



SEASONAL LABOUR FOR HORTICULTURE AND VITICULTURE INDUSTRIES: USE OF REGIONAL SURVEYS AND FORECASTS IN ALLOCATION DECISIONS

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Abstract

Regional seasonal labour shortages have become a quite common occurrence in recent years, especially in the major Horticulture/ Viticulture regions. The reliance on workers from overseas sources under various visa & permit conditions also assumed greater significance over the past few years given the low unemployment levels. Regional seasonal labour needs and the potential seasonal labour supply had to be assessed during 2008 (and for seasons beyond) for the allocation of overseas workers including under the Recognised Seasonal Labour Employer (RSE) & its Transitional (TRSE) scheme based on forecast results incorporating the responses to the Regional Labour Surveys.

The survey was referred to as the "Survey of Seasonal Labour Employers – Demand & Supply". It was conducted by the local industry and/or the Labour Governance Groups with assistance from the Department of Labour in survey design and in the analysis of the responses. All the major regions with significant horticulture and viticulture activities such as Hawkes Bay (covering pipfruit, wine, kiwifruit & a number of vegetable crops), Bay of Plenty (kiwifruit), Marlborough (wine), Nelson (pipfruit) and Wairarapa (wine) carried out the surveys after the 2006/07 season. It was intended to cover both demand-side and supply-side labour market information.

Demand related information covered the number of full-time staff in relation to casual & seasonal workers, number of seasonal workers per supervisor, method of hiring seasonal workers (directly or through contractors), work profile (ie, hours worked per day, days worked per week etc) and wages (piece and hourly rates) as well as the number of casual & seasonal workers used by seasonal months and by crops. The supply-side information covered the source of workers (domestic by sources and overseas by types of visa), level of return of workers; especially labour turn-over, the level of training provided & impacts on productivity, accommodation facilities available or likely and the level of anticipated participation in the RSE scheme.

In this paper, some of the key results related to the level of seasonal labour requirements by major regions and the sources of labour supply are reported. The impact of labour practices on labour requirements and the nature of potential supply on implications for temporary migration policies are identified. The method by which a forecasting framework is used for allocation decisions is also outlined along with how survey information was used to refine and calibrate the Forecast Tool.

Background

This was an example of a significant engagement with the potential to transform an industry that exported products valued at over \$3b in recent years and also employed in total about 40,000 people either permanently and/or during seasonal months. It was also an opportunity to manage the relationship with a sector in a strategic way that assisted the industry improve its practices and reduce the need for enforcement interventions over time.

The Horticulture & Viticulture Seasonal Working group formed in 2005 attempted to address these important issues faced by these key export industries, which also required a significant number of seasonal workers during

peak months. The additional requirement coincided with a period of rising employment and declining unemployment levels, which resulted in fewer workers available within New Zealand to meet the needs of expanding industries. The result was greater reliance on overseas workers sourced under a number of different visa and permit schemes: Approval in Principle (AIP in 2003), Variation of Conditions (VoC in 2004), Skills Worker Pilot (SWP in 2005), Working Holiday Scheme (WHS since 2000) and more recently the Recognised Seasonal Employer (RSE) and Transitional RSE (TRSE) scheme since 2007.

In 2005, the Working Group, consisting of both Government (eg, MAF, DoL and MSD) and Industry (eg, HortNZ) also recognized the need for a forecasting frame

work to assess the likely future seasonal labour needs by key regions and industries. A prototype of Seasonal Labour Forecasting Tool was developed in late 2005 (BERL, November 2005) to address this need, but it was recognised by the developers then that the information requirements to make it operational was lacking.

The Horticulture/Viticulture Seasonal Labour Strategy, which was launched in December 2005, tasked the regional industries to develop a plan to fill this information gap with respect to demand (eg, the labour practices and labour ratios) and supply (eg, by sources).

Following a period of contemplation and evaluation during 2006 on how best to collect this information, the Regional Labour Governance Groups established during 2006 and 2007 in the major regions decided to conduct Regional Seasonal Labour Surveys. Assistance was sought from DoL to develop the appropriate survey questionnaire, provide guidance on sampling and to evaluate the survey results. This engagement was usually developed through the DoL Labour Market Knowledge Managers located in the regions and who were also key members of the Regional Labour Governance Groups.

