18.3	68.0	11.7	0.0	2.0	0.0	0.0	14.8	1.093	22.0	7			157
96-50-2	21.6	66.5	7.1	0.0	4.9	0.0	0.0	15.0	1.105	25.3	7		1	171+
96-50-4	2.9	52.7	26.1	15.4	2.9	0.0	0.0	10.3	1.082	20.5	7	3		164
96-51-1	10.0	42.9	27.1	17.2	2.8	0.0	0.0	11.1	1.093	22.0	8		3	171+
96-52-1	18.7	68.4	12.8	0.0	0.0	0.0	0.0	9.3	1.077	19.5	4		1	164
96-67-5	10.2	66.7	20.7	0.0	2.0	0.0	0.5	17.5	1.095	23.2	8	3	3	171+
RB2	8.8	47.2	34.6	6.4	1.1	0.0	2.0	10.8	1.092	22.0	7	4	2	164
RB3	3.1	22.1	30.3	38.2	6.2	0.0	0.0	5.8	1.09	22.0	7		2	164
RB4	4.1	25.9	36.9	23.3	7.4	1.6	0.8	10.5	1.097	23.6	7	2	3	164
RB5	6.2	55.8	20.1	15.7	0.0	2.2	0.0	11.8	1.097	23.6	7	2	2	164
RB6	6.5	62.5	22.4	3.5	3.1	2.2	0.0	9.6	1.087	21.6	6	2		164
RB7	6.2	48.3	23.0	15.0	7.4	0.0	0.0	11.1	1.093	22.0	7	3	2	171
RB8	6.7	41.2	43.0	5.7	0.0	3.3	0.0	10.1	1.09	22.0	7	4	1	164
RB9	9.7	37.7	40.3	12.3	0.0	0.0	0.0	8.9	1.084	20.9	8	2	2	164

NOTE: Harvest date 8 April 1999
Key to quality results:
0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe
SEB = Stem end browning, Vasc ring = vascular ring
3 tuber sample for SG & fry assessments only

Table 15. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Forthside Research Station in 1998-99.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste
95-5-14	25	9.0	68.5	22.6	3.6	94.7	110.4	91.1	27.8	6.7
95-105-1	22.5	5.2	46.8	40.5	7.1	94.4	105.4	87.3	50.3	5.8
95-110-8	22.5	6.5	48.0	32.3	13.7	94.0	105.1	80.3	49.0	4.7
95-102-13	22.5	4.3	55.7	27.0	5.6	88.3	94.3	82.7	37.1	1.7
Kennebec	20	2.3	35.3	35.6	14.8	85.7	90.2	70.9	59.1	2.2
95-81-1	27.5	4.2	46.4	28.7	9.7	84.9	90.1	75.1	44.6	1.0
95-51-11	25	2.8	29.8	33.8	17.5	81.0	89.5	63.5	63.4	5.7
95-102-2	27.5	4.7	61.0	18.3	1.0	80.2	85.5	79.2	24.0	0.6
95-62-1	22.5	4.7	43.6	28.5	6.1	78.2	85.2	72.1	44.1	2.3
Russet Burbank	30	4.4	36.8	22.8	11.2	70.8	82.2	59.5	48.1	7.1
95-110-15	27.5	7.2	55.8	13.2	0.8	69.8	77.9	69.0	20.0	1.0
Shepody	20	3.1	24.2	31.2	13.1	68.5	80.3	55.4	64.5	8.7
95-37-12	35	4.1	38.9	24.8	4.5	68.2	74.1	63.7	42.5	1.8
95-105-5	25	6.0	44.4	16.3	3.2	63.9	70.4	60.7	30.1	0.5
95-20-12	30	5.4	45.2	14.1	4.0	63.2	69.4	59.2	28.3	0.8
95-109-2	35	10.5	54.9	5.3	0.0	60.2	71.8	60.2	8.1	1.0
95-76-16	35	4.4	38.8	17.2	1.3	57.3	62.7	56.0	31.3	0.9
95-43-17	22.5	15.8	47.4	7.3	1.0	55.7	72.3	54.7	14.8	0.9
95-85-3	35	5.2	33.5	15.9	4.4	53.7	60.3	49.4	37.4	1.4
95-86-9	22.5	10.1	32.0	11.7	3.0	46.7	58.3	43.7	30.7	1.5
A84118-3	30	1.9	16.3	15.9	12.1	44.3	48.3	32.2	63.5	2.0
LSD P=0.05		1.9	9.6	8.1	5.8	14.0	13.1	13.5	9.9	3.3

Table 15 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Stems per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							Days to matur	% hollow
							Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Other		
95-5-14	1	13.3	4.7	4.4	1.5	0	1.085	21.1	5.3	3	0	0		179+	0.0
95-105-1	2	8.9	2.2	3.3	3.8	1	1.099	24.1	5.3	0	2	2		182+	0.0
95-110-8	3	9.3	2.4	3.2	5.3	2	1.106	25.3	6.3	2.5	1	0		181+	38.3
95-102-13	4	8.8	2.4	4.8	4.8	1	1.105	25.3	4.7	1	2	1		167	10.0
Kennebec	5	5.9	3.0	2.8	4.3	3	1.088	21.8	2.0	0	0.5	0		160	13.3
95-81-1	6	9.6	3.2	3.9	2.8	0	1.091	22.3	2.7	0	0	0		172	0.0
95-51-11	7	7.2	3.3	6.3	6.3	1	1.082	20.6	6.3	3	2	0	spr'ting	165	3.3
95-102-2	8	10.7	3.7	5.0	4.2	2	1.100	24.3	3.0	0	0.5	0	yellow	172	0.0
95-62-1	9	8.5	2.8	1.5	0.1	0	1.082	20.5	7.3	4	3	0		164	15.0
Russet Burbank	10	9.7	2.5	4.5	3.8	2	1.090	22.2	5.7	3	2	0		164	8.3
95-110-15	11	10.8	2.5	4.0	2.2	0	1.088	21.3	3.3	0.5	0.5	0		164	0.0
Shepody	12	5.4	2.1	1.5	1.9	1	1.079	19.8	6.3	3	0	0		164	0.0
95-37-12	13	10.8	2.6	4.2	4.5	3	1.083	20.8	3.0	0.5	0	0		165	0.0
95-105-5	14	8.2	2.5	3.2	2.0	1	1.081	20.3	2.3	1	0	0	Sp'ting	158	3.3
95-20-12	15	10.3	3.3	0.4	0.2	0	1.087	21.4	2.3	1	0	0		163	0.0
95-109-2	16	15.4	3.2	2.9	5.9	3	1.090	21.9	3.3	2	0	0		164	0.0
95-76-16	17	10.1	2.6	2.4	0.9	1	1.082	20.5	4.0	1	0	1		158	1.7
95-43-17	18	10.8	3.2	5.2	5.8	2	1.087	21.4	4.0	1	1	0		165	0.0
95-85-3	19	9.7	2.1	5.5	4.5	0	1.084	20.9	3.7	1	0	1	Spr'ting	162	0.0
95-86-9	20	8.1	2.5	2.7	2.2	1	1.099	24.1	6.3	2	0	0		175+	0.0
A84118-3	21	4.8	1.7	1.4	0.4	0	1.093	22.8	3.0	0	1	0		177+	3.3
LSD P=0.05		1.4	na	1.5	1.5	na	0.008	1.5	1.0	na	na	na	na	na	10.2

NOTES: Planted: 16 October 1998, harvested 7 April 1999. NR = not recorded. * Samples assessed visually , scale 1 - 10, 7 = borderline, > 7 = too dark . Key to quality results : 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout. Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.

Table 16. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Cressy in 1998-99.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste
Kennebec	20	2.3	15.8	15.1	40.5	71.4	82.9	30.9	77.6	9.2
95-102-13 (1 rep)	22.5	3.1	24.1	25.2	17.7	67.0	75.3	49.3	63.4	5.2
95-5-14	25	6.5	39.1	16.9	10.2	66.1	77.1	55.9	40.5	4.5
95-81-1	27.5	4.4	24.5	25.5	13.6	63.6	75.2	50.0	61.5	7.2
95-76-16 (2 rep)	35	2.9	28.3	16.4	12.2	56.9	68.7	44.8	50.4	9.0
95-51-11 (1 rep)	25	4.8	21.6	20.5	10.4	52.4	60.1	42.1	57.9	2.9
95-102-2	27.5	2.5	24.5	16.1	10.5	51.2	56.5	40.6	52.3	2.8
95-105-1	22.5	5.4	30.7	15.1	5.2	51.0	59.8	45.8	40.9	3.4
95-110-8	22.5	5.8	20.6	13.1	14.4	48.0	61.6	33.6	55.4	7.8
Russet Burbank	30	3.7	16.4	14.9	13.3	44.7	62.8	31.4	60.2	14.4
Shepody	20	1.4	10.4	16.4	17.8	44.6	50.2	26.7	75.5	4.3
95-86-9 (1 repl)	22.5	9.1	30.0	12.7	0.7	43.4	54.2	42.8	33.0	1.7
95-37-12	35	7.5	28.1	12.3	2.7	43.0	51.4	40.3	34.4	1.0
95-105-5 (2 rep)	25	1.6	18.7	15.6	8.5	42.8	46.5	34.3	56.5	2.1
95-110-15	27.5	7.6	34.7	7.3	0.6	42.6	50.7	42.0	17.8	0.6
95-85-3	35	2.0	16.2	13.8	6.6	36.6	41.9	30.0	55.2	3.4
A84118-3	30	3.5	23.9	9.8	2.1	35.8	40.2	33.7	33.4	0.9
95-20-12	30	3.6	22.5	10.2	2.6	35.3	42.3	32.8	36.7	3.4
95-43-17 (1 rep)	22.5	5.8	21.9	9.6	2.0	31.5	39.2	31.5	34.0	1.9
95-62-1 (1 rep)	22.5	3.8	14.3	9.7	6.2	30.2	55.2	24.0	53.5	21.3
95-109-2	35	5.5	25.1	4.6	0.3	30.0	38.4	29.7	16.3	3.0
LSD P=0.05		2.7	10.5	6.1	9.3	17.1	17.8	13.8	13.5	7.2

Table 16 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							Days to matur	% hollow
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Other		
Kennebec	1	4.3	1.1	2.3	2	1.075	19.1	6.0	1	1	0		152	3.3
95-102-13 (1 rep)	2	5.6	2.0	1.0	0	1.091	22.2	2.9	1	0	0		160+	61.4
95-5-14	3	8.7	0.5	0.3	0	1.075	19.0	6.3	2	0	0	pale y'w	160+	1.7
95-81-1	4	7.3	0.9	1.0	0	1.092	22.7	2.0	0	0	0		158	0.0
95-76-16 (2 rep)	5	8.6	0.5	1.8	1	1.077	19.5	2.4	1	0	0		160+	14.9
95-51-11 (1 rep)	6	6.0	4.8	2.5	2	1.077	19.4	2.1	0	0	0		148	10.3
95-102-2	7	5.5	2.1	2.8	2	1.088	21.7	4.7	0.5	0	0	yellow	160	6.7
95-105-1	8	6.3	2.8	2.7	0.5	1.086	21.4	4.3	0	1	0		160+	0.0
95-110-8	9	5.8	2.2	4.4	2	1.092	22.5	6.0	1	1	0		160+	15.0
Russet Burbank	10	7.0	1.8	1.7	0	1.077	19.6	7.0	3	2	0		158	0.0
Shepody	11	2.7	0.4	0.7	0	1.068	17.6	6.3	3	1	0		150	15.0
95-86-9 (1 repl)	12	6.9	4.5	0.4	0	1.103	24.8	6.1	0	0	0	yellow	160+	0.3
95-37-12	13	9.8	2.1	5.1	3	1.072	18.4	6.0	0	0.5	0	pale y'w	151	0.0
95-105-5 (2 rep)	14	4.0	1.0	2.6	0.5	1.073	18.6	4.4	0	0.5	0		158	0.0
95-110-15	15	8.2	1.8	0.6	0	1.076	19.2	4.7	0	0	1		155	1.7
95-85-3	16	5.2	4.1	2.0	0.5	1.075	19.0	4.0	1	0.5	0		151	0.0
A84118-3	17	5.8	0.0	0.0	0	1.081	20.4	6.7	0	3	0		160+	0.0
95-20-12	18	5.8	0.3	0.3	0	1.092	22.4	2.7	0	0.5	0		160+	0.0
95-43-17 (1 rep)	19	4.9	4.3	3.3	0	1.070	18.0	6.1	0	2	0		153	0.3
95-62-1 (1 rep)	20	4.6	0.8	0.4	0	1.071	18.2	8.1	0	2	3		153	0.3
95-109-2	21	8.0	2.7	5.3	3	1.084	20.9	5.0	2	0	0	pale y'w	158	0.0
LSD P=0.05		2.0	1.5	1.4	na	0.005	1.1	1.5	na	na	na	na	na	10.2

NOTES: Planted: 3 November 1998, harvested 12 April 1999. NR = not recorded. * Samples assessed visuall , scale 1 - 10, 7 = borderline, > 7 = too dark . Key to quality results : 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout. Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.

Table 17. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Burnie in 1998-99.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste
Russet Burbank	30	4.06	36.37	24.02	4.70	65.09	74.61	60.40	44.1	5.46
93-51-8	30	2.83	26.83	21.37	14.29	62.49	67.77	48.20	57.0	2.46
93-123-19	30	3.33	32.41	17.77	4.48	54.66	58.00	50.18	40.7	0.00
94-42-10	25	1.46	20.06	23.52	10.97	54.55	58.45	43.58	62.2	2.45
94-109-38	25	2.81	22.84	21.28	9.63	53.75	60.80	44.12	57.5	4.25
Shepody	20	1.36	16.83	18.29	17.16	52.29	57.37	35.12	67.8	3.73
94-117-2	22.5	3.35	27.68	16.13	6.88	50.69	54.52	43.81	45.3	0.47
W1005PRUS89	30	1.91	22.04	18.54	9.58	50.16	53.85	40.58	56.1	1.78
94-119-14	27.5	0.72	16.77	16.98	15.52	49.27	52.78	33.75	66.0	2.79
Kennebec	20	3.60	20.88	14.70	9.02	44.60	52.47	35.58	53.2	4.26
94-76-7	25	2.80	25.15	13.05	2.74	40.94	45.53	38.21	38.5	1.78

Table 17 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							% hollow	Scab rating
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Other		
Russet Burbank	1	9.7	2.6	2.5	0	1.098	23.8	5.0	3.5	2	0		27.5	
93-51-8	2	8.1	0.9	1.4	0	1.082	20.4	2.8	0	0.5	0		2.5	
93-123-19	3	7.9	1.0	1.4	0	1.093	22.6	2.5	0	0.5	0		15.0	
94-42-10	4	5.0	0.4	1.8	0	1.089	21.7	5.3	2	0	2		0.0	
94-109-38	5	5.6	3.9	2.2	1.5	1.091	22.0	6.0	0	0	3	yellow	10.0	slight
Shepody	6	3.7	0.8	1.8	0	1.067	17.4	6.0	3	1.5	0		5.0	severe
94-117-2	7	5.3	3.9	3.2	2	1.087	21.4	3.3	1	1	0		52.5	mod'te
W1005PRUS89	8	6.1	4.2	3.1	0.5	1.080	20.1	5.0	3	0	0		0.0	
94-119-14	9	5.0	6.2	5.9	1	1.089	22.0	4.5	1	0.5	0		0.0	
Kennebec	10	4.7	2.4	4.7	4	1.070	18.0	7.3	3	4	0		17.5	severe
94-76-7	11	5.2	3.8	3.0	2	1.088	21.5	3.5	1	1	0		7.5	

NOTES: Planted: 4 November 1998, harvested 4 June 1999.
NR = not recorded.
Samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout. Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.

Table 18. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Cressy in 1998-99.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste
Kennebec	20	3.39	30.09	21.74	8.57	60.40	64.54	51.83	50.2	0.76
94-117-2	22.5	2.66	29.51	19.05	9.16	57.72	61.57	48.57	48.7	1.19
Russet Burbank	30	6.56	34.12	10.99	3.27	48.37	59.84	45.10	29.5	4.91
Shepody	20	3.74	23.05	17.01	6.50	46.56	52.09	40.06	50.0	1.78
94-42-10	25	7.96	35.43	6.65	0.57	42.64	50.76	42.08	17.0	0.16
93-123-19	30	7.16	28.78	10.14	1.16	40.08	48.33	38.92	26.6	1.09
94-109-34	22.5	2.20	17.74	15.95	6.30	39.99	43.06	33.69	55.5	0.87
66107/51	30	5.92	23.84	12.28	3.81	39.94	48.54	36.12	39.4	2.69
W1005PRUS89	35	5.76	30.30	8.65	0.95	39.90	46.27	38.95	23.9	0.62
A8495/1	30	12.02	30.06	6.41	0.30	36.77	49.31	36.47	18.0	0.52
94-44-5	25	4.20	19.45	8.42	4.76	32.64	45.14	27.88	40.7	8.31

Table 18 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							% hollow	Scab rating
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Other		
Kennebec	1	5.9	1.7	4.1	3	1.075	19.1	3.8	1.5	0	0		10.0	Mod'ate
94-117-2	2	6.2	5.9	5.8	1	1.084	20.8	3.8	0.5	0.5	0		15.0	
Russet Burbank	3	9.9	5.4	3.6	2	1.081	20.2	6.3	2	1.5	0		5.0	
Shepody	4	4.9	0.7	1.0	0	1.067	17.4	5.8	2.5	0.5	0		15.0	slight
94-42-10	5	10.1	1.0	2.1	0	1.096	23.3	6.0	0	0	2		0.0	
93-123-19	6	9.8	0.6	1.0	1	1.083	20.7	3.8	0	0.5	0		0.0	
94-109-34	7	5.0	3.6	1.3	0	1.077	19.4	5.8	0.5	0.5	0		0.0	
66107/51	8	7.6	2.9	4.1	2	1.070	17.9	8.0	0	3	3		0.0	
W1005PRUS89	9	8.0	4.8	2.4	0.5	1.074	18.8	4.8	2.5	0	0		0.0	
A8495/1	10	11.8	2.4	3.3	1.5	1.068	17.6	5.3	0	2	0		0.0	
94-44-5	11	6.5	5.7	6.0	3	1.083	20.7	6.5	0	1	0		50.0	

NOTES: Planted: 3 November 1998, harvested 12 April 1999.
NR = not recorded.
Samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout. Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.

