Review of Program 5: Education & Technology Adoption

4th February 2003

Program 5 Manager: Clare Johnson

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Review of Program 5:
Education and Technology Adoption

4 February 2003
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VAWCRC

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Executive Summary

Achievements supporting the range of research and technology transfer interests of Value Added Wheat CRC were reported.

Postgraduate students; researcher workshops
Clare Johnson, VAWCRC

Charles Sturt University has agreed to run the Cereal Science Certificate course. The course requires 2 more subjects to be a stand-alone Graduate Certificate, and the plan is to integrate Wheat CRC noodle etc. outcomes and possibly to create a complementary RACI-CCD methods course in TAFE.

Two students on summer scholarships offered by VAWCRC and Arnotts are working on Arnotts’ project to improve the quality of Salada biscuits made from blends of hard and soft flours. The other two summer students are working on monoclonal antibodies against starch granule peptides identified in project 1.1.2. and helping Dr Matt Hayden integrate recently published markers into a sequence-tagged microsatellite map of Australian wheat. The supervisors have expressed their appreciation of the assistance VAWCRC provides via this scheme. Many of the applicants showed potential for higher degree study at a later stage.

Three new PhD students have been appointed, and a further two are undergoing selection, bringing the total to fifteen students. Students are submitting regular quarterly reports and have made excellent use of their $1,500 training grants to improve their technical skills in the most relevant areas. In addition, two research staff have been sponsored on microarray analysis BioIT courses.

VAWCRC sponsored workshops at industry conferences this year include:
- Microarrays and Proteomics for Gene Discovery (30 attendees)
- Diversity Array Technology (19 attendees)
- Bioinformatics (17 attendees)
- 3 day Masterclass: Population Breeding Methodology and Plant Improvement (54 attendees)
- 3-D Structural Considerations in Design for Mutagenesis (21 attendees)
- Prebiotic Carbohydrates & Gut Health short course, coordinated by Curtin University staff (4 deliveries, approx. 60 attendees).

Manuals have been / are being compiled, for use by research staff and students. A technology transfer workshop with the Diagnostics CRC has resulted in collaboration.

Student training: BioIT programming course
Yunxian Mak, APAF

Yunxian, a postgraduate student of VAWCRC, will save 2 full months per year, i.e. 50% of the time otherwise required for database searching to analyse her proteomic results, as a result of attending a BioIT programming course offered by BioLateral Pty Ltd. The course has enabled her to write short Python programs to automate repetitive data entry for proteomic database searching, and to filter the output. Other staff at APAF have naturally been very interested in using or adapting Yunxian’s Python programs, and she envisages a collaborative paper will be written on this.
Researcher training: Microarray, Protein Structure and programming BioIT courses
Mui-Keng Tan, EMAI

Mui-Keng applied successfully for a $3,875 High Growth Bio-Business Program Grant by the NSW Department of State and Regional Development, with the assistance of the Program Manager. The grant provided a 50% subsidy of the cost of her training in BioIT at BioLateral Pty Ltd courses.

She attended courses in:
1. Protein Modelling
2. Microarray / Image Analysis
3. Bioprogramming

These courses will enable Dr Tan to derive more information from the data she generates, and to generate time savings as illustrated by Yunxian Mak (above).

For growers: FertiPlan® crop nutrition software
Tom Yeatman, PIRSA Rural Solutions

Our grower initiatives include the release next month of FertiPlan®, in which VAWCRC’s sponsorship enabled development of PIRSA Rural Solutions data into predictive crop nutrition software applicable to South East Australia. The software is based on extensive research undertaken by J.N. Ladd and others at the CSIRO Division of Soils, Glen Osmond, S.A. with significant input from R.A. Payne, now of the South Australian Department of Water, Land and Biodiversity Conservation. FertiPlan® helps to calculate the nutrient requirement (N, P, Zn, Cu, Mn) for each individual crop and paddock to achieve target yield and protein, based on paddock history. It also calculates least-cost fertiliser rates, and can be configured to meet the farmers’ needs. They can also model the dollar margin vs percent grain protein to target the highest return.