Seasonal Labour Strategy & Policy

Meeting the seasonal labour needs of New Zealand's fruit, winegrape and vegetable crops was the key aim of a strategy launched by the Government and the industry in December 2005. A working group of industry, union and government representatives developed the strategy over the previous 12 months, which involved innovative changes in both government policy and industry practice.

As well as overcoming immediate labour shortages, the strategy intended to address long-term productivity and labour supply issues. The formation of contractor associations and strategies to reward and retain staff were other initiatives planned. To increase training and productivity, industry organisations and local grower groups were expected to work closely with the Tertiary Education Commission, and Industry Training Organisations.

A national coordinator was appointed to integrate regional initiatives, and develop national ones such as the Contractor Registration Programme. It was estimated that more than half of the industries' labour was supplied via contractors, who also supervised staff on the property.

<http://www.dol.govt.nz/News/Media/2005/horticulture-strategy.asp>

Horticulture & Viticulture Governance Group

The Governance Group that came into being following the launch of the Strategy recognised that there will continue to be areas where labour shortages would be critical. This medium to long-term strategy provided a framework for industry and government to continue working together to achieve sustainability and further growth.

Information Sub-group of Governance Group

The Horticulture & Viticulture Governance group consisted of five different Working or Sub-groups. The Sub-group 3 which was responsible for the collection, compilation and production of statistical and survey information as well as the forecasts was functionally referred to as "Information for Informed Management".

This Sub-group consisted of Government (ie, DoL, MAF & MSD) and Industry (eg, HortNZ-National Co-ordinator, PipFruitNZ Ltd, KZKGI Ltd) as well as national & regional (eg, Hawkes Bay Seasonal Labour Governance Group) representatives. This mix provided the necessary balance between top-down and bottom-up information required to assess the demand and supply situation in the regions along with the likely shortages requiring a temporary overseas worker policy response such as RSE & TRSE.

RSE & TRSE Policy

The horticulture and viticulture industries are very important to New Zealand and they often suffered from a shortage of workers. The Recognised Seasonal Employer (RSE) Work Policy was a new policy introduced in 2007 to facilitate the temporary entry of overseas workers to plant, maintain, harvest and pack crops in the horticulture and viticulture industries. This was required to meet the seasonal labour shortages and for industries in New Zealand to remain competitive with the rest of the world.

The RSE Work Policy is geared towards Pacific states. Employers were able to recruit from eligible Pacific Islands Forum member nations. The RSE Work Policy was initially capped at 5,000 places per year during its first year of operation. The number of available places can be adjusted, depending on the number of New Zealanders available and industry demand. The Department of Labour and the Ministry of Social Development were expected to work with industry to collate this information.

RSE status is initially granted for two years. Subsequent applications may be granted for a period of three years. However, employers could lose this status if they breach the RSE or Agreement to Recruit conditions or if their conduct has created an unacceptable risk to the integrity of New Zealand's immigration or employment laws or policies.

An employer must submit a completed RSE application to the Department of Labour's RSE Unit. The Unit will assess and decide the application in light of the RSE Work Policy requirements. The Department of Labour must also be satisfied they will meet other requirements such as paying market rates and looking after their overseas workers.

This policy replaced the Seasonal Work Permit Pilot as well as the Approval in Principle process in the horticulture and viticulture industries (the Approval in Principle process will still be available to other industries).

There was a transitional period after the Recognised Seasonal Employer Policy was introduced where the Seasonal Work Permit pilot and Approval in Principle process were still available to employers as a means to recruit overseas workers, while the new policy was bedded down. Like all immigration policy, RSE Work Policy is designed to ensure New Zealanders are put first, and employers have strong incentives to train and upskill the domestic workforce and utilise unemployed labour before looking elsewhere.