Table 19. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Stowport in 1998-99.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	% waste
94-117-2	30	1.73	28.90	28.87	14.48	72.25	76.53	57.77	60.0	2.55
Kennebec	20	1.04	20.03	31.37	20.73	72.13	76.10	51.40	72.4	2.92
Russet Burbank	30	3.91	36.43	24.42	8.30	69.16	77.27	60.85	47.3	4.20
W1005PRUS89	30	3.37	30.64	30.85	7.60	69.10	74.15	61.49	55.7	1.69
93-123-19	30	3.50	40.70	16.37	4.90	61.98	66.92	57.07	33.9	1.44
Shepody	20	1.16	21.10	28.32	9.06	58.48	64.89	49.42	63.8	5.25
94-42-10	30	1.18	17.38	21.25	19.85	58.48	63.46	38.63	70.3	3.81
94-44-5	30	2.96	22.29	19.39	14.91	56.59	64.92	41.68	60.6	5.38
94-109-34	30	0.95	6.25	14.74	31.65	52.63	54.91	20.99	88.1	1.33
A8495/1	30	3.49	28.84	16.89	6.56	52.29	56.74	45.73	44.8	0.96
94-76-7	30	1.61	13.69	15.75	7.13	36.56	50.33	29.43	62.5	12.15

Table 19 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							% hollow	Scab rating
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Other		
94-117-2	1	8.0	3.6	5.8	2	1.080	20.0	6.0	2	0	0		0.0	
Kennebec	2	4.6	1.2	5.7	3	1.081	20.2	4.5	0	0	0		2.5	
Russet Burbank	3	9.2	4.4	4.3	0	1.083	20.6	6.5	1.5	0	0		5.0	
W1005PRUS89	4	9.1	5.5	4.7	1.5	1.089	21.9	6.0	0.5	0	0		0.0	
93-123-19	5	9.6	0.4	0.4	0	1.084	20.9	3.0	0	0	0		0.0	
Shepody	6	4.7	0.7	1.6	0	1.074	18.8	7.0	3	1	0		0.0	
94-42-10	7	6.4	0.0	0.7	0	1.091	22.4	4.5	2	0	0		2.5	
94-44-5	8	7.6	5.3	4.7	2.5	1.094	22.9	5.5	0	0	0		12.5	
94-109-34	9	4.5	4.2	3.0	0	1.073	18.6	7.0	0	0.5	0		0.0	
A8495/1	10	8.3	3.0	3.2	0	1.082	20.4	6.5	2	0	0		0.0	
94-76-7	11	6.0	1.6	2.7	1	1.080	20.1	6.5	3.5	0	0		0.0	

NOTES: Planted: 3 November 1998, harvested 12 April 1999.
NR = not recorded.
Samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout. Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.
A8495/1 known as Classic Russet in the US.

Table 20. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Fresh market trial at Forthside in 1998-99.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)						
		Chats 0-100 g	Premium 100-350 g	Large >350 g	Marketable > 100 g	% in mark'ble grade 100-350 g	Total yield	Waste yield
White Delight (Crop 4)	22.5	9.9	85.3	18.1	103.5	82.8	118.5	5.2
85-2-1	25	5.6	81.9	5.4	87.3	93.9	96.8	4.0
Driver (Crop 8)	20	8.9	78.5	5.2	83.7	93.5	94.6	2.1
517/12 #	27.5	11.0	78.2	5.8	84.0	93.4	98.5	3.4
602/5 #	20	8.5	70.8	12.3	83.1	85.4	93.4	1.9
Sebago	20	5.9	68.3	18.6	86.8	78.6	93.9	1.2
92-19-10	25	11.5	64.9	7.0	71.9	90.4	84.7	1.3
2287/18 #	30	5.8	64.4	5.0	69.3	93.4	78.3	3.1
511/1	25	6.1	63.6	18.4	82.0	77.8	88.2	0.2
Nadine	22.5	14.0	63.6	1.0	64.6	98.6	79.9	1.3
354/5	25	8.0	62.2	22.1	84.2	74.6	97.3	5.1
Nicola	25	18.4	60.3	2.0	62.3	97.2	83.4	2.8
Crystal	20	5.6	59.7	9.2	68.9	87.2	78.8	4.2
Desiree	25	7.4	57.6	6.0	63.5	90.7	74.9	4.0
2371/3 #	27.5	4.4	56.4	5.9	62.3	90.7	67.2	0.4
Ruby Lou	25	5.4	54.0	4.3	58.4	92.7	65.1	1.3
Pontiac	25	2.9	52.2	27.5	79.7	65.9	89.1	6.5
Coliban	15	4.5	51.5	35.8	87.4	59.0	99.4	7.5
92-19-4	25	1.9	50.7	21.7	72.4	69.5	83.5	9.2
Shine	25	9.0	49.2	2.2	51.4	96.1	62.3	2.0
2287/20 #	27.5	4.4	47.8	18.7	66.4	72.5	74.5	3.7
Winter Gem	25	10.0	47.7	3.0	50.7	94.3	63.7	3.0
93-38-1	25	7.3	46.6	4.4	51.0	91.4	59.6	1.4
2396/1 #	25	3.2	44.7	25.1	69.8	64.3	74.6	1.7
Karaka #	25	3.2	43.1	23.3	66.4	65.2	85.5	16.0
Snow Gem	25	2.9	40.2	17.3	57.5	69.6	62.4	2.0
Fontenot	25	4.7	39.2	5.9	45.1	86.6	59.7	9.9
86-31-5	25	3.0	36.4	16.2	52.6	71.4	60.2	4.7
LSD P=0.05		2.6	11.1	8.7	14.5	9.9	14.3	3.9
LSD P=0.01		3.4	14.8	11.5	19.2	13.2	19.0	5.1

Table 20 continued

Line or cultivar	Rank by premium grade	Tuber no. per plant	Quality						
			Spec. grav.	% dry m'ter	* Skin col.	Skin texture	Flesh colour	Cook colour	Misc. defects (Sloughing, mash texture, after cook blackening, etc)
White Delight (Crop 4)	1	12.3	1.087	21.4	cream	smooth	pale cream	cream	slight after cook blackening
85-2-1	2	11.3	1.084	20.9	cream	smooth	pale cream	white	severe sloughing
Driver (Crop 8)	3	9.4	1.083	20.7	cream	textured	pale cream	pale cream	
517/12 #	4	14.4	1.085	21.2	nr	nr	nr	nr	nr
602/5 #	5	9.0	1.088	21.7	nr	nr	nr	nr	nr
Sebago	6	7.8	1.088	21.8	cream	smooth	pale cream	pale cream	moderate sloughing
92-19-10	7	11.2	1.077	19.5	pale cream	smooth	pale cream	white	mash texture too moist
2287/18 #	8	12.3	1.092	21.8	nr	nr	nr	nr	nr
511/1	9	9.0	1.087	21.5	pale cream	textured	off white	pale cream	severe sloughing
Nadine	10	11.4	1.062	16.4	pale cream	smooth	pale cream	pale cream	mod slough, mash too moist
354/5	11	10.9	1.088	21.6	cream	textured	pale cream	pale cream	
Nicola	12	13.9	1.080	20.2	yellow	textured	yellow	yellow	mash texture too moist
Crystal	13	7.1	1.083	20.5	cream	smooth	pale cream	white	severe aft cook black'g, brown centres
Desiree	14	9.6	1.091	22.5	pink	smooth	cream	yellow	
2371/3 #	15	8.8	1.062	16.4	nr	nr	nr	nr	nr
Ruby Lou	16	6.9	1.080	20.2	pink	textured	cream	pale cream	after cook vasc discolour
Pontiac	17	7.6	1.074	18.8	pale red	textured	white	white	moderate sloughing
Coliban	18	5.1	1.082	20.6	cream	textured	white	white	moderate/severe sloughing
92-19-4	19	6.8	1.061	16.2	cream	smooth	white	white	excellent colour & stability
Shine	20	8.9	1.075	19.1	pale cream	smooth	cream	white	severe sloughing
2287/20 #	21	8.2	1.082	20.5	nr	nr	nr	nr	nr
Winter Gem	22	9.1	1.099	24.1	pale cream	russetted	pale cream	white	severe sloughing
93-38-1	23	7.9	1.072	18.5	red	textured	pale cream	pale cream	mash texture too moist
2396/1 #	24	6.5	1.078	19.8	nr	nr	nr	nr	nr
Karaka #	25	6.8	1.088	21.8	nr	nr	nr	nr	nr
Snow Gem	26	5.5	1.070	18.0	cream	textured	pale cream	off white	mod after cook blackening
Fontenot	27	6.9	1.087	21.6	red	textured	white	pale cream	severe after cook black'ing
86-31-5	28	5.6	1.089	22.1	nr	nr	nr	nr	nr
LSD P=0.05	n/a	1.0	0.010	1.9	n/a	n/a	n/a	n/a	n/a
LSD P=0.01		1.3	0.013	2.6					

NOTES: Planted: 27 October 1998, harvested 15 April 1999.
NR = not recorded.

Due to plant breeder instructions, some Crop & Food Research cultivars were not assessed for quality as they were regarded as unsuitable for the market at harvest. These cultivars are marked #.

1999-2000

Materials and methods

Eighty- three new accessions were planted on 19 October 1999 for evaluation in a single plot, Stage 1 trial at Forthside Research Station, together with eight Russet Burbank check plots. The twenty-eight lines previously selected for Stage 2 trials in 1999-2000 were planted at two sites, Forthside Research Station and Cressy. Also, at the industry's request to target genotypes more suited to early production, two planting times were used at the Forthside Research Station site. All selections and usual checks were planted at the usual planting time (19 October 1999) but, in addition, twelve selections and checks were also planted on 27 September 1999. These trials were harvested on 29 March and 19 April 2000 respectively. Eight cultivars and lines were evaluated in Stage 3 observations at Cressy and Stowport, together with relevant checks. At the latter site, where six entries were planted, 95-81-1 was included at two in-row spacings – 250 and 325 mm.

Results

Stage 1 lines with pronounced tuber defects were discarded and data on the remaining entries is shown in Table 21. The results of Stage 2, early and late trial plantings at Forthside Research Station and the Stage 2 trial at Cressy are shown in Tables 22, 23 and 24 respectively. Yield rankings of genotypes in both early and later planted trials at Forthside Research Station were consistent, indicating that few selections were responsive to the change in planting time. Tables 25 and 26 show the results from Stage 3 observational plantings at Cressy and Stowport respectively. The line 95-110-8 performed well at both locations.

Discussion

Twenty genotypes were selected from Stage 1 introductions in 1999-2000 for further assessment in the following season and ten lines and cultivars were retained from 1999-2000 Stage 2 trials for ongoing Stage 3 observation. Of the eight lines evaluated in 1999-2000 Stage 3 work, A84118-3, 95-51-11, 95-110-8 and 95-81-1 were selected for further investigation by industry.

Technology transfer

The season's work again was presented at an Open Day at Forthside Research Station and field days were again held during harvest operations at all trial locations. Results were included in the annual publication of national results.

Table 21. Tuber weights and grades, numbers per plant and quality characteristics from lines and cultivars compared in Stage 1, Forthside Research Station, 1999-2000.

Cultivar or Line	Total tuber no. per plant	Total tuber wt per plant (g)	100-280g Wt per plant (g)	100-280g % of total wt	280-450g Wt per plant (g)	280-450g % of total wt	>450g Wt per plant (g)	>450g % of total wt	100-450g Wt per plant (g)	100-450g % of total wt	Specific Gravity	% Dry Matter	Fry Results Colour	Fry Results SEB (0-4)	Fry Results VR (0-4)	Fry Results BR (0-4)	Uncooked Flesh Colour	Days to Maturity
97-88-3	13.7	2047	1378	67.3	405	19.8	0	0.0	1783	87.1	1.107	25.7	3	1			off white	148
97-86-16	5.6	1698	405	23.9	658	38.8	594	35.0	1064	62.7	1.112	26.8	8	3		3	cream	148+
97-45-3	4.8	1726	286	16.6	825	47.8	614	35.5	1112	64.4	1.097	23.6	5		1		white	148+
RB2	11.8	1408	986	70.1	104	7.4	0	0.0	1091	77.5	1.106	25.5	5	2			white	143
97-43-21	7.8	1423	858	60.3	452	31.8	0	0.0	1310	92.1	1.107	25.7	4		0.5		off white	148+
RB3	10.4	1754	1054	60.1	493	28.1	0	0.0	1548	88.3	1.111	26.6	6	3	0.5		white	145
97-102-7	8.2	1652	841	50.9	571	34.5	119	7.2	1412	85.4	1.102	24.7	3	0.5			white	148+
97-75-8	9.7	1871	988	52.8	626	33.5	50	2.7	1614	86.3	1.105	25.3	5	0.5			white	148
97-66-3	11.0	2051	1261	61.5	594	28.9	104	5.1	1855	90.4	1.111	26.6	8	4		2	off white	148+
RB6	12.7	1669	1344	80.6	0	0.0	64	3.8	1344	80.6	1.105	25.3	3	1			white	138
97-13-1	10.9	1657	1157	69.8	317	19.1	0	0.0	1474	88.9	1.111	26.6	4	1			off white	148+
97-26-2	9.7	2287	1172	51.3	793	34.7	152	6.6	1965	85.9	1.101	24.5	7	2	2		off white	148+
97-44-14	8.8	1796	1123	62.5	366	20.4	52	2.9	1489	82.9	1.111	26.6	5	3			white	148+
RB1	9.2	1388	879	63.3	288	20.7	0	0.0	1166	84.0	1.109	26.1	4	2			white	140
RB5	9.9	1473	1201	81.5	76	5.2	0	0.0	1277	86.7	1.109	26.1	3	2			white	138
97-67-2	5.8	1455	266	18.3	782	53.8	271	18.6	1048	72.1	1.103	24.9	7	3	0.5	1	white	148
97-66-2	13.0	2269	1544	68.1	550	24.2	0	0.0	2094	92.3	1.104	25.1	5	3	0.5		off white	148+
97-88-15	7.9	1578	932	59.1	528	33.5	54	3.4	1460	92.5	1.097	23.6	7	3	1		white	143
97-40-10	10.6	2005	953	47.5	513	25.6	407	20.3	1466	73.1	1.096	23.4	8	3	1	2	off white	148+
97-83-4	7.6	1757	828	47.1	655	37.3	103	5.9	1483	84.4	1.108	25.9	4	2			white	148
97-86-60	7.1	2087	457	21.9	1007	48.3	536	25.7	1464	70.2	1.095	23.2	7	3	2		off white	148+
RB8	11.2	1659	1300	78.4	68	4.1	0	0.0	1368	82.5	1.105	25.3	3	1			white	138
97-100-1	10.0	2017	1322	65.5	549	27.2	65	3.2	1871	92.7	1.098	23.8	2				off white	145
RB7	8.7	1535	1115	72.7	188	12.2	0	0.0	1303	84.9	1.096	23.4	3	0.5			white	138
RB4	9.7	1646	1030	62.6	280	17.0	0	0.0	1309	79.5	1.100	24.3	6	1	2		white	140
97-63-11	9.0	2273	1019	44.9	522	23.0	584	25.7	1542	67.8	1.097	23.6	4	3			off white	148+
97-102-1	10.7	2452	1034	42.2	832	33.9	432	17.6	1867	76.1	1.111	26.6	6	2			off white	148+
97-91-6	12.9	2232	1744	78.2	277	12.4	109	4.9	2021	90.6	1.102	24.7	6		0.5		white	148+
97-100-3	13.6	2621	1383	52.8	933	35.6	177	6.8	2316	88.4	1.095	23.2	6	2	2		white	148+

NOTES: Planted: 19 October 19998 harvested 26 April 2000.
Colour: samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout.

Table 22. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 early planting trial at Forthside in 1999-2000.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	Waste yield
Kennebec	20	1.8	26.1	33.0	16.9	76.0	78.6	59.1	65.6	0.8
A8792-1	30	2.0	30.3	28.7	14.6	73.6	77.7	59.0	57.9	2.1
1-001-18	30	2.6	24.8	30.2	18.1	73.1	79.7	55.0	65.6	4.0
96-50-4	22.5	3.5	49.1	20.3	2.6	72.0	76.7	69.4	31.5	1.2
A82360-7	30	5.3	33.5	28.0	9.3	70.8	85.5	61.5	58.1	9.3
A82102-6	30	6.0	46.2	12.0	2.3	60.5	66.8	58.2	23.7	0.3
Shepody	20	3.5	35.4	21.2	2.7	59.3	65.5	56.6	40.3	2.6
96-52-1	27.5	2.8	33.8	16.9	4.2	54.8	58.8	50.7	38.2	1.2
96-131-17	25	4.4	37.4	12.7	3.0	53.1	61.6	50.1	29.0	4.1
96-139-29	30	2.2	37.9	12.5	1.3	51.7	55.6	50.5	26.0	1.7
96-125-56	30	1.6	21.2	22.0	7.2	50.4	52.0	43.2	57.6	0.1
96-131-48	27.5	2.2	19.2	23.7	6.4	49.3	55.7	42.9	60.9	4.2
96-131-36	30	4.3	34.5	11.5	1.7	47.6	52.8	46.0	27.5	0.9
96-145-13	27.5	7.6	39.0	3.2	0.2	42.5	50.4	42.2	7.9	0.4
LSD P=0.05		1.5	14.4	7.0	5.8	12.6	12.6	14.0	18.0	2.8

Table 22 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							Days to matur	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Unc'ked flesh colour		1st ten	2nd ten
Kennebec	1	4.8	4.4	4.3	1.3	1.095	23.2	3.8	0.5	0.4	0.0	white	155	20	0
A8792-1	2	7.7	5.1	1.1	0.0	1.101	24.5	4.8	1.3	1.3	0.3	white	170	17	3
1-001-18	3	8.6	5.0	0.8	0.0	1.082	20.5	8.3	3.0	3.7	0.0	yellow	167	23	0
96-50-4	4	7.6	4.0	1.8	0.0	1.090	21.8	6.2	3.0	1.0	0.0	white	162	0	0
A82360-7	5	11.8	4.1	2.1	0.0	1.099	24.1	5.8	2.0	2.7	0.0	cream	182	0	0
A82102-6	6	10.7	1.6	0.3	0.0	1.089	21.7	4.2	1.7	0.7	0.3	white	148	0	0
Shepody	7	5.8	4.8	2.2	1.7	1.088	21.5	4.8	1.8	0.3	0.0	white	155	0	0
96-52-1	8	6.8	3.1	0.3	0.0	1.085	21.1	5.0	2.3	0.5	0.0	white	148	0	0
96-131-17	9	7.0	6.4	6.4	3.3	1.086	21.3	5.0	2.3	0.8	0.0	white	155	0	0
96-139-29	10	7.5	4.0	1.1	0.0	1.084	20.9	4.7	2.3	0.3	0.0	white	155	0	0
96-125-56	11	5.5	5.8	2.9	2.3	1.081	20.2	5.7	0.5	0.3	0.0	cream	165	0	0
96-131-48	12	5.5	3.3	3.5	2.7	1.088	21.5	6.2	3.7	1.3	0.0	off white	155	0	0
96-131-36	13	8.1	6.8	5.6	2.7	1.089	21.8	4.7	1.0	0.0	0.0	white	155	3	0
96-145-13	14	8.9	5.6	2.2	0.0	1.102	24.7	5.2	0.5	0.4	0.0	cream	155	0	0
LSD P=0.05		1.1	1.7	1.4	0.7	0.006	1.0	1.3	1.1	0.7	ns	na	na	15	ns

NOTES: Planted: 27 September 1999, harvested 29 March 2000.
* samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout.
Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of sverity of impact/shatter damage.
ns - not significant, na – not applicable.
The following lines were selected by industry at harvest: A82102-6, 96-131-48, 96-52-1, 96-139-29, 96-50-4 & 96-125-56.