Building post-farm gate capacity, and TOPACTIVE module development
Dave Lewis, PIRSA Rural Solutions

Durum segregations are in place on the Eyre Peninsula. This enables farmers to obtain competitive payments without a freight penalty, though drought has affected production this year.

Working with farm business groups over the last 18 months, Dave has demonstrated that vertical integration of farm business into supply chain processing can be achieved. There has been interest from potential markets for the products, including frozen dough, premixes, frozen parbake and Asian noodles.

Dave is also developing an integrated series of 6 TOPACTIVE modules - resource packages for use by trainers when delivering workshops. The first two modules planned explore opportunities in building value chain businesses. The other 4 modules will focus on targeted crop management: pre-season planning, nutrition management to meet quality specifications, harvesting and storage, marketing: quality wheat for speciality end uses. The modules will target SA conditions in the first instance, but with the facility to substitute appropriate AgNotes in other regions.

There is also to be capacity development using FertiPlan® to target premium grade wheat at specific protein contents for speciality food products.

Strategic Value Chain Marketing for Wheat Producers: CD and short courses
Geoff Watson, University of Sydney, Orange

Australian wheat producers are confronting major shifts in their marketing environment, requiring greater chain and consumer awareness, more downstream linkages, and increased
accountability in their production and marketing activities. Our response was to develop an introductory value chain marketing course that covers the scope of 3 marketing pathways in the value chain: the commodity, contract, and branded product arenas. The course will enable participants to evaluate their current approach, and to become more market focused within these 3 arenas. Follow-up via action learning will be encouraged.

The Value Chain Marketing course materials have been reviewed, and a CD for distance educational delivery will be completed in June. We are also adapting the materials for TOPACTIVE delivery, and will provide training for workshop leaders.

Growers in WA and NSW; and Stalk to Store
Clare Johnson, VAWCRC

Our "Quality Wheat – Meeting Market Requirements" courses farmers and grain handlers in WA describe wheat quality in terms of suitability for a particular end use. Ben Curtis and Steve Penny demonstrate the key grain specifications for end-products including yellow alkaline, white salted, instant and long life noodles, flat, steamed and pan broads and pasta. They then describe agronomic strategies to achieve the targeted market quality profitably. This course has been running since 1998, and Geoff Watson’s material will mesh well with it.

In NSW, Jan Edwards and Shauna Dewhurst maintain regular liaison with district agronomists in the Northorn Focus project and have a role in Cropcheck data entry. This provides insight into management practices in the central and northern districts, and into key steps in dryland Prime Hard wheat production.

Shauna and Jan were unable to attend this review, as it coincided with a 3-day value chain study tour they were running for 15 extension agronomists from central and north-west NSW. Arnott’s and Goodman Fielder were among the plants visited to promote understanding of end-user quality requirements.

In September 2001, Clare Johnson was invited by Kondinin Group to source up-to-date information and contacts for revision of their book, “Stalk to Store”. This enabled inclusion of information on Wheat CRC outcomes such as the WheatRite rain damage test, our recommendation on optimal aeration temperature (< 23°C, and preferably closer to 15°C), and current information on QA on-farm. Clare also had external research outcomes included, such as heat disinfection and early (wetter) harvesting for improved yield, but ensured that these were cross-referenced to Wheat CRC results, to present a rounded picture. Our CD, Managing On-farm Grain Storage, is marketed as a package with the revised book, which was launched in October 2002 (630 copies sold to date).

Technology Transfer: baking process control, wheat varietal information etc.
Hayfa Salman, VAWCRC

Hayfa reported on her range of achievements in technology transfer of Wheat CRC research outcomes. She has produced a set of manuals for implementation of output from the Wheat CRC’s oven process control project. The set includes an overview for bakery staff, a training manual for production and operation staff, an installation and maintenance guide, and a workbook for installation and commissioning.

She also produced a list of QWCRC outcomes suitable for inclusion in training packages, which was vetted by the IP sub-committee on the afternoon of the review. We aim to include this updated industry best practice in the Cereal Chemistry course to be offered through Charles Sturt University.