It is less costly for employers to hire New Zealanders – so New Zealand workers remain the most accessible and attractive source of labour. The Department of Labour and the Ministry of Social Development will forecast labour shortages and allocate places to the Recognised Seasonal Employer policy to ensure all New Zealanders are given first opportunities at jobs.

<http://www.dol.govt.nz/initiatives/strategy/rse/index.asp>

Seasonal Labour Forecast Tool

The Seasonal Labour Forecast Tool was developed by Business Economic Research Limited (BERL) in November 2005 for the Horticulture/Viticulture Seasonal Working Group (HVSWG)¹. The primary focus of this tool were the three key crops (ie, apples, kiwifruit and wine grapes) with considerable seasonal work and the three main regions (ie, Hawkes Bay, Bay of Plenty and Upper South Island or Nelson-Marlborough) where these horticulture/viticulture activities take place in the main.

In its final report, BERL acknowledged that while the Forecasting Tool had taken into account all the key factors determining the demand for and the supply of seasonal labour (for these crops in these regions), this Tool was only a prototype as there were a number of pieces of information which were provisional in nature requiring updates and/or verification or were unavailable and yet to be collected.

The Information Sub-Group of the HVSWG (consisting of members from MAF, HortNZ and DoL) felt that there was the need to carry out a number of tasks to make the prototype into an operational version and sought the involvement of the Department of Labour (ie, the Work Opportunities Branch then) to carry out this work. This was to be undertaken from early 2006 with co-operation from MAF, HortNZ as well as agencies such as MSD and other parts of DoL (eg, Workforce).

The BERL Prototype

The BERL forecasting tool consisted of the steps necessary to derive the demand for and the supply of seasonal labour:

- (a) The demand for seasonal labour (by months) is derived based on acreage and production forecasts for these crops in the three regions (provided by MAF) and labour ratios for all seasonal operations (eg, pruning, picking), **and**
- (b) The supply of seasonal labour (by months for some categories only) estimated from domestic

sources (ie, those coming-off unemployment benefits are included but others available locally, regionally and/or nationally for such work was not available) and overseas sources (ie, Working Holiday Scheme, AIP, VOC and Seasonal Work Permits), **but**

- (c) The “seasonal labour shortage” was not assessed for these crops and/or these regions due to the need to verify and/or update information already available and used in the tool as well as due to the lack of other seasonal labour supply information.

From a Prototype to Operational

In order to extend the BERL prototype to an operational version, there were a number of activities that needed to be carried out. This included the following:

1. Data updates –

- (a) *Seasonal Demand*; the BERL forecasting tool developed in late 2005 included acreage and production forecasts for the 2005-10 period which were released in early to mid 2005 by MAF and other relevant industry organisations (eg, Pipfruit NZ, Zespri, Wine Growers Institute) and had to be updated in 2006 and later in 2007,
- (b) *Seasonal Supply - Domestic*; the BERL forecasting tool included the number coming-off unemployment benefits for varying periods in these three regions to July 2005 and this has to be updated to July 2006,
- (c) *Seasonal Supply – Overseas*; the BERL forecasting tool included information on those participating in WHS (since 2000), AIP (in 2003), and VOC (in 2004) to which early data on Seasonal Work Permits had to be incorporated.

2. Data verification –

The BERL forecasting tool included seasonal labour ratios which were considered to be uniform or undifferentiated (for the most part) in the case of the three main export crops across the different regions and this had to be confirmed,

3. Collection of presently unavailable data –

This was particularly related to those available for seasonal work within New Zealand (ie, locally, regionally and nationally) but not including those coming-off unemployment benefits.

4. Establishment of linkages with data sources for periodic updates –

This included MAF, MSD (providers of both historical and forecast data), and DoL – Workforce database administrators.

5. Engagements with potential users of the Tool (also suppliers/facilitators of key missing information) –

This included various national (eg, HortNZ) and regional organisations and personnel (eg, Viticulture Advisory Group in Blenheim consisting of regional MSD staff as

well as growers and seasonal labour contractors, Regional Labour Market Knowledge Managers) to assess the level of interest in the Tool, their insights and awareness of issues.