Table 23. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 later planting trial at Forthside in 1999-2000.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	Waste yield
1-001-18	30	1.7	33.9	34.2	9.3	77.3	83.0	68.0	55.8	4.0
A82360-7	30	3.1	38.9	24.0	11.9	74.8	81.7	62.9	47.9	3.8
Kennebec	20	1.4	23.9	31.4	13.3	68.6	72.1	55.3	64.8	2.1
96-141-4	22.5	2.4	49.6	15.1	2.2	66.9	70.1	64.7	25.8	0.7
Donelly Russet	25	0.8	18.8	21.3	20.6	60.7	66.3	40.1	69.0	4.8
96-139-28	30	4.3	41.9	12.7	2.8	57.4	62.0	54.6	25.9	0.4
Shepody	20	2.8	29.1	21.5	5.3	55.9	62.0	50.6	47.8	3.3
96-50-4	22.5	2.7	37.1	15.9	0.4	53.4	60.6	53.0	30.4	4.5
96-50-2	27.5	8.9	43.1	7.0	0.4	50.5	60.4	50.0	14.4	1.0
A8792-1	30	1.7	30.1	15.0	2.3	47.5	54.7	45.1	37.0	5.6
Russet Burbank	30	6.7	42.2	5.1	0.0	47.2	55.6	47.2	10.5	1.7
96-125-24	20	1.6	27.4	16.5	2.8	46.7	50.0	43.9	41.8	1.7
A82102-6	30	7.4	41.2	4.2	0.0	45.4	53.3	45.4	8.6	0.5
96-131-36	30	4.1	37.6	5.6	0.6	43.9	50.3	43.2	14.5	2.4
96-125-56	30	1.9	18.6	17.2	8.0	43.8	46.6	35.9	57.1	0.9
96-51-1	32.5	4.8	38.9	4.0	0.0	43.0	49.1	43.0	9.0	1.3
96-134-6	30	4.4	26.7	11.0	4.7	42.3	48.0	37.7	37.2	1.2
96-125-27	25	1.5	21.8	14.5	5.4	41.8	45.6	36.3	47.0	2.3
96-52-1 #	27.5	3.3	34.3	2.7	0.0	37.0	41.9	37.0	7.3	1.6
96-125-47	30	6.5	34.5	1.8	0.0	36.3	43.4	36.3	5.0	0.5
96-139-22	40	8.6	32.8	1.1	0.2	34.0	42.9	33.8	3.6	0.3
96-139-29	30	3.8	29.9	3.7	0.0	33.5	43.3	33.5	11.0	6.0
96-131-17 #	25	5.1	29.0	4.3	0.0	33.3	42.7	33.3	13.0	4.3
96-139-24	25	1.8	23.9	6.1	0.6	30.5	32.7	29.9	22.0	0.5
96-131-6	35	10.8	28.2	0.9	0.2	29.3	42.1	29.1	3.9	2.1
96-128-13 ##	25	7.0	24.4	2.7	0.1	27.2	36.2	27.0	11.9	2.1
96-113-2	32.5	9.3	24.4	2.7	0.0	27.1	36.7	27.1	9.7	0.3
96-130-7	30	9.3	25.9	0.3	0.0	26.1	35.9	26.1	1.0	0.4
96-13-1	32.5	4.9	23.6	2.2	0.0	25.8	32.2	25.8	9.0	1.5
96-145-13 ##	27.5	10.4	26.1	0.1	0.0	25.7	36.9	26.0	0.2	0.9
96-131-48 #	27.5	1.2	21.4	3.5	0.6	25.5	30.7	24.9	15.9	4.0
LSD P=0.05		2.0	7.2	4.3	4.1	8.2	8.3	8.1	9.3	2.5

Table 23 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							Days to matur	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Unc'ked flesh colour		1st ten	2nd ten
1-001-18	1	8.5	4.7	1.2	0.0	1.083	20.7	9.3	2.0	3.3	0.0	yellow	151	23	0
A82360-7	2	9.1	5.3	3.9	0.0	1.105	25.4	6.7	0.5	1.7	0.0	cream	151+	0	0
Kennebec	3	4.5	5.1	4.4	2.3	1.099	24.0	5.0	0.0	0.3	0.0	white	145	20	7
96-141-4	4	6.7	5.6	5.6	0.0	1.107	25.7	7.2	1.3	0.8	0.0	white	151	3	0
Donelly Russet	5	4.4	6.9	5.5	1.0	1.112	26.3	4.8	2.0	0.0	0.0	off white	151+	43	0
96-139-28	6	8.8	4.8	2.0	0.5	1.106	25.5	6.7	2.7	0.0	0.0	white	151+	0	0
Shepody	7	4.9	4.9	1.3	0.8	1.099	24.1	5.5	0.7	0.0	0.0	white	145	3	0
96-50-4	8	5.8	4.3	1.4	0.0	1.089	21.8	7.5	0.3	0.8	0.0	white	na	0	0
96-50-2	9	9.6	5.6	3.4	0.0	1.109	26.1	6.2	1.3	0.7	0.0	white	148	0	0
A8792-1	10	6.6	6.2	4.0	0.0	1.102	24.6	6.2	0.0	1.7	0.0	white	na	7	0
Russet Burbank	11	9.9	6.1	3.7	0.3	1.109	26.0	4.7	1.3	0.3	0.0	white	148	0	0
96-125-24	12	3.7	6.6	4.6	0.0	1.114	26.3	7.7	0.7	1.0	0.0	off white	151+	0	0
A82102-6	13	10.1	1.5	0.3	0.0	1.093	22.5	6.8	0.3	1.5	0.0	white	na	0	0
96-131-36	14	8.3	6.4	4.4	2.0	1.103	24.9	4.8	0.2	0.2	0.0	white	143	0	0
96-125-56	15	5.0	6.2	2.6	0.3	1.090.	22.0	6.0	0.0	0.0	0.0	yellow	145	0	0
96-51-1	16	9.1	3.0	1.1	0.0	1.107	25.7	7.8	0.0	1.7	0.0	white	na	3	0
96-134-6	17	7.2	5.3	1.5	0.0	1.108	25.9	6.3	0.8	0.5	0.0	cream	151+	47	17
96-125-27	18	4.1	3.3	1.5	0.0	1.092	22.3	7.2	0.0	2.0	0.0	cream	na	0	0
96-52-1 #	19	6.3	4.6	2.9	0.0	1.098	23.8	6.0	0.0	0.5	0.0	white	na	0	0
96-125-47	20	8.7	5.4	2.8	0.0	1.108	26.0	4.2	0.0	0.2	0.0	white	na	0	0
96-139-22	21	12.1	5.5	4.3	0.0	1.114	26.3	5.2	0.0	0.7	0.0	off white	na	0	0
96-139-29	22	7.3	5.0	3.3	0.0	1.098	23.7	5.8	0.0	0.2	0.0	white	na	0	0
96-131-17 #	23	6.0	5.8	3.9	1.0	1.095	23.2	6.0	0.0	0.0	0.0	white	na	0	0
96-139-24	24	3.8	3.7	0.1	0.0	1.091	22.3	4.8	0.0	0.3	0.0	white	na	7	0
96-131-6	25	10.7	7.0	6.6	3.7	1.090	21.9	6.8	0.5	0.7	0.0	white	na	3	0
96-128-13 ##	26	5.7	2.9	1.8	0.0	1.109	25.9	6.5	0.0	0.8	0.0	white	na	31	14
96-113-2	27	9.0	6.5	5.5	0.3	1.111	25.8	4.8	0.0	0.3	0.0	white	na	0	0
96-130-7	28	8.3	3.9	3.0	1.0	1.101	24.5	5.0	0.0	0.0	0.0	off white	na	27	23
96-13-1	29	6.4	5.0	4.0	3.0	1.103	24.8	5.7	0.0	0.3	0.0	white	na	0	0
96-145-13 ##	30	7.9	5.6	2.3	0.0	1.107	25.5	5.4	0.0	0.3	0.0	cream	na	0	0
96-131-48 #	31	4.0	4.3	3.6	0.0	1.107	25.7	6.0	0.0	0.5	0.0	off white	na	0	0
LSD P=0.05		1.4	1.6	1.5	0.8	0.006	1.1	1.0	0.5	0.7	ns			22	ns

NOTES: Planted: 19 October 1999, harvested 19 April 2000.
* samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout.
Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.
ns - not significant, na – not applicable.

Table 24. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Cressy in 1999-2000.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	Waste yield
A82360-7	30	4.9	44.9	31.1	16.0	92.0	99.6	76.0	51.0	2.8
Kennebec	20	1.2	18.5	30.0	42.1	90.6	94.7	48.5	79.6	2.9
1-001-18	30	2.1	22.0	33.0	22.0	77.0	85.1	54.9	71.5	6.1
96-125-27	25	1.2	17.1	25.4	29.0	71.6	81.4	42.5	75.4	8.6
A8792-1	30	2.0	30.7	27.9	11.1	69.7	75.9	58.6	56.2	4.2
Shepody	20	1.2	14.8	26.8	26.5	68.2	72.6	41.6	78.1	3.2
96-51-1	32.5	1.8	25.3	23.2	19.4	67.9	71.0	48.5	62.4	1.3
96-139-28	30	3.8	41.9	17.1	4.8	63.8	68.9	59.0	34.3	1.4
96-125-24 #	20	2.1	23.9	24.6	11.1	59.5	63.0	48.5	59.1	1.4
96-125-47	30	8.4	48.2	9.1	1.4	58.7	67.6	57.3	18.1	0.5
Russet Burbank	30	3.8	39.0	15.6	3.2	57.8	64.9	54.6	32.3	3.4
A82102-6	30	4.5	39.9	7.4	8.8	56.2	61.6	47.4	28.9	1.0
96-113-2	32.5	8.6	43.0	9.8	1.2	54.0	64.6	52.8	20.1	2.0
96-50-2	27.5	8.7	42.6	9.0	2.1	53.6	62.8	51.5	20.4	0.4
96-139-22	40	7.3	41.3	10.3	1.3	52.9	61.0	51.6	20.2	0.8
96-131-6	35	7.8	37.5	5.5	0.2	43.2	51.4	43.0	12.9	0.5
96-130-7	30	4.2	20.3	4.1	2.4	26.8	33.0	24.5	23.5	1.9
LSD P=0.05		2.3	6.7	7.0	6.5	9.7	9.7	9.8	10.4	2.1

Table 24 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							Days to matur	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Unc'ked flesh colour		1st ten	2nd ten
A82360-7	1	10.9	2.4	2.8	0.0	1.088	21.4	4.0	0.0	0.7	0.0	cream	157+	0	0
Kennebec	2	4.5	3.2	2.2	1.7	1.080	20.0	4.2	1.0	0.7	0.0	white	151	17	0
1-001-18	3	7.4	3.2	0.3	0.0	1.075	19.1	5.8	1.0	2.7	0.0	yellow	157+	23	0
96-125-27	4	5.1	3.3	1.7	0.0	1.087	21.5	4.5	0.5	0.2	0.8	cream	157+	0	0
A8792-1	5	7.9	2.8	1.9	0.0	1.088	21.5	3.3	2.3	0.7	0.0	white	153	0	0
Shepody	6	3.6	2.1	1.2	0.7	1.074	19.0	4.3	1.7	0.7	0.0	white	146	7	0
96-51-1	7	7.3	2.3	0.7	0.0	1.086	21.4	6.8	0.5	2.3	0.0	white	153	3	0
96-139-28	8	8.9	3.5	2.1	1.0	1.086	21.2	4.5	1.7	0.0	0.0	off white	157+	0	0
96-125-24 #	9	4.2	5.2	1.1	0.0	1.100	24.3	5.7	0.0	1.0	0.0	white	157+	0	0
96-125-47	10	11.7	6.1	3.9	0.0	1.096	23.4	2.8	0.2	0.1	0.0	white	155	0	0
Russet Burbank	11	8.7	5.2	2.2	1.0	1.084	21.0	3.5	1.3	0.7	0.0	white	155	0	0
A82102-6	12	9.3	1.3	0.3	0.0	1.078	19.6	5.0	1.7	0.8	0.0	white	146	3	0
96-113-2	13	11.9	5.4	4.3	2.0	1.103	25.0	3.2	0.4	0.0	0.0	white	157	0	0
96-50-2	14	9.8	3.6	2.7	0.0	1.092	22.0	4.7	1.3	0.8	0.0	off white	153	0	0
96-139-22	15	11.4	4.7	4.1	0.0	1.101	24.5	4.8	1.3	0.7	0.0	cream	157+	0	0
96-131-6	16	11.4	7.1	8.6	4.0	1.074	18.9	6.0	2.0	0.2	0.0	white	153	0	0
96-130-7	17	5.4	5.5	4.3	2.0	1.096	23.0	2.2	0.0	0.2	0.0	white	155	50	47
LSD P=0.05		1.0	1.6	1.5	0.8	0.006	1.3	1.4	0.8	0.7	ns	na	na	21	16

NOTES: Planted: 2 November 1999, harvested 4 April 2000.
* samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout.
Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.
ns - not significant, na – not applicable.
A82102-6, 96-125-47, 96-113-2, & A8792-1 were selected by industry.

Table 25. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Cressy in 1999-2000.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	Waste yield
95-110-8	22.5	1.37	31.88	29.26	14.40	75.55	77.98	61.14	57.8	1.07
Riverina Russet	25	2.33	21.70	27.47	20.00	69.17	73.52	49.17	68.4	2.02
Russet Burbank	30	4.37	45.86	16.17	6.51	68.55	73.68	62.04	32.9	0.77
95-81-1	32.5	1.30	26.20	27.16	14.39	67.75	70.22	53.36	61.3	1.17
Kennebec	20	1.57	12.69	15.12	37.65	65.46	71.72	27.81	80.6	4.68
A84118-3	30	3.67	46.94	13.70	2.52	63.17	67.05	60.65	25.4	0.20
Shepody	20	1.49	17.35	26.82	17.19	61.36	64.39	44.17	71.8	1.54
95-110-15	32.5	2.27	32.22	18.21	8.14	58.57	60.84	50.43	45.0	0.00
95-105-5	30	0.66	26.33	21.76	6.85	54.93	57.37	48.09	52.2	1.78
95-51-11	25	0.57	10.73	17.01	25.71	53.45	66.87	27.74	79.9	12.85
A8519-5	30	2.39	28.12	18.43	6.44	52.98	56.30	46.54	46.3	0.93

Table 25 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							Days to matur	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Unc'ked flesh colour		1st ten	2nd ten
95-110-8	1	5.6	2.9	4.5	2.0	1.097	23.2	2.8	0.5	0.5	0.0	white	+160	15.0	0.0
Riverina Russet	2	6.5	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	+160	5.0	0.0
Russet Burbank	3	9.9	4.5	2.3	1.0	1.083	20.7	2.5	1.0	0.5	0.0	white	153	20.0	10.0
95-81-1	4	8.0	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	155	0.0	0.0
Kennebec	5	3.7	1.3	4.1	2.5	1.074	18.9	3.8	1.0	0.8	0.0	white	146	25.0	0.0
A84118-3	6	9.8	0.3	0.2	0.0	1.091	22.3	2.8	0.3	0.5	0.0	white	153	5.0	0.0
Shepody	7	4.0	1.7	0.6	0.5	1.075	19.1	5.0	3.0	0.3	0.0	white	144	10.0	0.0
95-110-15	8	9.1	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	149	5.0	0.0
95-105-5	9	5.9	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	146	0.0	0.0
95-51-11	10	4.1	6.2	1.8	0.0	1.077	19.4	5.0	2.5	1.0	0.0	white	146	5.0	0.0
A8519-5	11	7.9	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	146	0.0	0.0

NOTES: Planted: 2 November 1999, harvested 4 April 2000.
* samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout.
Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.
ns - not significant, na – not applicable.
The following lines were selected by industry at harvest: A84118-3, 95-51-11, & 95-110-8.

Table 26. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Stowport in 1999-2000.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)								
		Chats 0-100 g	Small 100-280 g	Large 280-450 g	O'size > 450 g	Fry grade >100 g	Total yield	100-450 g grade	% by fry grade wt > 280 g	Waste yield
95-110-8	22.5	4.29	34.60	20.12	9.58	64.30	70.37	54.72	46.0	1.78
95-105-5	30	1.27	32.87	26.42	2.93	62.22	65.10	59.29	46.2	1.61
95-110-15	32.5	4.15	35.49	19.51	7.17	62.17	68.55	55.00	42.9	2.23
Kennebec	20	2.26	15.62	22.87	22.28	60.77	70.66	38.49	74.6	7.62
A84118-3	30	2.65	38.09	18.98	0.98	58.05	62.38	57.07	34.4	1.68
95-81-1 (250mm)	25	1.09	22.31	23.80	10.92	57.03	61.25	46.11	60.9	3.13
Shepody	20	1.83	24.97	21.30	9.42	55.68	61.42	46.27	55.2	3.90
Russet Burbank	30	6.88	46.60	5.07	0.00	51.68	60.17	51.68	9.8	1.61
95-81-1 (325mm)	32.5	1.03	14.63	17.81	17.53	49.97	53.68	32.44	70.5	2.68
95-51-11	25	1.68	17.99	21.79	8.02	47.80	54.85	39.78	62.4	5.37

Table 26 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality							% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	SEB	Vasc ring	BR	Uncooked flesh colour	1st ten	2nd ten
95-110-8	1	7.1	6.7	6.0	2.5	1.098	23.8	3.5	1.5	0.0	0.0	off white	25.0	5.0
Riverina Russet	2	7.7	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	0.0	0.0
Russet Burbank	3	11.1	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	15.0	10.0
95-81-1	4	5.2	3.1	5.6	3.0	1.083	20.7	2.3	0.0	0.3	0.0	white	20.0	5.0
Kennebec	5	9.0	0.4	0.4	0.0	1.097	23.6	2.0	0.0	0.3	0.0	white	0.0	0.0
A84118-3	6	5.7	3.3	4.8	2.5	1.092	22.5	2.5	0.0	0.1	0.0	white	0.0	0.0
Shepody	7	4.6	2.4	2.5	1.5	1.086	20.9	3.3	0.8	0.5	0.0	white	0.0	0.0
95-110-15	8	10.4	5.2	3.8	1.0	1.093	22.6	2.3	0.0	0.5	0.0	white	25.0	10.0
95-105-5	9	6.1	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	10.0	0.0
95-51-11	10	5.1	5.5	4.8	2.0	1.081	20.2	3.5	2.0	0.0	0.0	white	0.0	0.0

NOTES: Planted: 18 October 1999, harvested 17 March 2000.
* samples assessed visually, scale 1 - 10, 7 = borderline, > 7 = too dark.
Key to quality results: 0 = nil, 1 = very slight, 2 = slight, 3 = moderate, 4 = severe. SEB = Stem end browning, Vasc. ring = vascular ring, BR = browning throughout.
Bruise ratings = the higher the score, the larger the bruise. Bruise shatter = indication of severity of impact/shatter damage.
ns - not significant, na – not applicable.
The following lines were selected by industry at harvest: A84118-3, 95-51-11, & 95-110-8.

2000-2001

Materials and methods

A total of sixty-one new accessions were evaluated in a single plot trial at Forthside Research Station in addition to Russet Burbank check plots.

Twenty lines were tested in second year replicated trials at Forthside Research Station and eighteen at Cressy, together with check cultivars.

The ten cultivars and lines included in Stage 3 observation in 2000-01 were restricted to planting at Forthside Research Station only but, at industry's request, each was planted with three rates of nitrogen fertilizer and at three in-row spacings, as show in Table 30. This was carried out in the context of the belief, of both industry personnel and researchers, that selected lines may not reach their true yield potential under the single, standard agronomy practice usually applied.

Results

Discarding lines in the Stage 1 comparison with pronounced tuber defects left 27 lines and data on these are shown in Table 27. Results of Stage 2 trials at Forthside research Station and Cressy are shown in Tables 28 and 29. The line 97-86-60 returned the highest total yield at both of the sites. The disease pink rot was severe in the Stage 3 comparison at Cressy and caused this trial to be abandoned before harvest. In the Stage 3 comparison at Forthside Research Station, (Table 30) the line 96-50-4 returned the highest total yield but its yield of fry grade tubers was not greater than the check cultivar Kennebec. Examination of total yield data indicated that changes in plant density had a greater effect than did changing the rate of nitrogen fertilizer.