Hayfa has adapted the data on Australian wheat varieties and grain quality genes, compiled by Colin Wrigley, and including recent updates, into web-CD format. The CD should be complete in April. Future plans include assistance with a workshop on assuring microbiological safety and stability of refrigerated noodles, and comprehensive follow-up to revise the Cereal Chemistry course.
Postgraduate students
and workshops for researchers

Clare Johnson
VAWCRC
Review of Program 5:

Education
& Technology Adoption

Program Manager:
Clare Johnson

4 February, 2003

Projects

5.1.1: Summer students

Arnett's Product Research

1. Strategic blending of flours: Conola Chow
   Supervisor: Andrew Rees and Beverley O'Neil, Arnett, Huntingwood

2. Interactions between flour blends from hard and soft wheats: Deirdre Hunter
   Supervisor: Geoffrey Cram, SARDI Flour Quality Research Laboratory

Molecular Technologies

3. NABS against LMM peptides from starchy endosperms: Peter Schofield
   Supervisor: Thomas Gensch, Beng-Jie Yao, CSIRO

4. Sequence-tagged microsatellite map of Australian wheats: Denny Topic
   Supervisor: Matt Hayden, USyd Plant Breeding Institute, Gobbi

Applicant field had good potential for higher degrees at a later stage.

5.1.1: Undergraduate scholarship

2003-2005

- $6,590 per year for 1 year
- Awarded to Angela Darrett, Penrith High School
- UAI 99%
- HSC Maths, Chemistry, Agriculture, IT and Advanced English
- Enrolled in BSc Agr
- Interest in sustainable agriculture and better crops
5.1.1: Postgraduate students

COMPLETING
- Andrew Vennell
  - Wheat quality and yield
  - Wheat maggot
- Marcus Newbery
  - Yeast dough rheology
- Patricia Cheng
  - Skim milk polymer structure in products
- Lella Decq
  - Polymeric caps and shape
  - plastics in processing
- Mohamed Hassani
  - Wheat storage protein genes

2002 START
- Arakus Fernandez
  - Wheat varieties
- Derek Hatzis
  - Phenolics
- Karen Ryan
  - Wheat amylopectin
- Yusuf Murtin
  - Wheat gluten
- Michelle Powell
  - Cultivation of polymeric proteins
  - for extrudable products

2003 START
- Annmarie Ritter
  - Develop wheat
  - quality for local plant
- Mary Fang
  - Analysis of starch
  - and amylopectin
- Brent Tsortos
  - Develop new
  - extrudate
- (TBA)
  - Targeted proteasome
  - technology
- (Ming-Jie Wu, TBC)
  - Starch/sugar

Student progress vs timeline expected by VAWCRC:

<table>
<thead>
<tr>
<th>Year</th>
<th>Literature review and significant progress in written up</th>
<th>Target:</th>
<th>Achieved:</th>
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<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>month 18</td>
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<table>
<thead>
<tr>
<th>Year</th>
<th>Achieved:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

5.1.1: PhD student training

- Targeted technical training
- Quarterly reporting: budgeting, project management
- Communications and IP
- Industry co-supervision
e.g. Di Walsh's contribution
5.1.1: $1,500.p.a. student allowance for targeted technical training

Analysis: Frederick:
- Protein 2D gel workshop, UNSW Bioanalytical Mass Spec. Facility, Sept.
- VAWCRC 3-D structural design workshop, Oct.

Michelle Powell:
- Protein 2D gel workshop, UNSW Bioanalytical Mass Spec. Facility, Sept.
- VAWCRC 3-D structural design workshop, Oct.

Karen Ryan:
- Biotechnology workshop at Plant Breeding Conference, Sept.
- VAWCRC 3-D structural design workshop, Oct.
- Workshop on Spatial Statistics for Environmental Sciences, Dec.

Yunxiai Ma:
- ComBio Sydney, Sept., which featured Proteomics sessions.
- Biostatistical Brief Programming course, Dec.
- VAWCRC 3-D structural design workshop, Oct.

Cindy Seth:
- AAACC Down under conference, July
- PSI Student Seminar, Nov.