Seasonal Labour Demand Forecast Within & Seasonal Labour Supply Outside of Tool

Of the 5 areas of activities listed above (some of them inter-related such as items 1 & 4), greatest progress was made in relation to items 1 a) and 1 c) and item 1 b) was updated only in relation to those on unemployment benefits and hardship benefits. There was less concern expressed in relation to item 2 but still required some co-ordination of verification of relevant labour ratios if there is any differentiation needed to be made for individual regions.

Item 3 in relation to unavailable seasonal labour supply information required the most attention at the earliest where the strategy which was most likely to work was under some consideration and debate.

There was sufficient progress made with respect to item 4 on establishing linkages with the relevant sources of data updates. The contact information for each type of data source with respect to seasonal demand and supply and the nature of the data available at that time (eg, national or regional) along with suggestions on the best possible time and frequency of updates were also provided.

There was also considerable interest in item 5 in relation to who is likely to be in the best possible position to:

- (a) **Use the Forecasting Tool effectively** to produce relevant regional information when called upon to advice on related immigration issues,
- (b) **Update the Tool periodically** with regional seasonal labour supply information, the relevant labour ratios for seasonal operations as well as regional production/acreage data when made available by MAF, and hence
- (c) **Benefit from the ability to provide input and exercise the necessary influence** on key policy and operational decisions using relevant regional labour market knowledge.

While item 5 was critical to the effective use of the Seasonal Labour Forecasting Tool developed by BERL going forward, there had to be sufficient progress on item 3 first in order to complete the full-set of key information required to assess "labour shortages" (preferably on a regional basis) and to make the tool fully operational and useful in policy development and in DoL operational decisions.

External Forecasts Driving Labour Demand & Supply Forecasts and Shortage Assessments

It must be noted that the area forecasts (WineNZ) and crop estimates (eg, PipfruitNZ) made by the industry and/or MAF were important drivers of seasonal labour demand along with the labour ratios and the labour

practices, subsequently verified by regional labour surveys. In the case of seasonal labour supply, the potential supply from those on unemployment and hardship benefits were sourced from different parts of MSD who either provided the historical benefit recipient numbers by the relevant regions or the national forecasts of those likely to be receiving benefits in future during the upcoming Horticulture/Viticulture season.

In the absence of information on the remaining domestic supply of seasonal workers who worked in the regions by choice, the likely level of shortages in the different regions were evaluated by comparing the relative changes in demand and the likely supply from benefit recipients. This enabled an assessment of the level of seasonal labour shortages anticipated in different regions in order for the Regional Commissioners of MSD located in the regions to declare shortages. This permitted visas to be issued to overseas workers to work in orchards and vineyards.

2007 Seasonal Labour Surveys

The overall purpose of these surveys was to use the information underlying seasonal labour work practices & work profile and the timing of operations to make an assessment of the likely labour requirement and use during the 2008 season. This was to be implemented using the Seasonal Labour Forecasting Tool by incorporating the relevant survey based information and the assessment of future area & crop size from MAF and the industry taken into account.

The Scope and Coverage of the Surveys

The survey was referred to as the "Survey of Seasonal Labour Employers – Demand & Supply" and was intended to cover the following labour market information on the

Demand side:

- 1) Basic information about the business such as the size & scale of the operation,
- 2) Number of permanent full-time workers in relation to casual & seasonal workers,
- 3) Number of workers per supervisor,
- 4) Method of hiring the seasonal workers (directly or through contractors),
- 5) Work profile (ie, hours worked per day, days worked per week etc) and
- 6) Wages (piece and hourly rates; paid directly vs to contractors, as applicable), and
- 7) Number of casual & seasonal workers used by seasonal months & crops.

Supply side:

- 1) Source of workers (Domestic by sources and Overseas by types of visa)
- 2) Level of return of workers, especially labour turnover
- 3) Level of training provided & impacts on productivity

- 4) Accommodation facilities available or likely and
- 5) Level of anticipated participation in the RSE scheme.