Discussion

Twenty-four of the 27 Stage 1 lines shown were considered worthy of further evaluation in 2001-02. Eight lines were identified from Stage 2 data as being worthy of re-examination in the following season. Four lines were selected from Stage 3 comparisons by processing company personnel for their further development. These were A86102-6, A82360-7, 96-125-47 & 96-50-2. These selections confirmed the growing importance in recent seasons of Australian-bred genotypes in the program's outputs.

At the conclusion of 2000-01 activities, a total of 12 lines, which had displayed superior processing potential, continued to be investigated in bulk plantings and processing by the companies. As these genotypes had no proprietary rights, processing companies at that time preferred not to disclose the results of their advanced trials with a view to gaining market advantage for their particular selections. While making reporting difficult, this indicated that companies have seen strategic value in the project's outcomes.

Technology transfer

The season's work again was presented at an Open Day at Forthside Research Station and field days were also held during harvest operations at all trial locations. Results again were included in the annual publication of national results and a topical article published in "Eyes on Potatoes".

Table 27. Tuber grades, numbers per plant and quality characteristics from lines and cultivars compared in Stage 1, Forthside Research Station, 2000-01

Line or cultivar	Tuber no. per plant	Tuber wt. Per plant g	80-250 g grade		250-650 g grade		650-850 g grade		>80 g grade		>250 g grade		Waste		Spec. grav.	% dry matter	Fry results		Uncooked flesh colour	Scab rating	Days to maturity
			% by no	% by wt	% by no	% by wt	% / no	% / wt	% by no	% by wt	% by no	% by wt	% by no	% by wt			Fry col	Dark ends			
98-4-5	14.2	2605	49	40	23	43	0	0	72	83	23	43	28	17	1.057	15.3	2	0	off white	2.0	126
98-120-19	8.5	2021	49	36	33	48	2	7	84	90	35	54	16	10	1.070	18.0	4	1	white	0.0	139
98-2-1	12.3	1972	51	44	22	46	0	0	73	90	22	46	27	10	1.066	17.2	1	0	white	1.0	131
98-108-1	8.0	1901	47	34	47	65	0	0	94	99	47	65	6	1	1.059	15.7	1	1	white	1.0	134
98-66-1	12.6	1865	60	62	13	24	0	0	73	86	13	24	27	14	1.068	17.6	2	0	off white	1.0	119
98-35-27	7.5	1824	40	28	44	68	0	0	84	96	44	68	16	4	1.072	18.4	3	0	off white	0.0	139
98-66-7	8.8	1789	38	30	34	51	0	0	72	81	34	51	28	19	1.066	17.2	1	1	white	0.0	133
98-35-18	7.8	1775	43	35	40	59	0	0	83	93	40	59	17	7	1.068	17.6	2	1	white	1.0	126
98-88-4	7.5	1718	30	19	53	77	0	0	83	96	53	77	17	4	1.064	16.8	2	0	off white	1.0	126
98-33-24	12.8	1691	44	53	14	36	0	0	58	88	14	36	42	12	1.065	17.0	2	0	white	2.5	141
98-96-11	9.0	1679	59	53	20	39	0	0	80	92	20	39	20	8	1.082	20.5	4	0	off white	2.0	139
98-35-2	12.0	1660	68	76	7	13	0	0	75	90	7	13	25	10	1.063	16.6	1	0	off white	0.0	122
RB8	11.5	1640	62	69	10	21	0	0	72	91	10	21	28	9	1.077	19.5	2	2	white	0.0	122
98-96-15	9.3	1626	80	72	16	27	0	0	96	99	16	27	4	1	1.063	16.6	2	0	off white	1.0	133
98-35-23	9.7	1615	64	61	17	31	0	0	81	92	17	31	19	8	1.071	18.2	1	0	off white	1.0	141
RB6	12.2	1614	53	59	11	26	0	0	64	86	11	26	36	14	1.072	18.4	1	1	white	0.0	122
RB7	9.8	1603	61	65	10	22	0	0	71	87	10	22	29	13	1.079	19.9	1	0	white	0.0	122
RB1	10.7	1603	83	84	6	13	0	0	89	97	6	13	11	3	1.075	19.1	1	1	white	1.0	119
RB4	10.0	1576	75	73	10	19	0	0	85	92	10	19	15	8	1.071	18.2	1	0	white	0.0	126
98-66-9	11.5	1566	67	72	9	19	0	0	75	91	9	19	25	9	1.070	18.0	2	1	cream	0.0	129
RB2	11.7	1549	74	79	3	8	0	0	77	87	3	8	23	13	1.072	18.4	2	2	white	0.0	119
98-35-26	7.8	1525	55	44	30	52	0	0	85	96	30	52	15	4	1.069	17.8	3	2	off white	1.0	128
98-36-2	10.7	1519	69	75	6	12	0	0	75	88	6	12	25	12	1.060	16.0	1	0	white	1.0	122
98-96-13	7.4	1513	54	41	35	56	0	0	89	98	35	56	11	2	1.063	16.6	1	0	off white	0.0	115
98-35-9	11.0	1480	65	72	8	19	0	0	73	90	8	19	27	10	1.069	17.8	2	0	white	1.0	115
98-3-19	8.5	1473	51	49	24	47	0	0	75	96	24	47	25	4	1.060	16.0	2	1	white	1.0	122
RB9	10.3	1464	69	73	8	16	0	0	77	89	8	16	23	11	1.068	17.6	1	1	white	0.0	129
98-96-63	8.3	1368	78	80	10	17	0	0	88	97	10	17	12	3	1.080	20.1	1	0	white	0.0	119
98-35-5	10.8	1364	70	83	4	8	0	0	74	91	4	8	26	9	1.053	14.5	1	0	off white	1.0	119
98-3-11	8.3	1314	72	77	10	20	0	0	82	96	10	20	18	4	1.049	13.7	5	1	white	1.0	115
98-96-53	11.0	1299	74	92	0	0	0	0	74	92	0	0	26	8	1.061	16.2	3	0	white	1.0	115
RB5	8.0	1196	58	59	4	8	0	0	63	67	4	8	38	33	1.080	20.1	1	2	white	0.0	119
RB3	8.5	1179	75	82	4	8	0	0	78	90	4	8	22	10	1.083	20.7	1	0	white	0.0	119
98-102-10	5.4	1175	63	49	33	51	0	0	96	100	33	51	4	0	1.081	20.3	1	0	white	1.0	119
98-3-12	4.5	1093	48	39	44	59	0	0	93	98	44	59	7	2	1.061	16.2	3	0	white	2.0	122
98-96-72	8.5	1088	51	63	8	19	0	0	59	82	8	19	41	18	1.094	23.0	1	0	off white	0.0	144

NOTES: Planted: 7 November 2000, harvested : 3 April 2001
All SG & fry assessments were from 2 tubers only.
Fry colour: 1=light, 10=dark (7=borderline).
Scab rating: 0=nil, 1=slight, 2=moderate, 3=severe.

Table 28. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Forthside in 2000-01.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield
97-86-60	25	2.3	23.1	48.4	4.3	5.4	81.2	89.2	71.5	71.0	5.6
93-26-10 #	22.5	1.5	17.7	54.1	4.4	0.5	76.7	79.9	71.8	76.9	1.8
97-63-11	27.5	2.9	28.4	36.3	2.6	0.0	67.3	79.8	64.7	57.4	9.6
Kennebec	20	1.2	13.9	51.1	3.1	1.2	69.3	75.5	65.0	79.9	5.1
97-45-3	25	1.1	10.0	36.5	6.6	3.1	56.1	66.4	46.4	82.2	9.3
97-66-2	32.5	1.8	26.1	32.3	2.0	0.4	60.7	64.5	58.3	56.5	2.1
92-37-1	32.5	3.0	27.4	29.8	1.8	0.8	59.8	63.9	57.2	54.0	1.1
97-102-1	30	0.7	11.8	44.0	4.5	0.7	61.0	63.0	55.8	80.4	1.3
Shepody	20	1.2	19.3	34.4	2.1	0.0	55.7	61.6	53.6	65.1	4.7
97-100-3	35	2.0	28.4	27.8	0.9	0.0	57.1	60.0	56.2	50.1	0.9
97-44-14	25	2.0	26.0	11.8	0.3	0.0	38.0	59.5	37.7	32.1	19.5
97-91-6	30	1.2	16.1	33.6	1.7	0.4	51.8	57.9	49.7	68.5	4.9
97-26-2	27.5	1.8	16.5	26.7	3.2	1.2	47.6	57.6	43.2	65.2	8.2
97-100-1	27.5	2.2	24.8	27.3	2.1	0.4	54.6	57.5	52.1	55.2	0.7
97-43-21	25	1.3	21.6	29.8	0.0	0.0	51.3	55.6	51.3	57.7	3.0
RB	30	3.0	32.0	18.1	0.0	0.0	50.1	55.0	50.1	36.1	2.0
97-88-15	32.5	2.2	26.9	16.4	0.3	0.0	43.6	47.7	43.3	38.5	1.9
97-13-1	32.5	2.2	22.8	19.1	0.9	0.0	42.8	46.0	41.9	46.9	1.0
97-102-7	27.5	1.6	13.9	22.9	3.5	0.0	40.3	44.6	36.8	65.9	2.7
97-83-4	25	1.5	18.5	16.3	0.3	0.0	35.1	43.7	34.9	47.4	7.1
97-88-3	35	3.4	20.7	14.2	0.0	0.0	34.9	40.7	34.9	40.3	2.4
97-75-8	30	1.1	10.6	15.4	0.9	0.0	26.9	37.5	26.0	61.6	9.4
97-67-2	25	0.5	8.8	21.2	1.8	0.0	31.8	36.7	30.0	72.2	4.4
LSD P=0.05		0.9	5.8	7.4	3.2	ns	8.5	8.6	8.0	10.6	4.1

Table 28 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality					Days to maturity	Scab level	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	Fries – dark ends	Uncooked flesh colour			1st ten	2nd ten
97-86-60	1	8.1	3.7	3.2	0.7	1.087	21.6	4.0	6.7	white	143+	1.7	33	0
93-26-10 #	2	5.8	6.1	5.4	0.5	1.086	21.3	2.2	0.0	white	138	3	0	0
97-63-11	4	8.6	5.0	3.0	0.0	1.083	20.6	3.0	40.0	white	143+	0.7	20	0
Kennebec	3	4.5	3.7	6.1	2.2	1.080	20.0	2.0	0.0	white	125	3	20	0
97-45-3	9	4.9	4.1	4.1	0.2	1.083	20.7	2.0	11.2	white	134	2	0	0
97-66-2	6	8.8	6.3	6.0	1.7	1.087	21.6	2.7	0.0	off white	139	1	3	0
92-37-1	7	10.2	5.5	5.5	1.7	1.078	19.8	2.3	6.7	off white	141	1.3	0	0
97-102-1	5	5.4	4.7	2.5	0.3	1.091	22.0	2.3	6.7	white	137	2	3	0
Shepody	10	4.2	5.0	2.1	0.0	1.078	19.8	2.3	26.7	white	123	3	0	0
97-100-3	8	9.4	3.9	2.5	0.2	1.082	20.5	2.8	6.7	white	129	1	0	0
97-44-14	19	5.9	5.7	5.9	2.2	1.097	23.6	3.0	86.7	white	142	3	3	0
97-91-6	12	6.8	5.6	5.0	1.0	1.084	21.0	2.0	0.0	white	143+	2.3	0	0
97-26-2	15	8.0	5.1	2.7	0.2	1.082	20.5	2.7	13.3	white	143	2.7	0	0
97-100-1	11	7.2	5.0	6.1	0.7	1.085	21.2	2.8	26.7	white	137	1.3	0	0
97-43-21	13	6.1	6.3	4.9	1.8	1.083	20.7	3.0	0.0	off white	139	1	17	7
RB	14	8.4	5.4	3.9	0.2	1.086	21.4	2.0	6.7	white	126	0.7	0	0
97-88-15	16	8.6	5.4	2.8	0.0	1.074	18.8	2.5	0.0	white	118	1	7	0
97-13-1	17	9.0	3.6	2.5	0.0	1.090	21.9	3.7	6.7	off white	143+	1	30	0
97-102-7	18	5.1	6.0	5.4	1.5	1.085	21.1	2.0	0.0	white	139	1.7	33	0
97-83-4	20	4.9	7.7	8.0	3.0	1.088	21.7	2.5	33.3	white	137	0.7	0	0
97-88-3	21	8.2	5.2	2.7	0.2	1.094	22.8	2.3	0.0	white	124	1	50	7
97-75-8	23	4.8	5.3	4.7	0.0	1.092	22.0	2.5	0.0	off white	129	1	0	0
97-67-2	22	3.7	5.9	5.3	2.0	1.087	21.4	2.2	0.0	white	128	2	0	0
LSD P=0.05	1.4	1.3	1.4	0.9	0.005	1.0	0.7	26.6	na	na	0.6	21	ns	1.4

NOTES: Planted: 8 November 2000, harvested 4 April 2001.
Quality keys as previously described.

Table 29. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Cressy in 2000-01.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield
97-86-60	25	2.1	37.1	57.9	1.2	0.4	96.5	100.6	95.0	61.7	2.0
Kennebec	20	1.7	26.9	58.1	3.2	0.0	88.2	92.8	85.0	69.3	2.9
97-45-3 ##	25	0.6	14.7	56.9	7.2	5.9	84.7	90.3	71.6	82.3	5.0
97-63-11	27.5	3.2	37.9	38.0	0.9	0.0	76.8	86.5	75.9	50.6	6.6
97-44-14	25	1.4	39.7	34.7	0.3	0.0	74.7	85.8	74.4	46.7	9.6
97-102-7	27.5	2.2	35.3	44.3	1.4	0.0	81.0	83.9	79.6	56.6	0.6
97-102-1	30	1.6	26.4	46.4	5.1	0.4	78.3	83.3	72.8	66.0	3.5
97-100-3	35	3.5	47.0	27.9	0.6	0.0	75.5	82.3	74.9	37.8	3.4
97-66-2	32.5	3.8	37.6	33.9	0.8	0.4	72.6	79.6	71.5	47.4	3.1
97-91-6	30	1.7	34.8	34.6	3.5	0.0	72.9	77.4	69.4	52.3	2.8
97-26-2	27.5	3.1	37.5	28.1	0.3	0.4	66.4	75.0	65.6	43.9	5.6
Shepody	20	1.5	27.2	38.9	1.8	1.1	68.9	74.3	66.1	60.2	3.8
97-100-1	27.5	3.6	45.8	21.5	0.0	0.0	67.3	72.6	67.3	31.9	1.7
Russet Burbank	30	3.7	38.7	23.4	0.0	0.0	62.1	71.2	62.1	37.8	5.3
97-43-21 #	25	2.1	41.4	20.3	0.4	0.3	62.4	68.2	61.7	33.6	3.8
97-67-2 #	25	0.7	15.7	45.0	3.9	0.0	64.4	68.1	60.8	76.2	3.1
97-75-8	30	2.1	31.4	29.9	0.3	0.0	61.6	66.3	61.3	48.9	2.6
97-88-15	32.5	3.2	42.0	19.7	0.0	0.0	61.8	66.0	61.8	31.9	1.0
97-83-4	25	4.2	43.7	10.6	0.0	0.0	54.4	61.8	54.4	18.6	3.3
97-88-3	35	4.3	35.8	18.7	0.6	0.0	55.1	60.5	54.5	35.0	1.1
97-13-1	32.5	2.8	26.7	13.5	0.3	0.0	40.5	44.9	40.2	34.0	1.6
LSD P=0.05		1.4	9.2	9.8	2.4	1.9	9.3	9.1	9.1	12.4	3.0

Table 29 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Bruise rating rose end	Bruise shatter	Quality					Days to maturity	Scab level	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	Fries – dark ends	Uncooked flesh colour			1st ten	2nd ten
97-86-60	1	10.8	0.4	1.4	0.0	1.082	20.6	4.0	6.7	off white	158	0.8	23	3
Kennebec	2	6.2	1.7	5.1	1.3	1.079	19.8	2.2	20.0	white	143	2.5	20	0
97-45-3 ##	3	6.3	3.3	3.7	0.0	1.079	19.8	2.5	52.6	white	149	2.4	12	0
97-63-11	6	9.8	2.9	2.1	0.0	1.084	21.0	2.2	33.3	white	157	0.8	3	0
97-44-14	8	8.2	5.1	5.0	1.3	1.103	24.7	3.0	60.0	white	159	2.8	0	0
97-102-7	4	9.0	6.1	5.1	0.7	1.088	21.8	2.2	6.7	white	157	2.7	30	0
97-102-1	5	11.1	3.8	0.5	0.0	1.087	21.6	2.5	13.3	off white	154	1.5	10	3
97-100-3	7	15.1	3.8	1.9	0.0	1.087	21.6	3.0	20.0	white	159	1.7	0	0
97-66-2	10	14.5	5.7	3.1	0.5	1.079	19.8	3.0	20.0	white	153	0.5	0	0
97-91-6	9	9.3	4.8	3.9	0.3	1.087	21.3	2.3	0.0	white	159	1.7	23	3
97-26-2	13	11.1	0.8	0.6	0.0	1.082	20.5	3.0	26.7	white	158	2.5	23	10
Shepody	11	5.8	1.2	2.7	0.2	1.076	19.2	2.0	6.7	white	143	2.3	13.3	0
97-100-1	12	10.6	3.6	3.2	0.7	1.079	20.0	2.0	0.0	white	151	0.7	0	0
Russet Burbank	16	10.3	3.7	3.9	0.5	1.086	21.4	2.7	26.7	white	148	0	37	20
97-43-21 #	15	10.8	3.1	2.7	0.0	1.087	21.6	3.0	5.2	white	151	0.9	15	2
97-67-2 #	14	5.4	6.1	3.7	0.1	1.084	20.8	2.0	0.0	white	136	0.9	14	0
97-75-8	18	8.5	3.6	2.0	0.0	1.084	21.0	2.7	0.0	white	152	0.8	0	0
97-88-15	17	12.0	4.9	1.0	0.0	1.074	18.9	2.0	0.0	white	128	0.2	27	0
97-83-4	20	9.6	6.8	7.8	3.0	1.088	21.8	2.0	13.3	white	138	0.2	0	0
97-88-3	19	12.2	4.6	1.4	0.0	1.094	22.8	2.7	6.7	white	149	0.7	10	0
97-13-1	21	14.9	1.8	0.4	0.0	1.098	23.4	3.7	6.7	cream	162	0.7	50	0
LSD P=0.05		3.1	1.3	1.6	0.6	0.008	1.6	0.6	24.2	na	na	0.6	27	9

NOTES: Planted: 1 November 2000, harvested 24 April 2001.
Fry colour: 1=000, 2=00, 3=0, 4=1, 5=2, 6=3, 7=4 (USDA French fry colour chart 1988).
Otherwise, quality keys as previously described.

Table 30. In-row spacing, nitrogen rates, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Forthside in 2000-01.