5.1.2: Conference Workshops - maximise accessibility

- VAWCRC sponsored workshops at the Plant Breeding Conference in Perth in September:
  - Microarray and Proteomics for Gene Discovery (30 attendees)
  - Diversity Array Technology (19 attendees)
  - Bioinformatics (17 attendees)
  - 3 day Masterclass "Population Breeding Methodology and Plant Improvement" (56 attendees)

- Manuals being compiled, with report on Bioinformatics 2002 Conference, for use by research staff and students

- Will run similar diagnostics workshops at Cereal Chemistry Conference, Adelaide, Sept 7-10 2003

5.1.1: Workshop, "3-D Structural Considerations in Design for Mutagenesis"

- Protein structures
- Protein viewers and analysis tools
- In-silico site-directed mutagenesis
- Homology modeling and threading

- Presented by Dr Warren Klasen of the Garvan Institute for Cancer Research
- Run as satellite to ComBio conference in Sydney, Oct. 2002
- Attracted interest from Australia's general research community.

The 21 participants included:
- 4 VAWCRC students
- 4 external students (univ. Newcastle and U wollongong)
- 8 say VAWCRC students
- 1 external student (Baker Institute for Heart Research, CSIROLivessci
ing Ind., U. Melbourne, CSIRO, CSIRO, Macquarie University, Macquarie Uni, U. Sydney, U. Newcastle
- Presenter and coordinator

- 60% cost recovered, 40% subsidised

5.1.1/5.1.2: Diagnostics Technology Transfer (VAWCRC report #7)

- Presentations on relevant diagnostic technologies by Diagnostics CRC Deputy CEO, Dr Phillip Morris, and Dr Mick Foley

- Strong interest in VAWCRC pursuing application of their affinity libraries.

- Team will visit Dr Foley's laboratory to:
  - Evaluate a 12+ element peptide phage display library
  - Evaluate passing techniques to detect peptides that will bind to starch granules from a selected hard and soft wheats, and other novel approaches
5.1.1: Curtin University workshops

- Prebiotic Carbohydrates and Gut Health
  Presented in:
  - Perth
  - Rotherglen, in a private session to Goodman Fisher
  - Christchurch, at Cereal Chemistry conference Sept. 2002
  - Weeja
    - The final delivery included Dr John Moors (CIF/CS), "Using Dietary Glucose Equivalents and Wheat Bran equivalents of Food Bulk"

- Plan:
  Texture Analysis workshop

5.1.2: Cereal Science Distance Course

<table>
<thead>
<tr>
<th>Lessons</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>Cereals of the World</td>
</tr>
<tr>
<td>5-7</td>
<td>Starches</td>
</tr>
<tr>
<td>8-9</td>
<td>Proteins</td>
</tr>
<tr>
<td>10-11</td>
<td>Minor Constituents</td>
</tr>
<tr>
<td>12</td>
<td>Harvest and Storage</td>
</tr>
<tr>
<td>13-20</td>
<td>Decortication, Dry Milling, Wet Milling, Feeding</td>
</tr>
<tr>
<td>22</td>
<td>Microflavonoids</td>
</tr>
<tr>
<td>23-32</td>
<td>Products and Processes</td>
</tr>
</tbody>
</table>

- Min-Lab 1: Gluten Washing
- Min-Lab 2: Dry Milling of Wheat
- Min-Lab 3: Reconstituting Barley
- Min-Lab 4: Learning Agents

- Charles Sturt University to run at Associate Certificate level
- Will be stand-alone Graduate Certificate with 2 more subjects
- Integrate Wheat CRC noodle etc. outcomes
- Potential complementary RACE:CCD methods course in TAFE

5.1.1: BioIT courses for research staff

- MaKerx Test
  - Microarray Introduction
  - Microarray Analysis
  - Protein Structure BioIT
  - BioIT Programming
  - Awarded a NSW Dept of State & Regional Development $3,076 High Growth Bio-Business Program Grant

- Ming-Jie Wu
  - Microarray Introduction
  - Microarray Analysis

- Yunhao Wu
  - BioIT Programming
Student training:
BioIT programming course

Yunxian Mak
APAF
Bioinformatics Programming Course
(BioLateral Pty Ltd)

Course Contents:
- Python language
- UNIX basics
- Practical bioinformatics applications
- Wrapping bioinformatics applications
- HTML
- Wrapping remote Web services
- CGI – Common Gateway Interface
- Web resources

The Problem:

Proteomic data entry for database searching using web browser involves a lot of manual intervention and time wastage.