The survey of the employers of seasonal labour carried out in the Hawkes Bay region during the June-July 2007 period covered Pipfruit, Summerfruit, Kiwifruit, Wine grapes, Berries, Asparagus, Olives, Squash (Kaboucha), Onions & other vegetables. It was undertaken by the HB Seasonal Labour Governance Group and the Department of Labour (Work Directions) was asked to assist with development of the survey questionnaire, the survey response template and also in the evaluation & analysis.

2007 Hawkes Bay Seasonal Labour Survey: No of Responses & Hectares Covered

	No of Survey Responses Received	Production Hectares Surveyed	Hectares HortResearch Pamphlet 2006	Percent Surveyed	Adjustment Factor for Total Industry
Pipfruit	133 + 24*	5,018	5,681	88.3	1.1325
Summerfruit	69 + 21*	464	1,063	43.6	2.2936
Squash	15	2,219	2,457	90.3	1.1074
Onions	4	306	770	39.7	2.5189
Other Vegetables	17	846	4,272	19.8	5.0505
Olives	11	171	430	39.8	2.5126
Asparagus	8	94	449	20.9	4.7849
Kiwifruit	18	130	163	79.8	1.2531
Wine Grapes	51	1,434	4,346	33.0	3.0303
Berries	8	49	26		
Total Hectares		10,730	19,657	54.6	1.8315

* refers to packhouses & packing facilities surveyed

This regional seasonal labour survey of crops in the Hawkes Bay region was the most comprehensive in terms of coverage. There were surveys of specific crops in some of the other regions such as the Bay of Plenty (Kiwifruit), Nelson (apples), Marlborough and Wairarapa (wine) to identify the regional seasonal labour demand.

The overall response rate in terms of the hectares of crops in the Hawkes Bay covered was quite high and averaged above 50%. It varied between 80-90% at the high end in the case of kiwifruit, pipfruit and squash and about 20% at the lower end in the case of asparagus & other vegetables. The response rate was in the 30-45% range for winegrapes, olives, onions and summerfruit. This was a much better response rate than achieved in the previous Hawkes Bay survey conducted some years ago.