Line or cultivar	In-row spac. cm	N rate kg/ha	Tuber yield (t/ha)									
			Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield
96-50-4	23	118	2.6	45.2	17.8	0.0	0.0	63.1	75.6	63.1	28.3	10.0
A8792-1	29	161	1.2	14.0	30.9	3.6	0.0	48.5	73.7	44.9	71.2	24.0
A82360-7	29	191	2.6	32.8	26.1	2.6	0.0	61.5	73.1	59.0	46.6	9.1
Kennebec	20	191	0.7	14.9	51.2	0.0	0.0	66.1	72.4	66.1	77.4	5.6
A8792-1	29	191	0.8	15.0	30.3	0.9	1.2	47.4	71.6	45.3	68.3	23.4
A82360-7	29	161	2.7	36.6	21.4	0.0	0.0	58.0	71.4	58.0	36.8	10.7
A82360-7	29	118	3.7	42.8	18.3	0.0	0.0	61.1	70.4	61.1	30.0	5.6
Kennebec	20	191	1.0	8.9	50.5	4.5	1.5	65.4	69.2	59.4	86.4	2.8
A86102-6	29	118	3.0	32.0	28.0	0.8	0.0	60.8	67.3	60.0	47.4	3.5
96-50-4	23	191	2.5	23.3	32.3	0.0	0.0	55.6	67.0	55.6	58.2	8.8
A86102-6	29	191	3.2	39.3	18.4	0.0	0.0	57.7	65.5	57.7	31.9	4.6
Shepody	20	191	0.6	13.0	46.2	1.0	0.0	60.3	64.8	59.3	78.4	3.9
A8792-1	29	118	0.9	13.8	22.2	4.6	1.1	41.7	64.8	36.0	66.9	22.1
Donelly Russet	29	191	0.6	6.7	39.8	2.6	1.1	50.2	64.5	46.5	86.6	13.8
Donelly Russet	26	118	0.8	17.5	33.0	2.7	0.0	53.2	63.9	50.5	67.1	9.8
A8792-1	32	191	1.1	12.8	23.8	0.9	0.0	37.6	62.8	36.7	65.8	24.1
Donelly Russet	29	118	0.6	10.0	29.9	8.2	2.6	50.7	62.4	39.9	80.3	11.1
A86102-6	32	191	4.7	30.2	22.8	0.0	0.0	53.1	61.9	53.1	43.0	4.1
96-125-47	29	161	2.9	23.5	25.1	0.9	0.0	49.6	61.5	48.6	52.6	9.0
Shepody	20	191	1.0	16.0	35.1	1.7	0.0	52.8	61.0	51.1	69.6	7.2
A82360-7	26	161	3.9	34.8	12.5	0.0	0.0	47.3	60.3	47.3	26.5	9.0
Rus Burbank	32	191	4.0	34.8	16.7	0.0	0.0	51.5	60.2	51.5	32.5	4.7
96-50-4	23	161	1.9	26.1	22.4	0.0	0.0	48.5	59.6	48.5	46.2	9.2
Rus Burbank	32	191	2.4	38.3	16.2	0.0	0.0	54.5	59.6	54.5	29.8	2.6
Donelly Russet	29	161	0.3	7.8	33.3	0.9	0.0	41.9	59.5	41.0	81.5	17.3
A86102-6	29	161	5.0	37.7	15.1	0.0	0.0	52.7	59.4	52.7	28.6	1.7
A82360-7	26	191	4.2	29.2	19.0	0.0	0.0	48.1	59.3	48.1	39.4	6.9
A8792-1	32	118	1.3	10.4	21.7	5.2	0.0	37.2	59.1	32.0	72.1	20.6
96-125-47	29	191	3.1	26.7	17.0	0.9	0.0	44.6	58.9	43.7	40.1	11.1
A82360-7	26	118	4.4	29.4	17.2	0.0	0.0	46.7	57.8	46.7	36.9	6.8
96-50-2	29	161	3.2	27.8	23.0	0.0	0.0	50.8	57.8	50.8	45.2	3.8
96-125-47	29	118	3.0	28.8	22.0	0.0	0.0	50.7	57.7	50.7	43.3	4.0
A86102-6	32	118	4.0	31.0	19.4	0.0	0.0	50.5	57.1	50.5	38.5	2.6
96-50-2	29	191	4.1	30.5	20.2	0.0	0.0	50.7	57.1	50.7	39.8	2.3
96-125-47	32	161	1.4	21.4	28.0	0.0	0.0	49.4	56.7	49.4	56.8	5.9
96-125-47	32	191	2.4	20.4	27.4	0.9	0.0	48.7	55.9	47.8	58.1	4.8
A86102-6	32	161	4.2	32.0	16.9	0.0	0.0	48.8	55.7	48.8	34.5	2.7
Donelly Russet	26	191	1.1	10.2	28.9	2.6	1.3	43.0	54.9	39.1	76.3	10.8
96-113-2	35	191	2.2	19.4	23.6	0.8	0.0	43.8	53.8	43.0	55.8	7.9
A8792-1	32	161	0.7	1.6	26.9	1.7	5.1	35.3	52.5	28.5	95.5	16.5
96-50-2	26	191	3.9	27.0	16.6	0.0	0.0	43.6	52.4	43.6	38.0	4.9
96-50-2	26	161	4.6	32.1	13.3	0.0	0.0	45.4	52.3	45.4	29.3	2.4
96-125-47	32	118	2.9	26.9	15.1	0.0	0.0	42.0	51.8	42.0	36.0	6.8
Donelly Russet	26	161	1.8	15.2	23.6	0.0	0.0	38.8	51.5	38.8	60.7	10.9
96-113-2	35	161	2.3	21.5	24.0	0.0	0.0	45.5	51.4	45.5	52.6	3.6
96-50-4	20	191	4.4	27.4	11.9	0.0	0.0	39.3	50.2	39.3	30.2	6.5
96-50-4	20	161	3.2	25.6	14.1	0.0	0.0	39.6	50.0	39.6	35.5	7.1
96-52-1	23	118	3.1	26.5	13.5	0.0	0.0	40.1	49.2	40.1	33.7	6.0
96-50-2	29	118	3.6	24.9	15.6	0.8	0.0	41.3	48.9	40.5	39.7	4.0
96-50-2	26	118	5.2	25.0	10.9	0.0	0.0	35.9	47.5	35.9	30.3	6.5
96-113-2	32	161	3.6	29.4	12.0	0.0	0.0	41.4	46.8	41.4	29.0	1.8
96-113-2	35	118	2.5	27.6	13.8	0.0	0.0	41.4	46.3	41.4	33.4	2.4
96-50-4	20	118	3.4	23.8	8.5	0.0	0.0	32.3	46.3	32.3	26.3	10.5
96-52-1	23	161	2.2	22.8	10.5	0.0	0.0	33.3	46.2	33.3	31.5	10.6
96-131-36	32	118	5.2	31.4	5.0	0.0	0.0	36.4	45.7	36.4	13.7	4.0
96-113-2	32	118	3.6	27.2	11.2	0.0	0.0	38.5	45.2	38.5	29.2	3.2
96-113-2	32	191	3.6	21.9	16.5	0.0	0.0	38.4	45.1	38.4	43.1	3.2
96-52-1	26	118	3.5	25.2	9.8	0.0	0.0	35.0	45.1	35.0	27.9	6.7
96-52-1	23	191	3.3	20.4	9.3	0.8	1.1	31.6	43.5	29.6	35.5	8.7
96-131-36	29	191	4.1	22.2	9.8	0.0	0.0	32.0	42.1	32.0	30.5	6.0
96-131-36	32	191	3.8	23.7	9.9	0.0	0.0	33.6	41.4	33.6	29.4	4.0
96-52-1	26	161	1.4	18.5	13.6	0.0	0.0	32.0	41.2	32.0	42.4	7.8
96-52-1	26	191	3.5	18.6	12.1	0.0	0.0	30.7	41.1	30.7	39.4	6.9
96-131-36	29	161	8.3	22.1	5.7	0.9	0.0	28.7	40.9	27.8	22.9	4.0
96-131-36	29	118	5.9	26.5	4.0	0.0	0.0	30.5	40.8	30.5	13.1	4.4
96-131-36	32	161	6.5	23.4	6.0	0.0	0.0	29.4	40.2	29.4	20.5	4.2

Table 30 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Stems / plant	Bruise rate stem end	Bruise rating rose end	Bruise shatter	Quality					Days to maturity	Scab level	% hollow	
							Spec. grav.	% dry m'ter	* Fry col.	Fries – dark ends	Uncooked flesh colour			1st ten	2nd ten
96-50-4	3	7.2	3.1	0.3	0.3	0.0	1.082	20.5	3.0	100.0	white	133	1	0	0
A8792-1	28	6.3	2.9	1.9	3.2	0.0	1.091	22.0	2.0	20.0	white	136+	0.5	0	0
A82360-7	4	11.4	3.2	4.0	1.7	0.0	1.090	22.0	3.0	40.0	off white	136+	0	0	0
Kennebec	1	4.2	2.6	4.2	6.2	2.0	1.084	20.9	2.0	0.0	white	123	2	0	0
A8792-1	30	6.1	3.5	5.1	3.9	0.0	1.093	22.0	2.0	20.0	white	136+	0	10	0
A82360-7	8	10.7	2.9	2.4	1.1	0.0	1.102	24.7	3.0	40.0	off white	136+	0.5	0	0
A82360-7	5	13.0	3.1	1.2	0.5	0.0	1.089	22.0	2.5	40.0	off white	136+	0	0	0
Kennebec	2	4.3	3.0	3.2	5.5	1.5	1.080	20.1	2.0	0.0	white	123	2	10	0
A86102-6	6	9.1	2.8	0.0	0.5	0.0	1.085	21.1	2.0	60.0	white	128	0.5	30	0
96-50-4	10	6.0	2.5	2.1	0.4	0.0	1.079	19.9	3.5	100.0	white	133	0	0	0
A86102-6	9	10.0	3.6	0.7	0.5	0.0	1.090	22.0	3.0	60.0	white	128	0	30	10
Shepody	7	4.0	2.3	1.2	1.4	0.0	1.080	20.1	3.0	40.0	white	123	2	0	0
A8792-1	41	5.8	2.8	3.7	3.3	0.0	1.093	22.0	3.0	60.0	white	136+	0	10	10
Donelly Russet	22	4.9	2.2	5.5	6.0	1.5	1.095	23.2	3.0	100.0	white	136+	1	60	50
Donelly Russet	12	5.5	2.2	5.4	6.1	1.0	1.084	20.9	3.0	60.0	white	136+	1	40	10
A8792-1	51	6.4	3.2	3.7	3.1	0.0	1.092	22.0	2.0	20.0	white	136+	0	0	0
Donelly Russet	19	4.7	2.4	5.5	5.4	0.5	1.094	23.0	2.5	60.0	white	136+	1	80	30
A86102-6	13	9.7	2.9	0.3	0.3	0.0	1.082	20.5	3.0	60.0	white	128	0	20	0
96-125-47	23	8.6	3.5	5.2	1.5	0.0	1.103	24.9	2.0	20.0	white	136	0	0	0
Shepody	14	4.4	2.1	1.0	3.0	0.5	1.074	18.9	3.0	80.0	white	123	2	0	0
A82360-7	31	8.8	3.2	1.0	0.6	0.0	1.094	23.0	3.0	40.0	off white	136+	0	0	0
Rus Burbank	16	10.2	4.4	4.0	1.9	0.0	1.090	22.0	3.0	60.0	white	131	0	10	30
96-50-4	27	6.8	2.9	1.4	0.6	0.0	1.078	19.7	3.5	100.0	white	133	0	0	0
Rus Burbank	11	10.1	3.8	5.9	3.1	0.0	1.089	22.0	2.5	100.0	white	131	0	40	20
Donelly Russet	40	4.9	2.3	4.1	6.0	0.5	1.095	23.2	3.0	100.0	white	136+	1	30	0
A86102-6	15	9.9	2.7	0.6	0.0	0.0	1.089	22.0	3.0	20.0	white	123	0	10	0
A82360-7	29	8.5	2.8	3.5	1.0	0.0	1.088	21.8	3.0	20.0	off white	136+	0	0	0
A8792-1	52	6.0	3.7	1.0	3.9	0.0	1.091	22.0	2.0	20.0	white	136+	0	0	0
96-125-47	35	8.3	3.2	3.9	2.0	0.0	1.100	24.3	2.0	20.0	white	136	1	0	0
A82360-7	32	10.0	3.6	2.7	1.7	0.0	1.089	22.0	3.0	80.0	off white	136+	0	0	0
96-50-2	17	9.0	2.8	5.0	2.2	0.0	1.094	23.0	3.0	60.0	white	133	0	10	0
96-125-47	18	9.1	3.7	5.9	1.5	0.0	1.102	24.7	2.0	0.0	white	133	0	0	0
A86102-6	21	10.0	3.0	0.0	0.3	0.0	1.081	20.3	2.0	100.0	white	128	0	10	0
96-50-2	20	8.3	2.6	4.0	2.9	0.0	1.099	24.1	3.0	80.0	white	133	0	0	0
96-125-47	24	7.8	3.2	4.0	2.7	0.0	1.093	22.0	2.5	0.0	white	136	1	0	0
96-125-47	26	9.0	3.2	5.1	5.3	0.0	1.095	23.2	2.0	0.0	white	136	0.5	0	0
A86102-6	25	10.4	2.9	0.4	0.0	0.0	1.086	21.4	3.0	80.0	white	123	0	0	0
Donelly Russet	38	4.8	2.1	5.5	6.2	2.0	1.093	22.0	2.0	100.0	white	136+	0.5	40	0
96-113-2	36	8.2	3.3	6.5	6.3	1.5	1.114	26.3	2.0	0.0	white	136+	1	0	0
A8792-1	55	7.3	3.6	1.3	1.0	0.0	1.089	22.0	2.5	0.0	white	136+	0	40	0
96-50-2	37	7.3	2.6	2.6	1.7	0.0	1.100	24.3	3.5	100.0	white	133	0	10	0
96-50-2	34	8.9	3.1	2.6	1.5	0.0	1.095	23.2	3.0	60.0	white	133	0	10	0
96-125-47	39	10.7	3.7	3.7	1.7	0.0	1.103	24.9	2.0	20.0	white	133	0	0	0
Donelly Russet	48	5.6	2.1	5.7	5.5	1.5	1.093	22.0	3.0	60.0	white	136+	1	30	0
96-113-2	33	7.9	3.0	4.8	4.5	0.5	1.113	26.3	2.0	0.0	white	136+	2	10	0
96-50-4	47	6.3	2.5	2.6	3.1	0.0	1.084	20.9	3.0	100.0	white	133	0.5	0	0
96-50-4	46	6.1	3.0	3.1	0.4	0.0	1.084	20.9	3.0	100.0	white	133	0	0	0
96-52-1	45	7.3	3.2	3.0	1.3	0.0	1.084	20.9	2.0	60.0	white	114	0	10	0
96-50-2	44	7.8	2.5	5.3	2.5	0.0	1.101	24.5	3.5	60.0	white	123	0	0	0
96-50-2	54	9.4	3.3	3.5	1.8	0.0	1.096	23.4	3.0	80.0	white	123	0	0	0
96-113-2	43	8.5	3.6	4.2	4.4	0.5	1.110	26.3	2.5	20.0	white	136+	3	0	0
96-113-2	42	8.7	3.5	6.4	5.6	0.0	1.113	26.3	2.5	20.0	white	136	2	10	10
96-50-4	59	6.9	2.5	0.7	0.8	0.0	1.081	20.3	3.0	80.0	white	133	0	0	0
96-52-1	58	6.9	3.0	1.6	0.0	0.0	1.080	20.1	2.0	60.0	white	114	1	20	0
96-131-36	53	9.5	2.4	5.7	4.1	0.5	1.091	22.0	3.0	60.0	white	121	0	0	0
96-113-2	49	7.8	3.1	6.0	4.7	1.5	1.114	26.3	2.0	20.0	white	133	3	10	0
96-113-2	50	7.5	3.5	5.9	5.6	0.5	1.101	24.5	2.0	0.0	white	136+	2	10	0
96-52-1	56	7.3	2.6	0.6	0.7	0.0	1.091	22.0	2.0	0.0	white	114	0	10	0
96-52-1	62	7.7	3.5	1.8	2.5	0.0	1.088	21.8	2.0	40.0	white	114	0.5	20	0
96-131-36	61	8.3	2.6	5.8	5.7	2.0	1.082	20.5	3.0	20.0	white	121	0	0	0
96-131-36	57	8.2	3.3	6.0	6.2	2.0	1.082	20.5	2.5	40.0	white	121	0	0	0
96-52-1	60	6.2	2.4	2.5	0.6	0.0	1.083	20.7	2.0	0.0	white	114	0	0	0
96-52-1	63	6.4	2.4	3.4	0.0	0.0	1.083	20.7	2.0	40.0	white	114	0.5	0	0
96-131-36	66	7.2	2.7	5.3	3.9	0.0	1.084	20.9	3.0	20.0	white	121	0	0	0
96-131-36	64	8.8	2.8	5.9	5.2	1.0	1.087	21.6	3.0	0.0	white	121	0	0	0
96-131-36	65	8.9	2.9	6.0	4.8	2.0	1.088	21.8	3.0	0.0	white	121	0	0	0

2001-2002

Materials and methods

Early generation seed tuber material, of both Australian and overseas origin, was received again from Toolangi and a total of eighty-five new accessions were planted in single plots at Forthside Research Station (Stage 1) and these were selected at harvest on the basis of tuber quality characteristics.

The previous (2000-01) season's Stage 1 selections (a total of 24 lines and cultivars) were re-planted (Stage 2), in a replicated, randomized-block trial at Forthside Research Station and at a commercial site near Cressy.

A total of eight cultivars were evaluated in Stage 3 comparisons, which comprised a replicated trial at Forthside Research Station and two un-replicated, two or four-row 'length of paddock' plot comparisons, sited in commercial paddocks at Cressy and at Harford, near Devonport.

Results

Thirty selections were made from the Stage 1 plots in the paddock at harvest in 2002, after discarding lines with pronounced tuber defects. Data on these lines and Russet Burbank check plots is shown in Table 31. Results of Stage 2 trials at Forthside Research Station and Cressy are shown in Tables 32 and 33. The lines 98-4-5 and 98-2-1 returned consistently high total yields at both of sites. In the Stage 3 comparisons (Tables 34 – 36 incl.), the lines 97-45-3 and 97-66-2 returned consistently high total yields, although 97-66-2 had a low percentage of fry grade material and was susceptible to bruising. The line 92-37-1 performed well at two of the three sites.

Discussion

Twenty lines were retained from Stage 1 for further evaluation in 2002-03 and twelve were retained from Stage 2 field trials. Seven of the eight genotypes evaluated in Stage 3 trials were retained by industry for further investigation. These were 97-100-3, 97-100-1, 97-43-21, 97-102-1, 97-67-2, 92-37-1 and 97-45-3. All of these genotypes were bred in Australia.

Technology transfer

The season's work again was presented at an Open Day at Forthside Research Station and field days were again held during harvest operations at all trial locations. Results were included in the annual publication of national results and reported to an industry forum organized by the Potato Research and Advisory Committee in Tasmania.

Table 31. Tuber grades, numbers per plant and quality characteristics from lines and cultivars compared in Stage 1, Forthside Research Station, 2001-02.