I routinely search the ExPASy database for peptides matching my proteomic mass spectrometry peaks.
Bioinformatics Programming Course

Python Language Includes:

- Python as a calculator
- Methods
- Condition
- Lists
- Looping
- Dictionaries
- Name spaces
- Input
- Errors and exceptions
- Scripts and modules
- Parsing
- Output
- Classes

The course enabled me to write a Python script:

- Automates repetitive data entry for analysis of proteomic output
- Significant time savings

Last year:
- 2 months to run 2-D gels
- 2 months to use mass spectrometer to analyse the proteins
- 4 months searching on Internet to identify the proteins

Current estimate, using Python script:
- A 50% reduction in searching time

My 2nd Python script filters the results, saving more time:

Peptide mass fingerprinting

<table>
<thead>
<tr>
<th>Peptide mass</th>
<th>Fingerprint</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234</td>
<td>5678</td>
<td>Protein A</td>
</tr>
<tr>
<td>9012</td>
<td>3456</td>
<td>Protein B</td>
</tr>
<tr>
<td>7890</td>
<td>2345</td>
<td>Protein C</td>
</tr>
<tr>
<td>1122</td>
<td>3344</td>
<td>Protein D</td>
</tr>
</tbody>
</table>
My Python codes are useful to other staff

- Other APAF staff also frequently use the ExPASy web site for protein peptide searching
- Very interested to use my programs to run their research data, with any necessary customisation
- A collaborative paper is to be written about these works

Detail on Python language from Bioinformatics Programming Course

Python as a Calculator:

```python
>>> is python's primary prompt
>>> (30 - 5 * 6) / 4  -> 5
```

Condition:

```python
if statements and else clause
```

Lists:

```python
>>> orgs = ['Wheat', 'Rice', 'Maize']
```

Looping:

```python
for loop or while loop statements
```

Dictionaries:

```python
>>> sp = {'RAT': 'Rattus norvegicus',
        'HUMAN': 'Homo sapiens'}
```

Name space:

```python
To assign local variables or global variables
```

Input:

```python
Input file with opening a file and read a file
```

Methods:

```python
File methods, string methods, list methods, dictionary methods etc.
```
Researcher training:
Microarray, Protein structure, and Programming
BioIT courses

Mui-Keng Tan
EMAI
In the post-genomic era, a molecular biologist needs to be proficient with current bioinformatics tools to make the most of his own data as well as the publicly available databases.

**Objectives**

- An ability to identify a bioinformatics problem and need in a dataset.
- A knowledge of the available tools that may exist already to solve the problem.
- Skills to get that technical tool to work with my data.
- An ability to build new tools or modify existing ones when the ones about are not up to scratch.
- Skills to deliver the data.
II. Microarray technology

A tool for large scale parallel analyses of gene sequence and gene expression

Current applications include:
- global analysis of transcription programmes in yeast, mammals, Arabidopsis, rice,
- classification and review of clinical tumours
- accelerated discovery of drug targets

Skills needed:

- Microarray laboratory skills
- Statistical experimental design, data analysis (objectives of the microarray course)
- Software
- Cell biology and other biological disciplines (biochemistry, physiology)
- Investigations are multi-disciplinary

Objectives of the microarray course:

- Experimental design
  - types of array (cDNA, oligonucleotides)
  - statistical and biological issues (robustness, levels of replication, direct or indirect reference in treatment comparisons)
- Biological and physical measurement issues (relationship between fluorescence intensity, hybridization intensity and cell processes; dye bias, sources of noise, choice of ESTs used as probes, choice of reference, false positives, false negatives)
Protein Structure Viewer: Deep View