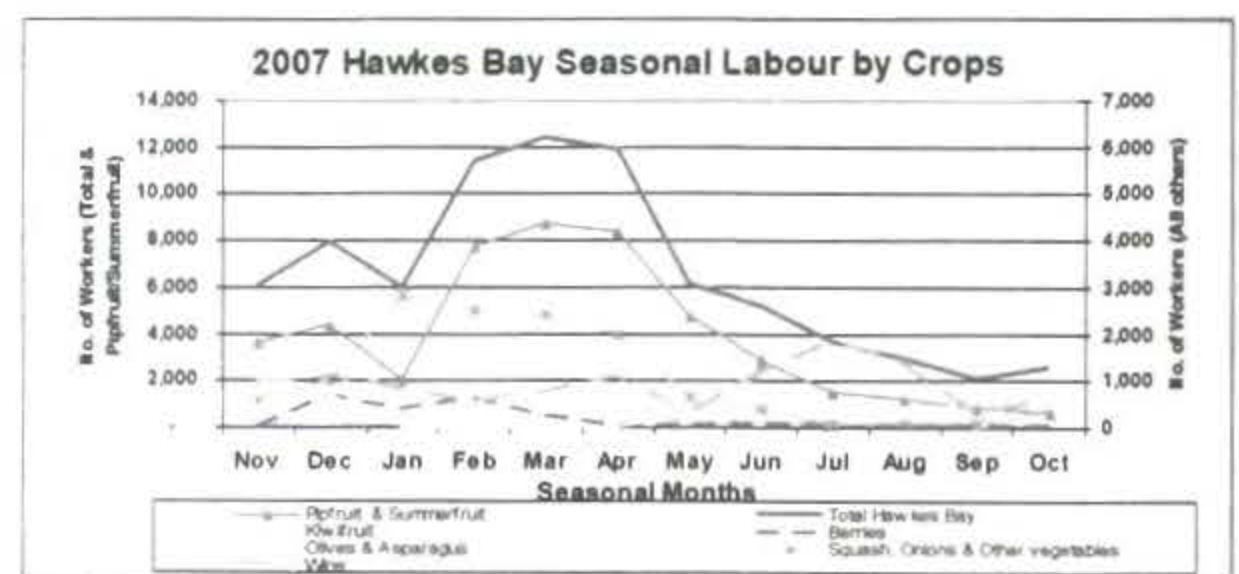
The Survey Results: Demand by Regions

While the overall objective of these surveys was to assess the labour requirement and use in the 2007 season (to a great extent completed at that stage), they also enabled the various assumptions related to seasonal labour ratios, labour practices by seasonal activities and turn-over, used in the Seasonal Forecasting Tool maintained by Work Directions to be assessed. Updates and revisions to these assumptions were to be considered and incorporated in the Forecast Tool in time to assess the 2008 seasonal labour requirements and beyond.

2007 Peak seasonal labour use - whole HB industry

Crop Combinations:	Sample Peak	Sample Peak incl. Turn-over	Industry Peak incl. Turn-over	Peak Month/s
1. Pipfruit / Summerfruit	6,445	6,751	8,309	March
2. Kiwifruit	254	291	365	April
3. Berries	613	675	675	December
4. Olives & Asparagus	174	174	833	Oct-Nov
5. Squash & Vegetables	797	1,266	2,815	January
6. Winegrapes	269	595	1,803	July
Total Hawkes Bay (not derived by adding peaks)	7,646	8,530	11,976	March

The table provided above indicates the peak seasonal labour requirement assessed based on the 2007 HB survey. This is reported first for each of the crop covered in the HB survey for the sample of growers who responded. This is followed by an assessment of the requirement for the grower sample including the levels of average turn-over indicated by the survey respondents and then the peak requirement for the industry is reported. The month or months in which the peak demand is experienced in the case of each crop is also noted.



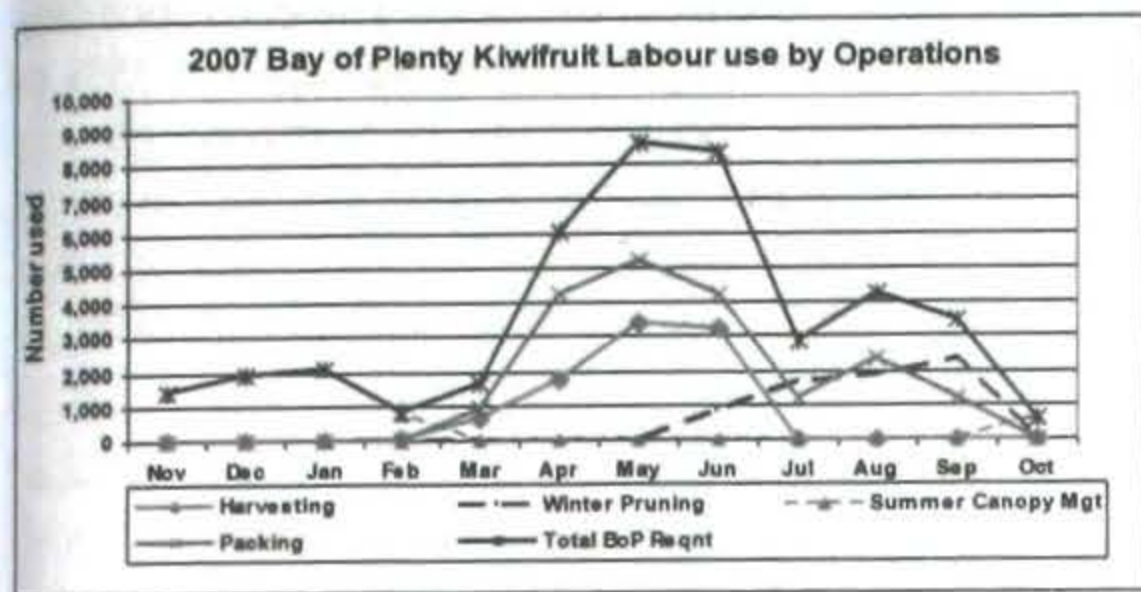
The information presented above is a breakdown of the total seasonal labour requirement for individual crops covered in the Hawkes Bay Regional Seasonal Labour Surveys. Given the scale of the *Pipfruit & Summerfruit* activity in HB, labour requirement is the highest for this activity in most months (except in January and July-August) with a peak of between 7,500-8,500 workers between February and April. The peak requirement for *Wine grapes* is in July at about 1,800 seasonal workers mainly for winter pruning and for *Squash, Onions and Other vegetables* during January-March between 2,500 and 2,800, mainly for harvesting and processing.