Line or cultivar	Spacing mm	Tuber no. per plant	Tuber wt. per plant g	80-250 g grade		250-650 g grade		650-850 g grade		>850 g grade		>250 g grade		Waste		Spec. grav.	% dry matter	Fry results		Uncooked flesh colour	Scab rating	Days to maturity
				% by no	% by wt	% by no	% by wt	% / no	%/ wt	% by no	% by wt	% by no	% by wt	% by no	% by wt			Fry col	Dark ends			
99-75-9	300	18.5	3070	67	61	13	29	1	4	0	0	14	33	20	6	1.088	21.8	0	0	o/ wh	0	138
99-39-5	325	17.2	2085	68	81	5	11	0	0	0	0	5	11	27	8	1.089	22.0	1	0	o/ wh	3	131
RB11	325	14.7	1880	60	63	10	22	0	0	0	0	10	22	30	15	1.101	24.5	00	1	wh	0	123
99-4-3	350	14.6	1879	64	69	8	19	0	0	0	0	8	19	27	11	1.094	23.0	00	0	wh	3	131
99-40-3	250	12.9	1540	67	75	3	9	0	0	0	0	3	9	29	16	1.087	21.6	1	1	wh	1	131
99-70-20	325	12.8	1389	63	77	2	4	0	0	0	0	2	4	36	18	1.095	23.2	0	0	wh	0	134
RB6	325	12.2	1874	84	82	5	11	0	0	0	0	5	11	11	7	1.086	21.4	00	0	wh	0	131
99-48-10	250	12.0	1590	63	70	7	17	0	0	0	0	7	17	30	13	1.073	18.7	0	0	o/ wh	0	132
RB7	325	11.8	1981	73	74	13	24	0	0	0	0	13	24	14	3	1.094	23.0	00	0	wh	0	131
RB15	325	11.6	2121	67	59	17	30	0	0	0	0	17	30	16	10	1.086	21.4	00	0	wh	0	138
99-26-10	250	11.5	1746	75	76	9	17	0	0	0	0	9	17	16	6	1.073	18.7	0	0	wh	0.5	138
99-9-36	225	11.3	1745	66	66	10	23	1	5	0	0	11	28	24	6	1.110	26.3	00	2	wh	0.5	147+
RB2	325	11.3	1810	76	73	13	23	0	0	0	0	13	23	10	4	1.096	23.4	00	0	wh	0	138
99-2-13	325	11.3	2228	62	52	27	45	0	0	0	0	27	45	11	4	1.104	25.1	1	0	l/y	1.5	147+
RB8	325	11.2	2061	52	45	25	46	0	0	0	0	25	46	22	9	1.088	21.8	00	2	wh	1	134
99-49-22	275	11.0	1671	72	62	16	34	0	0	0	0	16	34	12	3	1.082	20.5	0	0	wh	0	138
RB13	325	11.0	1895	52	44	15	29	0	0	0	0	15	29	33	27	1.101	24.5	00	1	wh	0.5	131
99-48-26	225	10.3	1502	55	53	15	36	0	0	0	0	15	36	30	11	1.099	24.1	0	1	o/ wh	1	147
99-67-10	300	10.3	1357	74	82	4	9	0	0	0	0	4	9	22	9	1.071	18.2	00	0	o/wh	1.5	134
RB4	325	10.0	1594	80	84	5	9	0	0	0	0	5	9	15	7	1.087	21.6	00	0	wh, 1 h'w heart	0.5	131
RB9	325	10.0	2239	65	51	23	36	0	0	0	0	23	36	12	13	1.095	23.2	00	1	wh	0	138
99-48-22	250	9.6	1181	56	57	10	28	0	0	0	0	10	28	34	15	1.064	16.8	00	0	o/wh	0.5	138
RB3	325	9.3	2198	52	38	25	42	0	0	0	0	25	42	23	20	1.101	24.5	0	1	wh	0	138
99-40-11	300	9.3	1641	65	55	22	41	0	0	0	0	22	41	14	4	1.081	20.3	1	0	wh	0.5	134
99-33-56	275	9.0	1667	67	64	20	32	0	0	0	0	20	32	13	4	1.087	21.6	0	2	wh	0	147
99-67-7	300	9.0	1752	54	42	29	52	0	0	0	0	29	52	17	6	1.089	22.0	00	0	wh	1.5	131
RB1	325	9.0	2139	52	40	26	35	0	0	0	0	26	35	22	25	1.095	23.2	nr	nr	nr	1	138
RB5	325	9.0	1935	56	45	19	32	0	0	0	0	19	32	26	23	1.093	22.0	00	0	wh	0.5	131
99-4-1	300	8.4	1718	55	42	33	54	0	0	0	0	33	54	12	5	1.079	19.9	0	0	l/y	3	129
99-33-19	300	8.2	1658	65	51	31	48	0	0	0	0	31	48	4	1	1.073	18.7	00	0	wh	0	147+
99-33-46	275	7.8	1291	74	71	13	25	0	0	0	0	13	25	13	4	1.084	20.9	0	0	l/y	0	138
99-9-1	225	7.6	1588	29	44	56	48	0	0	0	0	56	48	15	8	1.101	24.5	00	0	o/wh	0.5	147+
99-70-10	275	7.4	2173	48	32	33	51	3	7	0	0	36	58	16	10	1.090	22.2	0	0	cr, 1 h/w heart	0.5	147+
99-70-29	250	7.3	1563	67	54	21	34	3	10	0	0	24	44	9	2	1.106	25.5	00	0	wh	0	147
99-70-13	275	7.3	1499	53	46	29	44	2	6	0	0	31	50	16	4	1.089	22.0	0	0	o/wh	1	138
99-4-9	250	7.2	1470	74	61	14	22	5	13	0	0	18	35	8	4	1.088	21.8	00	0	wh	1	147
99-67-28	275	6.8	1812	41	29	48	69	0	0	0	0	48	69	11	2	1.112	26.3	0	2	o/wh	2.5	147+
99-33-10	225	6.0	1401	59	43	37	51	2	6	0	0	39	57	2	0	1.077	19.5	0	0	o/wh	2	132
99-61-7	300	6.0	1491	39	31	56	68	0	0	0	0	56	68	6	1	1.072	18.4	00	0	wh	0	131
99-70-19	275	5.6	1391	38	26	42	60	2	5	0	0	44	66	18	8	1.095	23.2	0	0	o/wh	1	147
99-70-19	275	5.4	1339	37	27	52	72	0	0	0	0	52	72	11	1	1.097	23.6	00	0	cr	0	147
99-49-13	275	4.7	1127	54	35	43	56	4	10	0	0	46	65	0	0	1.112	26.3	0	0	o/wh	1	147

NOTES: Uncooked flesh colour: wh = white, o/wh= off white, cr=cream, y=yellow, l/y=light yellow.
Planted 16 November 2001, harvested 29 April 2002.
Fry colour: as per USDA chart 1988 version 4.
Scab rating: 0=nil, 1=slight, 2=moderate, 3=severe.

Table 32. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Forthside in 2001-02.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield
98-2-1	30	2.8	30.8	19.0	0.0	0.0	49.7	58.0	49.7	38.5	5.4
98-96-72	22.5	3.5	21.7	19.0	0.0	0.0	40.7	56.9	40.7	46.7	12.8
98-96-15	27.5	3.6	42.5	9.6	0.0	0.0	52.1	56.3	52.1	18.4	0.6
98-66-7	30	3.0	30.1	14.4	0.0	0.0	44.4	54.2	44.4	32.3	6.8
98-35-23	30	2.0	30.0	19.2	0.6	0.0	49.7	52.8	49.2	39.5	1.1
98-4-5	32.5	1.8	19.4	24.5	0.6	0.0	44.5	52.3	43.9	55.7	6.0
RB	32.5	3.6	36.8	8.1	0.0	0.0	44.9	50.4	44.9	17.6	2.0
98-96-11	27.5	1.2	17.0	23.9	0.3	0.0	41.2	49.1	40.9	59.4	6.7
98-120-19	30	0.5	12.8	29.4	3.3	0.0	45.5	48.8	42.2	71.7	2.8
98-3-11	27.5	1.4	26.6	18.1	0.0	0.4	45.1	48.3	44.7	41.2	1.8
98-35-9	32.5	2.0	33.1	9.1	0.0	0.0	42.2	45.2	42.2	21.3	0.9
98-66-1	35	3.2	34.3	4.6	0.0	0.0	38.8	43.3	38.8	11.9	1.3
98-88-4	25	1.5	22.5	15.0	0.0	0.0	37.6	42.9	37.6	40.0	3.8
98-35-2	32.5	2.3	29.3	9.9	0.0	0.0	39.2	42.5	39.2	25.1	1.0
98-96-63	32.5	3.5	31.0	4.9	0.0	0.0	35.9	41.9	35.9	13.4	2.5
Shepody	20	1.2	14.6	17.4	0.4	0.0	32.3	41.5	31.9	55.1	7.9
98-35-27	30	1.4	14.2	16.9	0.7	0.4	32.1	40.5	31.1	56.0	7.0
98-3-19	30	1.2	14.6	20.4	0.6	0.0	35.9	40.4	35.3	59.4	3.3
98-36-2	27.5	2.2	26.1	9.7	0.0	0.0	35.8	40.3	35.8	26.9	2.3
98-35-26	25	0.9	14.6	19.5	0.8	0.4	35.4	38.8	34.2	58.3	2.5
98-35-18	32.5	2.9	27.0	6.6	0.0	0.0	33.6	38.0	33.6	19.6	1.6
98-102-10	25	1.1	9.6	17.6	1.9	0.0	29.1	37.4	27.2	67.1	7.2
98-96-53	25	2.9	31.7	1.9	0.0	0.0	33.7	37.3	33.7	6.8	0.8
98-96-13	27.5	1.3	25.6	9.1	0.0	0.0	34.7	36.7	34.6	27.0	0.7
98-108-1	30	0.5	12.1	20.9	0.3	0.0	33.3	35.9	33.0	63.7	2.2
98-35-5	30	1.9	22.5	6.3	0.0	0.0	28.8	31.3	28.8	21.3	0.6
LSD P=0.05		1.1	6.5	5.6	0.9	ns	8.7	8.6	8.5	9.4	2.6

Table 32 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end	Bruise shatter	Quality					Days to maturity	Scab level	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	Fries – dark ends	Unc'ked flesh colour			1st ten	2nd ten
98-2-1	2	10.2	5.8	5.2	1.3	1.082	20.5	00	13.3	white	136	2.8	0	0
98-96-72	11	7.0	3.8	1.4	0.0	1.083	20.7	00	20.0	cream	141	3.0	0	0
98-96-15	1	8.2	6.1	2.4	0.0	1.079	20.0	00-0	0.0	off white	144.7	1.5	0	0
98-66-7	8	9.0	5.2	0.3	0.0	1.090	22.1	00	6.7	off white	134	2.0	0	0
98-35-23	3	7.2	3.7	2.6	0.0	1.085	21.2	000	0.0	off white	132.3	0.3	0	0
98-4-5	7	7.6	2.3	0.2	0.0	1.074	18.8	00	13.3	cream	130	2.8	0	0
RB	6	9.7	5.7	3.5	0.0	1.087	21.6	00	6.7	white	131.3	0.8	23.3	6.7
98-96-11	10	5.3	6.2	3.0	0.0	1.090	21.9	0-1	0.0	off white	147	0.8	0	0
98-120-19	4	5.5	6.4	2.8	0.3	1.094	22.6	0	13.3	off white	144	1.0	0	0
98-3-11	5	7.5	2.2	1.2	0.0	1.074	18.9	00-0	0.0	white	114	1.2	0	0
98-35-9	9	7.9	3.6	0.6	0.0	1.091	22.0	00	0.0	white	128.7	0.3	0	0
98-66-1	13	10.1	6.1	1.5	0.0	1.087	21.4	00	0.0	off white	131.3	1.0	0	0
98-88-4	14	5.7	6.1	3.9	1.0	1.081	20.3	000	0.0	white	119	2.0	0	0
98-35-2	12	8.0	6.2	5.3	0.0	1.092	22.4	000-00	0.0	white	129	0.0	0	0
98-96-63	15	9.1	6.7	2.9	0.0	1.091	22.1	00	0.0	white	127.3	0.5	0	0
Shepody	23	3.7	3.5	2.6	0.3	1.075	19.1	00-0	6.7	white	121	4.0	0	0
98-35-27	24	6.4	3.1	3.8	0.7	1.099	24.1	00	6.7	off white	150	0.5	0	0
98-3-19	16	6.1	2.4	0.8	0.0	1.080	20.1	00-0	0.0	white	126.3	1.8	0	0
98-36-2	17	7.0	4.1	2.8	0.0	1.085	21.2	00-0	0.0	white	121.3	0.8	0	0
98-35-26	18	5.3	6.6	1.8	0.0	1.091	22.2	00-0	26.7	cream	134	0.5	0	0
98-35-18	21	9.2	3.6	1.2	0.0	1.080	20.1	00	6.7	white	116.3	0.7	0	0
98-102-10	25	4.2	6.9	7.9	3.0	1.075	19.1	00	20.0	white	134	2.5	10.0	0
98-96-53	20	7.5	6.0	3.4	0.5	1.090	21.7	00-0	0.0	white	120.6	0.2	0	0
98-96-13	19	7.1	4.8	3.4	1.5	1.076	19.3	000	0.0	white	122.6	0.0	4.7	0.1
98-108-1	22	5.6	6.0	3.1	0.0	1.081	20.3	000-00	0.0	white	134	2.7	0	0
98-35-5	26	7.0	4.3	2.8	0.0	1.080	20.0	000-00	0.0	white	112	0.7	0	0
LSD P=0.05		1.3	1.5	1.5	0.7	0.009	1.8	na	14.3	na	6.7	0.5	5.7	2.0

NOTES: Planted: 13 November 2001, harvested 30 April 2002. Quality keys as previously described.

Table 33. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Cressy in 2001-02.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield
98-4-5	32.5	2.8	33.0	31.4	0.9	0.0	65.3	70.0	64.4	49.5	1.9
Shepody	20	2.1	18.8	45.5	1.6	0.0	65.9	69.7	64.3	71.5	1.7
98-2-1	30	3.8	37.4	21.2	0.0	0.0	58.7	66.6	58.7	36.2	4.2
RB	32.5	2.8	37.9	23.4	0.0	0.0	61.3	65.5	61.3	38.2	1.4
98-35-27	30	3.3	40.2	20.3	0.0	0.0	60.6	64.3	60.6	33.5	0.5
98-120-19	30	1.1	19.3	40.5	1.6	0.0	61.5	63.6	59.8	68.6	1.1
98-35-23	30	3.4	35.9	16.2	0.0	0.0	52.1	56.5	52.1	31.0	1.0
98-66-7	30	4.3	29.4	14.4	0.0	0.0	43.8	49.1	43.8	32.9	1.0
98-96-15	27.5	2.8	32.0	9.7	0.0	0.0	41.7	45.7	41.7	23.3	1.3
98-35-2	32.5	4.7	3.4	35.3	0.0	0.0	38.7	43.5	38.7	91.1	0.0
98-35-9	32.5	2.7	32.1	7.0	0.0	0.0	39.1	42.5	39.1	17.9	0.7
98-96-63	32.5	5.2	25.0	7.7	0.0	0.0	32.7	38.7	32.7	23.4	0.9
98-66-1	35	6.8	28.6	0.8	0.0	0.0	29.4	37.7	29.4	2.6	1.5
LSD P=0.05		na	na	na	na	na	na	na	na	na	na

Table 33 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end	Bruise shatter	Quality					Days to maturity	Scab level	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	Fries – dark ends	Unc'ked flesh colour			1st ten	2nd ten
98-4-5	2	9.7	2.6	0.0	0.0	1.073	18.7	00	0.0	white	142	1.0	0	0
Shepody	1	4.9	4.5	2.7	0.5	1.072	18.4	0	60.0	white	135	1.0	0	0
98-2-1	6	10.7	5.5	3.6	0.0	1.078	19.7	00	20.0	white	150	1.0	20	0
RB	4	10.4	5.4	3.2	0.0	1.091	22.0	00	0.0	white	148	0.0	10% stain	0
98-35-27	5	10.3	2.5	3.5	2.0	1.084	20.9	0	20.0	white	150	0.0	0	0
98-120-19	3	6.8	5.0	2.5	0.0	1.084	20.9	00	20.0	white	151	0.0	0	0
98-35-23	7	9.5	3.5	0.8	0.0	1.086	21.4	0	0.0	off white	154	0.0	0	0
98-66-7	8	8.7	3.2	0.9	0.0	1.086	21.4	00	20.0	white	148	1.0	0	0
98-96-15	9	6.7	2.6	0.3	0.0	1.076	19.3	00	0.0	white	154	0.0	0	0
98-35-2	11	11.8	4.1	5.9	0.0	1.081	20.3	00	20.0	white	135	0.0	0	0
98-35-9	10	8.4	3.9	1.5	0.0	1.079	19.9	00	0.0	white	142	0.0	0	0
98-96-63	12	8.8	6.3	1.1	0.0	1.09	22.0	0	0.0	white	142	0.0	0	0
98-66-1	13	10.6	4.4	0.2	0.0	1.09	22.0	00	0.0	off white	135	1.0	0	0
LSD P=0.05		na	na	na	na	na	na	na	na	na	na	na	na	na

NOTES: Planted: 31 October 2001, harvested 9 April 2002.
Quality keys as previously described.

Table 34. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Cressy in 2001-02.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield
97-45-3	26	0.8	12.3	46.5	9.9	8.2	76.9	81.9	58.9	84.0	4.1
92-37-1	32	1.5	19.9	45.0	6.2	1.7	72.9	76.8	64.9	72.4	2.4
97-66-2	32	2.8	26.9	38.4	5.0	0.0	70.3	74.2	65.3	61.8	1.1
97-100-3	35	3.1	38.2	29.9	0.9	0.0	69.0	73.8	68.1	44.6	1.7
97-102-1	32	0.7	13.5	39.1	8.5	2.4	63.5	69.7	52.7	78.7	5.5
97-43-21	26	2.7	28.5	33.1	0.0	0.0	61.6	68.6	61.6	53.6	4.3
RB	32	3.5	33.2	26.1	0.9	0.0	60.3	66.3	59.3	44.8	2.5
97-100-1	29	5.8	38.4	18.1	0.4	0.0	56.9	63.9	56.5	32.7	1.2
Shepody	20	3.4	27.3	26.9	0.0	0.0	54.3	61.9	54.3	49.6	4.3
LSD P=0.05		na	na	na	na	na	na	na	na	na	na

Table 34 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end	Bruise shatter	Quality					Days to maturity	Scab level	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	Fries – dark ends	Unc'ked flesh colour			1st ten	2nd ten
97-45-3	1	5.7	1.4	1.8	0.0	1.074	18.9	00	0.0	white	160	2.0	5	0
92-37-1	2	8.2	6.5	1.9	0.5	1.090	22.2	00	30.0	white	160	2.5	5	0
97-66-2	3	10.6	6.3	5.2	0.8	1.087	21.4	00	0.0	off white	156	1.0	0	0
97-100-3	4	13.0	2.8	1.9	0.0	1.076	19.3	0 - 00	10.0	white	160+	2.0	0	0
97-102-1	5	7.3	3.9	1.8	0.0	1.086	21.4	00	10.0	white	156	1.5	25	5
97-43-21	6	8.8	3.5	3.0	0.8	1.079	19.9	00	0.0	off white	156	0.5	0	0
RB	7	10.3	5.4	3.1	0.3	1.087	21.6	00	10.0	white	156	1.0	10, 10% stain	5, 20% stain
97-100-1	8	11.9	2.5	2.8	0.0	1.083	20.7	0	0.0	white	156	0.0	0	0
Shepody	9	5.4	4.0	2.2	0.0	1.071	18.2	0	30.0	white	142	3.0	0	0
LSD P=0.05		na	na	na	na	na	na	na	na	na	na	na	na	na

NOTES: Planted: 31 October 2001, harvested 9 April 2002.
Quality keys as previously described.