- Free
- Easy to use
- Runs on most OSs
- Offers the most functionality

Monomer Modeling

- Model specific inhibitors
- Sequence alignment
- Alignment verification
- Automated model generation
- Provides a new tool to advance our understanding of enzyme reactions and the development of more effective inhibitors

Structure of wild radish ALS from homology modeling with yeast ALS

X-ray crystallography of yeast acetolactate synthase gene (ALS)
For Growers:
FertiPlan® crop nutrition software

Tom Yeatman
PIRSA Rural Solutions
FertiPlan

New software to remove the uncertainty from fertiliser application decisions
Post-farm gate capacity building: frozen dough initiative & TOPACTIVE training module development

Dave Lewis
PIRSA Rural Solutions
Building Capacity
Post Farm Gate

Dave Law
Kadina, South Australia

Post Farm Gate

- Project evolved from Wheat and Durum Projects
  - Durum project activities concluded
  - Wheat quality project evolved to include all wheat project activities required to achieve post farm gate opportunities
- Team
  - Tarx Yamun (Clem) and Simon Garle (Melton)
  - Other Field Crop projects provide support through Capacity Building/Farming system projects and Environmental Management system projects

Post Farm Gate

- Durum Project
  - No opportunity for Value Chain development in line with new project.
  - Objective to expand durum opportunity on Eyre Peninsula partially successful
    - Segregation in place
    - Durum payments to farmers competitive without height penalty
    - Adoption by farmers limited due impact of drought so production increases expected but not observed

Post Farm Gate

- Capacity Building
  - Working with groups of people - in this case farmers
  - Providing the opportunity to develop new skills, networks and resources.
  - Together identify and explore developing new opportunities.
**Post Farm Gate**

- Primary Aim: Unintended side vertical integration of farm business into supply chain including value-added processing, storage, and distribution.

**Value Adding Project: Outcomes**

- **Value Added**
  - Increased product value
  - Enhanced brand reputation

- **Process**
  - Raw materials to value-added products
  - Customers benefit from increased product value

**TO ENGAGE WITH:**

- Local farmers and processors
- Government agencies
- Private sector organizations

**Skilled Personnel**

- Monitoring
- Training
- Fieldwork
Project Profile - Post Farm Gate

- Future
  - Potential new groups on Yorks Products, Nuf Herd, and potential to service other established groups (eg. Luferring Premium Wheat Growers)
Strategic Marketing for Wheat Producers: a Value Chain Approach – CD and short courses

Geoff Watson
University of Sydney, Orange
Value Added Wheat CRC Project

Value Chain Marketing

Presentation by Geoff Watson and Tony McKenzie
Faculty of Rural Management
University of Sydney Orange
email: gwatson@orange.usyd.edu.au

The need for such a course and the approach we are taking to position it in the marketplace
- Australian wheat producers are confronting major shifts in their marketing environment
- In particular the wheat value chain is demanding that producers develop:
  - greater chain and consumer awareness,
  - more downstream linkages,
  - increased accountability in their production and marketing activities

Key areas I want to cover in this presentation
- the need for such a course and the approach we are taking to position it
- Key features and outcomes of the course
- Delivery options we are exploring
- Progress to date and the future

Our response is to develop a value chain marketing course for rural producers that has the following approach:
- It is introductory in level of detail yet comprehensive in covering the full scope of marketing pathways in the value chain
- It is educational in emphasis (it seeks to alter mindsets/perspectives) rather than focusing primarily on behavioural competencies
- It is, however, strongly change-oriented for participants in that it challenges comfort zones and works towards shifts in mindsets/purpose/information/relationships, and tools for getting organised.
How is the course to be positioned in the training marketplace?

- It is NOT attempting to be a skills building program for commodity marketing.
- Rather it seeks to provide a bird's-eye view of the value of upgrading commodity marketing skills or breaking out of commodity marketing into contract or into branded product marketing approaches.

Key features and outcomes

- "What will participants gain from this course?" They will be able to:
  - Identify the factors that can make marketing a 'weak link' in their farm business.
  - Describe how marketing adds value to their industry.
  - Use the language of value in discussing marketing activities.

What will participants gain from this course? cont.