Table 35. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Forthside in 2001-02.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield
97-45-3	25	0.5	10.7	29.1	5.4	3.5	48.7	55.1	39.8	77.5	6.0
97-66-2	32.5	2.2	27.4	23.4	0.5	0.0	51.2	54.1	50.8	46.6	0.7
97-100-3	35	1.5	24.0	21.7	0.4	0.5	46.6	49.3	45.7	48.4	1.2
97-43-21	25	2.3	22.9	18.9	0.0	0.0	41.8	49.3	41.8	44.7	5.1
97-102-1	30	0.8	8.7	24.9	5.1	2.9	41.6	45.1	33.6	78.8	2.7
92-37-1	32.5	1.3	18.0	21.2	2.2	0.0	41.4	45.0	39.2	56.6	2.3
97-100-1	27.5	2.1	22.2	17.6	0.4	0.0	40.3	43.1	39.9	44.6	0.7
97-67-2	25	0.5	9.5	23.3	2.6	1.5	36.8	40.1	32.7	74.7	2.8
LSD P=0.05		1.0	5.0	ns	ns	ns	6.6	5.8	4.9	11.5	2.5

Table 35 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end	Bruise shatter	Quality					Days to maturity	Scab level	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	Fries – dark ends	Unc'ked flesh colour			1st ten	2nd ten
97-45-3	2	4.1	6.5	5.7	0.0	1.089	21.9	00	0.0	white	145.5	2.5	0	0
97-66-2	1	9.0	7.1	6.4	0.0	1.105	25.1	00	0.0	off white	150	0.0	0	0
97-100-3	3	9.1	6.6	4.8	0.0	1.094	22.5	00	0.0	off white	145.5	1.0	0	0
97-43-21	4	7.7	6.9	4.1	1.5	1.090	22.0	00	0.0	off white	150	0.8	5	0
97-102-1	5	5.8	7.4	4.3	0.0	1.101	24.4	00	0.0	off white	143.5	2.0	20	0
92-37-1	6	6.5	7.0	4.2	0.5	1.093	22.0	00	60.0	white	134	1.3	0	0
97-100-1	7	8.3	6.9	5.3	0.0	1.096	23.4	00	0.0	off white	150	0.5	0	0
97-67-2	8	4.3	6.1	4.5	0.1	1.096	23.5	00	17.1	white	136.1	0.5	2.1	0
LSD P=0.05		1.6	0.6	ns	0.8	0.009	2.0	na	26.2	na	ns	1	ns	ns

NOTES: Planted: 13 November 2001, harvested 30 April 2002.
Quality keys as previously described.
The lines 97-66-2, 97-100-1, 92-37-1, 97-100-3 & 97-67-2 were selected as being suitable for ongoing industry testing.

Table 36. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Harford in 2001-02.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)									
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield
92-37-1	32	1.9	18.2	73.3	7.8	3.1	102.4	107.3	91.5	82.2	3.0
97-66-2	32	2.5	20.1	59.4	6.8	4.4	90.7	101.2	79.5	77.8	8.0
97-45-3	26	0.9	11.4	56.8	10.7	5.8	84.6	96.8	68.2	86.2	11.2
97-100-3	35	2.3	26.1	59.6	3.8	1.1	90.6	94.1	85.7	71.1	1.2
97-43-21	26	9.5	25.9	45.6	0.8	0.0	72.3	84.7	71.5	64.1	2.8
97-102-1	32	0.6	13.7	50.9	7.6	4.0	76.0	78.6	64.5	82.0	2.0
Shepody	20	2.9	28.4	40.0	1.3	0.0	69.7	76.2	68.4	59.2	3.6
97-100-1	29	2.5	30.5	36.8	1.4	0.0	68.6	71.8	67.2	55.6	0.7
RB	32	4.3	43.6	16.0	0.8	0.0	60.5	65.6	59.7	27.9	0.8
97-67-2	26	0.8	8.3	39.5	6.6	1.1	55.5	58.9	47.8	84.9	2.7
LSD P=0.05		na	na	na	na	na	na	na	na	na	na

Table 36 continued

Line or cultivar	Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end	Bruise shatter	Quality					Days to maturity	Scab level	% hollow	
						Spec. grav.	% dry m'ter	* Fry col.	Fries – dark ends	Unc'ked flesh colour			1st ten	2nd ten
92-37-1	1	11.1	4.1	3.6	0.0	1.070	18.0	00	0.0	white	158	1.3	0	0
97-66-2	2	11.5	6.2	6.4	2.0	1.081	20.2	0-00	0.0	off white	169	0.0	5	0
97-45-3	4	6.8	2.7	2.5	0.5	1.064	16.8	0-00	10.0	white	158	0.5	0	0
97-100-3	3	12.0	2.3	2.4	0.0	1.061	16.1	0-00	0.0	white	161	0.5	0	0
97-43-21	6	8.6	3.0	4.7	1.3	1.077	19.4	0-00	0.0	cream	167	0.5	0	0
97-102-1	5	7.3	4.4	3.8	0.0	1.083	20.7	0-00	10.0	off white	158	0.5	10	0
Shepody	7	7.8	1.4	5.1	1.0	1.062	16.4	00	0.0	white	154	1.3	0	0
97-100-1	8	9.9	3.4	3.7	0.3	1.078	19.6	00	0.0	off white	158	0.0	0	0
RB	9	11.5	1.5	4.0	0.0	1.082	20.5	00	0.0	white	158	0.0	40 & 20% staining	10 & 35% staining
97-67-2	10	4.5	5.6	5.6	1.0	1.070	17.9	00	0.0	white	158	0.0	0	0
LSD P=0.05		na	na	na	na	na	na	na	na	na	na	na	na	na

NOTES: Planted: 29 October 2001, harvested 23 April 2002.
Quality keys as previously described.
The lines 97-100-3, 97-100-1, 97-43-21, 97-102-1, 97-67-2, 92-37-1 & 97-45-3 were selected as being suitable for ongoing industry testing.

2002-2003

Materials and methods

Sixty-two lines were acquired from Toolangi, Victoria in 2002 for comparison in Stage 1 plots, and these were planted on 30 October, with small adjustments in spacing as recommended by the plant breeder. Twenty genotypes, selected from the previous year's Stage 1 comparison were planted at Forthside Research Station on 31 October, together with check plots of Russet Burbank and Shepody. Four, replicated Stage 3 evaluations were carried out – at Forthside Research Station, at Myalla, Woodside and Cressy. Twelve selections and check cultivars were planted at the former three locations and ten selections and check cultivars were planted at Cressy.

Results

Table 37 shows the Stage 1data collected on the 16 genotypes remaining after lines with pronounced tuber defects had been discarded and on the Russet Burbank check plots. Results of the Stage 2 evaluation at Forthside Research Station are shown in Table 38. The line 99-48-26 returned the highest total and fry-grade yields but many tubers were small and many fries exhibited darkened ends. In Stage 3 evaluations (Tables 39 – 42 incl.), the line 98-4-5 returned the highest total yield at the three northwestern locations and the line 98-120-19 also performed well, being the highest yielding line at the Cressy location.

Discussion

The lines 99-26-10, 99-48-26, 99-49-22, 99-67-7, 99-70-13, 99-70-19, 99-70-29 & 99-75-9 were selected by industry representatives and researchers, from the Stage 2 trial, as being worthy of further evaluation in future work. Processing companies also selected a range of material from Stage 3 evaluations for further development. These are listed in the relevant tables of results. Processing companies and researchers also made selections from Stage 1 comparisons. Arrangements for the further evaluation of these genotypes are the subject of confidential discussions at the time of writing this report, in accordance with the new funding arrangements for future potato cultivar evaluation work recently agreed between Horticulture Australia Limited and industry stakeholders.

Technology transfer

The season's work again was presented at an Open Day at Forthside Research Station and field days were held during harvest operations at trial locations. Results again were reported to an industry forum organized by the Potato Research and Advisory Committee in Tasmania.

Table 37. Tuber grades, numbers per plant and quality characteristics from lines and cultivars compared in Stage 1, Forthside Research Station, 2002-03.

Line or cultivar	Spacing mm	Tuber no. per plant	Tuber wt. per plant g	80-250 g grade		250-650 g grade		650-850 g grade		>850 g grade		>250 g grade		Waste		Spec. grav.	% dry matter	Fry results		Uncooked flesh colour	Scab rating	Days to maturity
				% by no	% by wt	% by no	% by wt	% / no	%/ wt	% by no	% by wt	% by no	% by wt	% by no	% by wt			Fry col	Dark ends			
RB2	325	9.3	2518	38	26	46	61	1	2	0	0	47	63	15	11	1.083	20.7	00	50	wh	0	F
RB1	325	7.7	2248	22	12	54	71	0	0	0	0	54	71	24	16	1.092	22.6	00	50	wh	0	F
RB8	325	7.3	1903	36	25	39	47	2	5	0	0	41	52	23	23	1.085	21.1	000	0	wh	0	F
00-23-1	250	7.1	1901	27	66	46	15	2	5	1	5	49	25	24	9	1.097	23.6	00	0	wh	0	L
RB10	325	6.7	1893	43	25	48	65	1	2	0	0	49	67	9	7	1.077	19.5	00	50	wh	0	F
RB5	325	7.9	1829	42	33	37	54	0	0	0	0	37	54	20	13	1.086	21.4	00	50	wh	0	F
00-10-5	250	4.3	1808	15	6	51	54	18	35	0	0	69	89	15	5	1.091	22.4	0	0	wh	0	L
RB6	325	7.9	1774	53	40	37	57	0	0	0	0	37	57	10	3	1.097	23.6	00	0	wh	0	F
RB4	325	6.5	1736	46	30	42	57	0	0	0	0	42	57	11	13	1.088	21.8	00	0	wh	0	F
RB7	325	7.1	1721	42	36	41	53	0	0	0	0	41	53	18	11	1.096	23.4	00	0	wh	0	F
00-81-6	275	6.5	1708	42	28	46	64	1	3	0	0	47	67	10	4	1.096	23.4	000	0	wh	0	L
RB3	325	7.0	1630	46	28	37	62	1	3	0	0	38	65	16	7	1.087	21.6	00	0	wh	0	F
00-33-16	250	7.3	1594	55	42	36	55	0	0	0	0	36	55	9	3	1.104	25.1	00	0	wh	0	L
00-22-8	300	9.7	1591	75	74	13	20	0	0	0	0	13	20	12	6	1.095	23.2	00	0	wh	0	L
00-28-4	300	6.6	1564	44	31	39	55	0	0	2	6	41	61	15	9	1.098	23.8	0	50	wh	0	L
RB9	325	6.5	1564	48	34	36	53	0	0	0	0	36	53	16	13	1.075	19.1	00	0	wh	0	F
00-61-2	225	4.9	1481	36	25	52	63	0	0	0	0	52	63	11	12	1.080	20.1	0	50	cr	0	L
00-11-13	250	7.0	1420	60	48	25	40	2	5	0	0	27	45	13	7	1.092	22.6	00	0	wh	0	L
00-13-13	250	7.0	1396	51	40	25	50	0	0	0	0	25	50	24	10	1.096	23.4	00	0	wh	0	L
00-11-21	225	5.0	1337	42	27	51	69	0	0	0	0	51	69	7	4	1.099	24.1	00	0	o/wh	0	L
00-4-7	250	5.1	1310	37	22	35	52	0	0	0	0	35	52	28	26	1.114	26.3	00	0	wh	0	L
00-13-2	275	9.1	1280	62	68	11	22	0	0	0	0	11	22	27	9	1.095	23.2	00	0	wh	0	L
00-12-1	250	5.9	1093	47	38	30	55	0	0	0	0	30	55	23	7	1.067	17.4	00	0	o/wh	0	L
00-10-6	250	5.8	1093	48	40	25	46	0	0	0	0	25	46	27	14	1.081	20.3	00	0	wh	0	L
00-22-3	250	5.0	1073	47	43	33	53	0	0	0	0	33	53	20	4	1.081	20.3	0	0	wh	0	L
00-22-4	250	6.5	850	46	52	12	32	0	0	0	0	12	32	41	16	1.101	24.5	00	0	wh	0	L

NOTES: Uncooked flesh colour: wh = white, o/wh= off white, cr=cream, y=yellow, l/y=light yellow.
Planted 30 October 2002, harvested 1 April 2003.
Fry colour: as per USDA chart 1988 version 4.
Scab rating: 0=nil, 1=slight, 2=moderate, 3=severe.
Maturity: F = finished, L = late :- rated 146 days from planting (25/3/03), all ratings relative to RB, which was fully senesced at that date.

Table 38. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 2 trial at Forthside in 2002-03.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)										Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield				
99-48-26	22.5	2.5	40.4	39.3	0.5	0.0	80.3	86.0	79.8	50.0	3.2	1	8.6	2.9	2.0
99-75-9	30	2.8	52.6	18.7	0.2	0.0	71.6	77.0	71.3	26.5	2.6	2	12.0	6.3	5.9
RB	32.5	1.0	23.5	38.9	0.7	0.3	63.3	74.6	62.4	63.0	10.3	6	8.4	5.0	3.0
Shepody	20	0.8	17.0	48.2	2.4	1.5	69.0	73.6	65.1	75.0	3.9	3	5.2	1.9	1.4
99-70-29	27.5	0.8	17.1	44.1	1.8	1.0	64.0	70.1	61.2	73.2	5.3	5	5.8	5.6	5.4
99-67-7	30	1.1	27.4	36.8	0.0	0.0	64.2	67.9	64.2	57.5	2.6	4	7.8	3.8	2.3
99-70-19	27.5	1.7	25.1	33.7	1.8	0.3	60.8	65.9	58.7	58.7	3.3	9	7.1	5.7	4.1
99-40-11	32.5	1.5	28.6	34.4	0.0	0.0	63.0	65.7	63.0	54.7	1.2	7	10.4	2.0	1.5
99-40-3	27.5	2.3	29.0	29.4	0.6	0.0	59.0	65.5	58.4	51.0	4.2	12	8.1	2.8	3.7
99-49-22	27.5	1.7	29.4	32.5	0.0	0.0	61.9	64.3	61.9	52.5	0.7	8	7.1	1.7	1.5
99-4-9	27.5	0.5	22.4	33.6	4.4	0.0	60.4	63.9	55.9	62.9	3.1	10	5.4	3.5	2.9
99-70-13	30	1.1	19.2	37.1	0.0	0.0	56.4	63.4	56.4	65.8	5.9	14	6.6	6.6	5.9
99-26-10	27.5	2.0	37.0	22.8	0.2	0.0	60.0	63.3	59.8	38.5	1.3	11	10.2	2.5	0.7
99-49-13	27.5	1.4	24.7	31.3	0.0	0.0	55.7	61.7	55.9	56.6	4.6	15	7.0	5.4	4.5
99-9-36	25	1.1	20.0	31.8	2.9	0.3	55.0	61.5	51.8	63.6	5.4	16	5.1	4.3	4.3
99-33-10	22.5	0.9	13.0	41.8	2.4	0.8	58.1	60.1	54.8	77.9	1.2	13	5.5	4.2	2.6
99-67-10	32.5	3.2	38.6	10.7	0.0	0.0	49.4	54.0	49.4	21.1	1.5	17	10.1	0.8	1.3
99-61-7	30	0.5	8.5	36.7	3.1	0.5	48.8	53.1	45.2	82.9	3.9	18	4.8	6.7	7.8
99-48-10	27.5	3.6	30.8	15.6	0.0	0.0	46.5	51.7	46.5	33.5	1.6	20	7.7	4.5	1.7
99-48-22	25	1.5	18.9	22.4	0.0	0.4	41.7	51.3	41.3	54.6	8.1	21	5.3	1.7	2.2
99-33-56	27.5	1.3	26.8	21.4	0.0	0.0	48.1	50.2	48.1	44.4	0.8	19	5.5	4.1	0.8
99-70-20	35	1.7	23.0	8.9	0.2	0.0	32.1	37.5	31.9	28.1	3.7	22	6.8	4.8	5.4
LSD P=0.05		0.8	6.4	5.8	1.4	ns	7.1	7.4	6.7	8.9	2.5		1.2	1.2	1.3

Table 38 continued

Line or cultivar	Bruise shatter	Quality Spec. grav.	% dry m'ter	* Fry col.	Fry col -USDA eq.	Fries – dark ends	Unc'ked flesh colour	Days to maturity	Scab level	% hollow 1st ten	% brown centr 1st ten	% intern defect 1st ten	% hollow 2nd ten	% brown centre 2nd ten	% intern defect 2nd ten
99-48-26	0.3	1.090	21.8	1.978	00	45.2	white	slightly late	0.0	0	0	0	0	0	0
99-75-9	0.5	1.088	21.6	2.25	00	5.0	white	same	0.0	0	0	0	0	0	0
RB	0.0	1.092	22.5	2	00	25.0	white	finished	0.0	8	3	11	0	3	3
Shepody	0.3	1.090	22.1	2.75	0	10.0	white	early	1.4	5	0	5	0	0	0
99-70-29	0.3	1.097	23.4	1.75	00	10.0	white	late	0.0	5	0	5	0	0	0
99-67-7	0.3	1.096	23.2	1.25	000	0.0	white	same	0.0	0	0	0	0	0	0
99-70-19	0.0	1.099	24.1	1.75	00	0.0	white	same	0.0	20	13	33	0	0	0
99-40-11	0.0	1.080	20.0	3.5	1	10.0	white	early	0.0	0	0	0	0	0	0
99-40-3	0.7	1.084	20.8	3.978	1	31.9	white	same	0.0	0	0	0	0	0	0
99-49-22	0.0	1.082	20.4	2.75	0	5.0	white	very early	0.0	0	0	0	0	0	0
99-4-9	0.3	1.092	22.3	2	00	5.0	white	same	0.0	3	0	3	0	0	0
99-70-13	0.5	1.096	23.1	3	0	0.0	white	very early	0.0	5	0	5	0	0	0
99-26-10	0.0	1.079	19.8	2.75	0	35.0	white	very early	0.0	3	5	8	0	0	0
99-49-13	0.0	1.100	24.2	1.915	00	8.3	white	same	0.0	39	0	39	0	0	0
99-9-36	0.3	1.094	22.8	1.5	00	0.0	white	very late	0.0	18	3	21	5	0	5
99-33-10	0.0	1.077	19.5	1.978	00	0.0	off white	very early	0.2	3	0	3	0	0	0
99-67-10	0.0	1.092	22.5	1.25	000	0.0	white	early	0.0	0	60	60	0	48	48
99-61-7	3.0	1.079	19.9	1.978	00	25.2	white	early	0.0	13	21	34	7	4	11
99-48-10	0.0	1.084	20.9	3	0	15.0	white	very early	0.0	0	0	0	0	0	0
99-48-22	0.3	1.082	20.4	1.978	00	0.0	off white	very early	0.0	16	21	37	0	4	4
99-33-56	0.0	1.104	24.9	2.311	00	18.6	white	very early	0.0	0	0	0	0	0	0
99-70-20	1.3	1.091	22.1	2.5	0	5.0	white	very early	0.0	0	0	0	0	0	0
LSD P=0.05	0.5	0.007	1.4	0.576	na	17.9	na	na	0.1	12	11	17	4	8	9

NOTES: Planted: 31 October 2002, harvested 3 April 2003. Quality keys as previously described.
Maturity: rated 145 days from planting (25/3/03), all ratings relative to RB which was fully senesced at that date.

Table 39. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Cressy in 2002-03.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)										Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield				
98-120-19	25	0.6	23.4	28.4	0.5	0.0	52.4	53.9	51.9	56.7	0.9	1	5.8	1.5	3.5
98-66-7	30	3.0	31.5	11.0	0.3	0.0	42.8	48.4	42.5	25.4	2.6	6	8.0	1.0	1.2
RB	32.5	1.8	23.6	19.4	0.3	0.0	43.2	47.6	43.0	43.9	2.5	5	6.8	2.7	3.9
98-35-27	27.5	2.0	28.0	16.2	0.0	0.0	44.3	47.1	44.2	38.6	0.8	4	6.1	6.0	6.8
98-4-5	32.5	1.5	25.2	19.4	0.0	0.0	44.6	46.9	44.6	43.8	0.8	2	6.7	0.6	0.3
Shepody	20	0.8	13.8	26.7	2.8	1.2	44.5	46.8	40.5	67.6	1.5	3	3.0	1.6	2.7
98-66-1	35	4.0	28.1	10.0	0.0	0.0	38.1	43.2	38.1	25.8	1.1	7	9.1	2.2	1.5
98-3-11	27.5	2.5	23.5	12.3	0.0	0.0	35.9	38.8	35.9	35.4	0.4	8	5.5	0.4	0.8
98-35-23	30	2.0	23.3	9.7	0.0	0.0	33.1	38.4	33.0	29.1	3.4	10	7.1	2.3	1.4
98-96-15	27.5	3.6	27.4	5.8	0.0	0.0	33.2	37.6	33.2	18.7	0.9	9	6.8	4.3	2.7
98-96-63	32.5	3.6	25.6	7.2	0.0	0.0	32.8	37.0	32.8	20.1	0.6	11	7.2	4.5	2.3
98-35-2	32.5	3.4	21.7	4.1	0.0	0.0	25.8	29.6	25.8	16.3	0.4	12	6.7	3.5	5.1
LSD P=0.05		1.5	ns	9.2	0.6	0.6	12.1	ns	11.8	14.4	ns		2.1	1.8	1.8

Table 39 continued

Line or cultivar	Bruise shatter	Quality						Scab level	% hollow 1st ten	% brown centr 1st ten	% intern defect 1st ten	% hollow 2nd ten	% brown centre 2nd ten	% intern defect 2nd ten
		Spec. grav.	% dry m'ter	* Fry col.	Fry col - USDA eq.	Fries – dark ends	Unc'ked Flesh colour							
98-120-19	0.5	1.072	18.5	2	00	30.0	white	0.0	0	0	0	0	0	0
98-66-7	0.3	1.076	19.3	1.667	00	6.7	white	0.0	0	0	0	0	0	0
RB	1.0	1.076	19.3	2	00	0.0	white	0.2	0	0	0	0	0	0
98-35-27	3.0	1.071	18.2	2.611	0	0.0	white	0.0	0	0	0	0	0	0
98-4-5	0.0	1.069	17.8	1	000	0.0	white	1.0	0	0	0	0	0	0
Shepody	0.3	1.074	18.9	2.333	00	26.7	white	1.3	0	10	10	0	0	0
98-66-1	0.7	1.081	20.4	2.333	00	0.0	white	0.2	0	0	0	0	0	0
98-3-11	0.3	1.073	18.7	1	0	0.0	white	0.0	0	0	0	0	0	0
98-35-23	0.0	1.074	18.9	2	00	0.0	white	0.0	0	0	0	0	0	0
98-96-15	0.7	1.071	18.3	2	00	0.0	white	0.2	0	0	0	0	0	0
98-96-63	1.3	1.078	19.7	1.333	000	0.0	white	0.2	0	0	0	0	0	0
98-35-2	1.7	1.076	19.4	1.333	000	6.7	white	0.0	0	0	0	0	0	0
LSD P=0.05	1.3	0.006	1.2	0.693	na	12.3	na	0.5	ns	5	5	ns	ns	ns

NOTES: Planted: 19 November 2002, harvested 12 May 2003. Quality keys as previously described.

Table 40. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Forthside in 2002-03.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)										Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield				
98-4-5	32.5	3.6	24.7	42.9	1.2	0.4	69.2	78.4	67.6	64.2	5.7	1	10.1	0.9	0.2
Shepody	20	1.3	15.5	46.4	3.8	1.7	67.4	75.8	61.8	77.0	7.2	2	4.5	3.9	1.0
98-96-15	27.5	1.6	21.8	43.7	0.3	0.0	65.7	72.2	65.4	66.9	5.0	4	7.2	5.8	1.3
98-3-11	27.5	1.8	25.3	38.3	2.2	0.0	65.7	70.0	63.5	61.6	2.5	3	7.1	3.5	0.9
RB	32.5	1.8	27.2	33.2	0.0	0.0	60.4	69.1	60.4	54.5	6.9	5	8.6	5.3	3.0
98-96-72	22.5	1.6	21.7	32.9	0.0	0.0	54.6	65.1	54.6	60.1	8.9	11	8.2	4.9	1.9
98-66-7	30	2.8	20.7	29.3	0.6	0.0	50.6	63.0	50.0	59.0	9.5	13	8.2	4.0	0.3
98-120-19	25	0.8	16.2	39.4	2.4	0.8	58.9	62.6	55.7	72.4	2.9	6	5.5	4.6	2.1
98-35-27	27.5	1.9	25.0	29.3	1.7	0.0	56.0	61.5	54.3	55.4	3.6	9	7.7	2.5	2.8
98-35-2	32.5	2.0	31.3	24.9	0.9	0.0	57.1	60.7	56.1	45.1	1.7	7	8.8	5.5	4.1
98-35-18	32.5	1.1	20.5	35.3	0.8	0.0	56.6	60.1	55.8	63.8	2.4	8	7.3	3.3	1.3
98-96-63	32.5	1.5	27.5	27.5	0.0	0.0	55.0	58.5	55.0	50.0	2.0	10	7.9	6.2	3.2
98-35-23	30	1.8	22.7	28.5	0.6	0.4	52.1	58.2	51.2	56.3	4.3	12	7.7	1.8	0.5
98-66-1	35	4.9	37.4	11.3	0.0	0.0	48.7	54.7	48.7	23.2	1.1	14	12.1	5.9	0.6
LSD P=0.05		0.9	4.6	6.1	ns	0.6	5.2	5.1	4.7	8.6	2.5		1.7	1.4	1.0

Table 40 continued

Line or cultivar	Bruise shatter	Quality						Days to maturity	Scab level	% hollow 1st ten	% brown centr 1st ten	% intern defect 1st ten	% hollow 2nd ten	% brown centre 2nd ten	% intern defect 2nd ten
		Spec. grav.	% dry m'ter	* Fry col.	Fry col -USDA eq.	Fries – dark ends	Unc'ked flesh colour								
98-4-5	0.0	1.067	17.3	2	00	0.0	white	141.3	1.3	0	0	0	0	0	0
Shepody	0.0	1.086	21.4	2.333	00	26.7	white	140.0	2.3	17	7	23	3	0	3
98-96-15	0.0	1.084	20.7	2.333	00	0.0	off white	144.3	0.0	0	0	0	0	0	0
98-3-11	0.0	1.082	20.5	2.667	0	20.0	white	140.0	0.0	3	0	3	0	0	0
RB	0.0	1.084	20.9	2	00	6.7	white	144.3	1.0	0	3	3	3	0	3
98-96-72	0.3	1.087	21.6	1.333	000	6.7	white	150.0	0.5	0	0	0	0	0	0
98-66-7	0.0	1.093	22.5	1	000	6.7	white	140.0	1.0	0	0	0	0	0	0
98-120-19	0.0	1.087	21.6	3	0	33.3	off white	144.3	0.0	0	0	0	0	0	0
98-35-27	0.3	1.086	21.4	2	00	0.0	white	154.0	0.0	0	0	0	0	0	0
98-35-2	0.0	1.082	20.5	2	00	13.3	white	140.0	0.0	0	0	0	0	0	0
98-35-18	0.0	1.078	19.8	1.333	000	0.0	white	140.0	2.2	0	0	0	0	0	0
98-96-63	0.0	1.085	21.2	2	00	6.7	white	140.0	0.2	0	0	0	0	0	0
98-35-23	0.0	1.081	20.4	1.667	00	0.0	off white	143.7	1.2	0	0	0	0	0	0
98-66-1	0.0	1.096	23.4	2	00	13.3	white	140.7	1.7	0	0	0	0	0	0
LSD P=0.05	ns	0.009	1.9	0.654	na	ns	na	2.3	0.8	ns	ns	8	ns	ns	ns

NOTES: Planted 5 November 2002, harvested 3 April 2003.
Quality keys as previously described.
The lines 98-35-2, 98-3-11, 98-35-27, 98-96-72 & 98-96-63 were selected as being worthy of further development.

Table 41. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Myalla in 2002-03.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)										Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield				
98-4-5	32.5	2.3	26.4	41.8	1.6	0.5	70.4	75.8	68.2	62.4	3.1	1	9.6	0.5	0.1
98-120-19	25	1.4	25.1	41.6	1.9	0.9	69.5	72.6	66.7	64.0	1.8	2	6.4	1.5	1.4
98-35-27	27.5	3.8	36.3	23.1	0.2	0.0	59.5	64.1	59.3	39.4	0.8	4	8.9	1.8	2.6
98-96-72	22.5	1.6	26.2	34.1	0.0	0.0	60.1	63.3	60.3	55.9	1.6	3	6.0	0.2	1.1
RB	32.5	2.2	31.4	25.5	0.0	0.0	56.9	62.8	56.9	44.9	3.7	6	8.7	1.3	1.9
Shepody	20	1.4	16.5	36.2	2.2	1.5	56.4	61.6	52.7	70.6	3.7	7	4.4	2.4	1.3
98-35-23	30	1.4	27.1	30.1	0.0	0.0	57.2	60.1	57.2	52.2	1.5	5	7.0	1.1	0.3
98-96-63	32.5	3.9	34.0	19.3	0.2	0.0	53.5	58.3	53.3	36.4	0.9	8	8.9	4.1	0.9
98-96-15	27.5	3.8	36.4	16.7	0.2	0.0	53.3	57.5	53.1	31.8	0.5	9	8.9	2.1	1.0
98-3-11	27.5	3.4	32.5	19.7	0.3	0.0	52.4	57.5	52.2	37.9	1.6	10	8.0	0.8	0.3
98-66-7	30	3.2	33.1	17.7	0.0	0.0	50.9	56.1	50.9	34.6	2.0	12	9.3	0.7	0.4
98-35-18	32.5	1.6	23.4	26.9	0.9	0.0	51.2	55.8	50.3	54.2	3.1	11	7.3	2.3	1.6
98-35-2	32.5	4.5	39.2	10.6	0.0	0.3	50.1	55.0	49.8	21.2	0.4	13	10.5	2.5	3.0
98-66-1	35	4.4	33.2	11.7	0.0	0.0	44.9	53.1	44.9	25.8	3.8	14	10.8	3.3	0.7
LSD P=0.05		1.0	6.5	7.2	1.2	ns	8.2	7.9	8.3	10.8	2.0		1.3	1.4	1.2

Table 41 continued

Line or cultivar	Bruise shatter	Quality						Days to maturity	Scab level	% hollow 1st ten	% brown centr 1st ten	% intern defect 1st ten	% hollow 2nd ten	% brown centre 2nd ten	% intern defect 2nd ten
		Spec. grav.	% dry m'ter	* Fry col.	Fry col -USDA eq.	Fries – dark ends	Unc'ked flesh colour								
98-4-5	0.0	1.068	17.6	2	00	0.0	white	148.8	3.0	0	0	0	0	0	0
98-120-19	0.8	1.079	19.9	2.5	0	0.0	white	154.0	0.9	0	0	0	0	0	0
98-35-27	1.3	1.083	20.6	2.5	0	0.0	white	152.5	2.3	3	0	3	0	0	0
98-96-72	0.4	1.095	22.8	2	00	0.0	off white	149.8	1.6	0	0	0	0	0	0
RB	0.5	1.084	20.8	2	00	20.0	white	147.0	2.3	5	38	43	5	25	30
Shepody	0.3	1.080	20.2	2.75	0	15.0	white	144.0	3.3	8	5	13	3	0	3
98-35-23	0.0	1.088	21.7	1.75	00	0.0	off white	151.0	1.5	0	0	0	0	0	0
98-96-63	0.0	1.085	21.1	1.25	000	0.0	white	147.0	1.9	0	0	0	0	0	0
98-96-15	0.0	1.081	20.4	3	0	0.0	off white	149.5	2.3	0	3	3	0	0	0
98-3-11	0.0	1.075	19.0	2.5	0	10.0	white	144.0	2.0	0	0	0	0	0	0
98-66-7	0.0	1.087	21.5	2	00	0.0	white	150.0	2.0	0	0	0	0	0	0
98-35-18	0.8	1.081	20.4	1.75	00	5.0	white	147.8	2.8	0	0	0	0	0	0
98-35-2	0.3	1.084	20.8	1	000	0.0	white	144.0	1.6	0	3	3	0	0	0
98-66-1	0.0	1.083	20.7	2.5	0	5.0	white	144.8	2.5	0	0	0	0	0	0
LSD P=0.05	0.6	0.005	1.0	0.666	na	ns	na	1.7	0.8	ns	10	11	ns	5	6

NOTES: Planted 15 November 2002, harvested 9 April 2003.
Quality keys as previously described.
The lines 98-35-2 and 98-35-27 were selected as being worthy of further development.

Table 42. In-row spacing, tuber yield and quality data of lines and cultivars evaluated in the Stage 3 trial at Woodside in 2002-03.

Line or cultivar	In-row spac. cm	Tuber yield (t/ha)										Rank by fry gr'de	Tuber no. per plant	Bruise rating stem end	Br'se rating rose end
		Chats 0-80 g	Small 80-250 g	Medium 250-650 g	Large 650-850 g	O'size > 850 g	Fry grade >80 g	Total yield	80-650 g grade	% by fry grade wt > 250 g	Waste yield				
98-4-5	32.5	5.8	36.1	32.6	1.7	0.0	70.4	77.6	68.7	48.7	1.4	2	12.7	0.6	0.0
Shepody	20	1.7	28.0	38.9	4.9	0.6	72.4	77.2	66.9	61.0	3.1	1	5.3	1.6	0.9
98-120-19	25	2.4	34.6	33.9	1.1	0.0	69.6	73.8	68.5	50.3	1.8	3	8.2	3.2	1.7
98-35-27	27.5	5.5	48.9	13.4	0.0	0.0	62.4	68.5	62.4	21.6	0.7	5	11.3	1.8	1.6
98-35-2	32.5	5.5	43.1	19.2	0.0	0.0	62.3	68.5	62.3	30.5	0.7	6	12.6	3.4	1.6
98-35-18	32.5	4.3	43.1	19.9	0.0	0.0	63.0	68.0	63.0	29.6	0.7	4	11.9	2.3	1.6
98-3-11	27.5	3.3	37.5	24.4	0.0	0.0	61.9	65.8	61.9	39.3	0.5	7	9.1	2.0	0.2
RB	32.5	3.7	41.5	19.5	0.0	0.0	61.0	65.8	61.0	32.0	1.1	8	11.0	4.0	1.9
98-66-7	30	6.2	33.1	23.8	0.0	0.0	56.9	64.7	56.9	41.3	1.7	10	11.3	3.3	0.3
98-35-23	30	3.1	38.9	21.4	0.0	0.0	60.3	64.2	60.3	35.1	0.8	9	9.8	2.8	0.8
98-96-15	27.5	6.6	45.4	9.6	0.0	0.0	55.1	62.3	55.1	17.3	0.6	12	11.6	3.4	1.0
98-96-72	22.5	3.4	39.3	17.0	0.0	0.0	56.3	60.8	56.3	30.0	1.0	11	7.7	3.2	2.2
98-66-1	35	6.7	37.7	10.5	0.0	0.3	48.5	56.0	48.2	21.9	0.8	13	12.6	3.4	0.4
98-96-63	32.5	7.7	39.5	7.6	0.2	0.0	47.3	55.6	47.1	16.4	0.6	14	12.6	5.2	1.2
LSD P=0.05		1.6	6.4	8.4	1.8	0.3	9.6	9.7	9.2	10.0	1.2		1.5	1.2	0.9

Table 42 continued

Line or cultivar	Bruise shatter	Quality						Days to maturity	Scab level	% hollow 1st ten	% brown centre 1st ten	% internal defect 1st ten	% hollow 2nd ten	% brown centre 2nd ten	% internal defect 2nd ten
		Spec. grav.	% dry m'ter	* Fry col.	Fry col -USDA eq.	Fries – dark ends	Unc'ked flesh colour								
98-4-5	0.0	1.066	17.2	1	000	0.0	white	148.0	1.9	0	0	0	0	0	0
Shepody	0.3	1.078	19.6	1.75	00	30.0	white	148.0	2.1	0	0	0	0	0	0
98-120-19	0.3	1.083	20.5	1.75	00	5.0	white	161.0	0.4	0	0	0	0	0	0
98-35-27	0.3	1.083	20.7	2	00	0.0	white	157.0	0.5	0	0	0	0	0	0
98-35-2	0.0	1.080	20.1	1.5	00	10.0	white	143.5	0.4	0	5	5	0	3	3
98-35-18	0.0	1.082	20.4	1.5	00	5.0	white	145.5	1.1	0	0	0	0	0	0
98-3-11	0.0	1.076	19.2	1.5	00	5.0	white	142.0	0.1	0	0	0	0	0	0
RB	0.0	1.082	20.5	2	00	30.0	white	154.0	0.4	0	3	3	0	0	0
98-66-7	0.3	1.087	21.5	1.25	000	0.0	white	156.3	0.5	0	0	0	0	0	0
98-35-23	0.0	1.084	20.9	1.25	000	0.0	off white	159.0	1.5	0	0	0	0	0	0
98-96-15	0.0	1.080	20.1	2	00	0.0	off white	156.8	0.4	0	0	0	0	0	0
98-96-72	0.5	1.092	22.2	2	00	5.0	white	158.3	0.3	0	0	0	0	0	0
98-66-1	0.0	1.087	21.4	1.75	00	10.0	white	154.0	1.1	0	0	0	0	0	0
98-96-63	0.0	1.085	21.0	1.5	00	5.0	white	146.5	0.0	0	0	0	0	0	0
LSD P=0.05	ns	0.008	1.6	0.629	na	16.6	na	3.4	0.7	ns	ns	ns	ns	ns	ns

NOTES: Planted 23 October 2002, harvested 27 March 2003.
Soil type: duplex sand.
Quality keys as previously described.
The lines 98-35-2, 98-3-11, 98-35-27, 98-96-72, 98-66-7 and 98-4-5 were selected as being worthy of further development.

Conclusions

The comparative evaluation of new potato genotypes reported here has formed a major part of the ongoing development of Tasmanian potato industry and, beyond that, a contribution to the National Potato Introduction and Evaluation Scheme. The latter, together with Australian potato breeding, has formed a significant part of Horticulture Australia Limited's research and development portfolio for the potato industry. The Tasmanian industry has benefited from the introduction and testing of genotypes such as Nooksack and Ranger Russet by the program. In more recent seasons, the breeding program's increased focus on processing potato genotypes has led to a greater proportion of Australian-bred material flowing through to commercial development. The time-lines associated with the latter, however, dictate that these genotypes have yet to enter commercial use.

The performance of genotypes at locations in North-western Tasmania and at Cressy in northern Tasmania has reflected the acknowledged differences in these potato production environments. The best performing genotypes in the former location have rarely been those performing best in the latter. Alternately, there has been consistency in those best performing genotypes across locations in North-western Tasmania.

Recommendations

At the time of writing this report, implementation of the review of the Australian potato breeding program and the National Potato Introduction and Evaluation Scheme is progressing. Changes to the breeding program itself are likely to improve the focus on the pursuit of improvement in particular (and fewer) desirable genotypic traits. The data presented in this report indicates the breadth of selection parameters, which have previously been employed and the improved focus referred to above is recommended.

In the Tasmanian context, it is likely that, given the consistency of previous results across locations in North-western Tasmania, that fewer trials in the region, but with these trials having more precision, will improve cost-effectiveness. This is also recommended.