- Evaluate how market focused they currently are and what it might take to shift.
- Evaluate their marketing comfort zone and design change strategies to become more market focused within:
  - The commodity arena
  - The contract arena
  - The branded product arena.
**Some Key Features of this Course**

This course is different because:
- it uses the concept of marketing *arenas*
- it focuses on the *person* (via comfort zones) as well as on marketing skills and tools
- it initially uses *case studies* to drive home the key issues
- it encourages participants to subsequently relate to the concepts and tools via *action learning* within their various marketplaces

**Some Delivery Options and Progress**

- The options are:
  - via 2 day workshops
  - via CD ROM through a provider
  - via online
  - via some combination of the above

- Progress to date is:
  - we have trialled the workshop format
  - the CD ROM is being developed right now
  - the online version may follow!
Activities for growers in WA, NSW and nationally

Clare Johnson
VAWCRC
5.1.4: Wheat quality courses, WA

Quality/Suitability for a particular end use

- Courses for farmers and grain handlers
- Market orientation and use requirements for:
  - Yellow/white endosperm
  - White salted noodles
  - Instant noodles
  - Flat breads
  - Steamed breads
  - Fan breads
  - Long life noodles
  - Pasta
- Key grain specifications/characteristics for these products
- Role of grain quality in milling efficiency for specific uses
- Strategy to achieve targeted markets profitably

5.1.2: Stalk to Store book / Manage On-farm Grain Storage CD package

- New edition:
  - Invited to source up-to-date information content
- Included Wheat CRC outcomes:
  - Wheat/Barley damage levels
  - Optimal aeration temperature (<2°C, preferably closer to 0°C)
  - QA on farm
- Ensured inclusion of external research outcomes:
  - Wheat disinfection
  - Early (winter) harvesting for improved yield
- Reviewed / cross-referenced, to present a rounded picture
- Case study:
  - Lee farm (Dandeniga) uses aeration cooling and Great Grain QA to provide contact selected SunPrime
- Sales: 850 (53,900) since Aug 2002

5.1.3: NSW agronomists

- Regular liaison with DARGRON in Northern Focus project
- Strong linkages with Northern Focus through role in Coochalea data entry:
  - Insights into management practices in central and northern districts and key crops in dryland wheat production, with emphasis on Prime Hard
- 3 day Value Chain Study Tour, 6 Feb 2003:
  - 15 extension agronomists from central and northwest NSW who are in daily contact with growers
  - Promote understanding of end-use quality requirements
- Shaun Coughlan resigns as T.O. on 13 Feb. 2003
  - Re-evaluating sub-project objectives
Technology Transfer:
baking process control,
wheat varietal information,
noodle HACCP etc.

Hayfa Salman
VAWCRC
Project 5.1.2: Initiatives for Uptake of VAWCRC Innovation

Hayfa Salman
Research Officer – Technology Transfer

Achievements

- Training manual for oven technology
- IP list of innovation for potential technology transfer
- Wheat varieties website

Oven Technology Transfer and Training

- Project 2.1.4
  - Workshops
    - Dough Processing
      - Bread Cooling
        - Dough Height
    - Manual
      - Dough Processing
        - Bread Cooling
        - Dough Height

Benefits include:
- Increased water uptake
- Increased yield
- Reduced yeast
Oven Training Manuals

- Liaison with Thomas Adamczak
- Produced master-document on the Dough Processing Optimiser
- Divided the document into:
  - Training manual for production and operation staff
  - Installation and maintenance guide.
  - Workbook for installation and commissioning

Potential Technology Transfer: IP List

- Existing TAFE training packages were purchased
- Quarterly reports of Quality Wheat CRC were compiled and studied
- A list was made for the IP committee to approve incorporation of results into TAFE courses
Wheat Varieties Website

- Learned FrontPage software
- Formatted data on each wheat variety from QWCRC Report #48 into webpages
- Created the web, to be saved to CD
- 80% complete, looking at April to finish

Future Plans

- Workshop for Microbiological Safety and Stability of Refrigerated Noodles
- Follow up development of training from items on the IP list; make a new list from Quality Wheat CRC Program 5 and VAWCRC projects