2007 Peak Seasonal Labour Use - New Zealand Kiwifruit

Seasonal Operations:	Sample Peak	Sample Peak incl. Turn-over	BoP Peak incl. Turn-over	Industry Peak incl. Turn-over	Peak Month/s
B: All Bay of Plenty					
1. Picking	729	1,370	3,455	4,490	May
2. Winter Pruning	606	915	2,290	2,980	September
3. Summer Canopy Management	525	830	2,075	2,700	January
4. Packing	1,100	2,080	5,180	6,730	May
Total Kiwifruit (not derived by adding peaks)	1,829	3,450	8,640	11,220	May

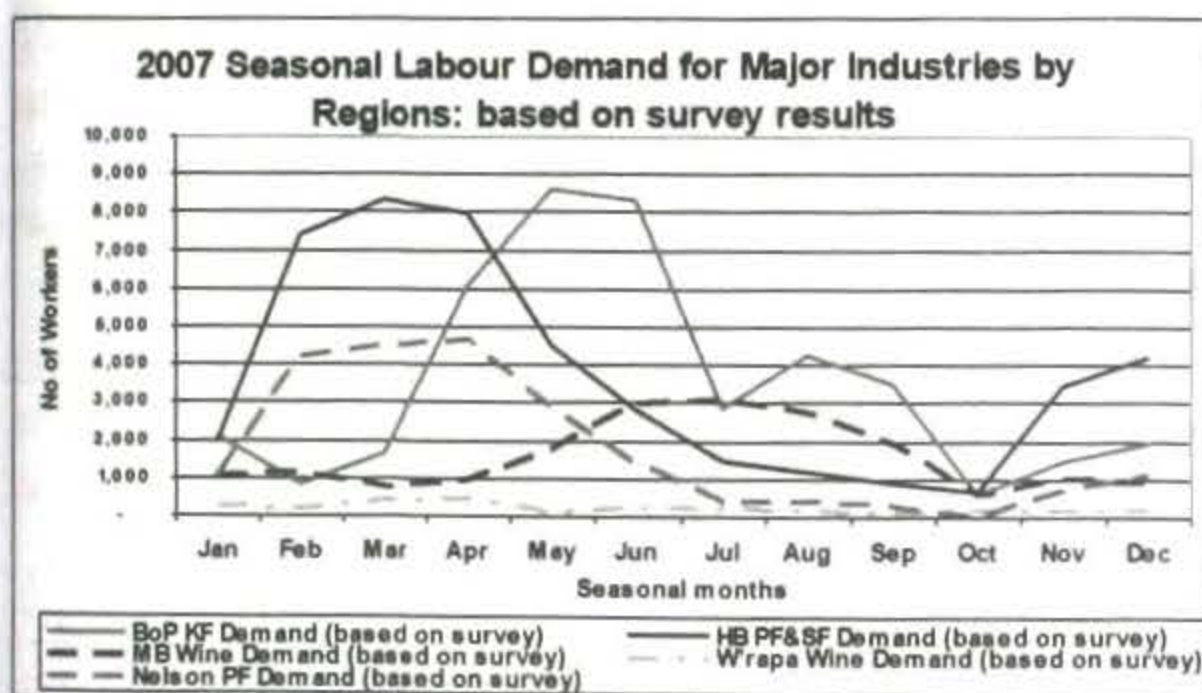
The peak seasonal labour use for kiwifruit in the Bay of Plenty was around 8,600 workers based on the responses

of all respondents to the 2007 Seasonal Labour survey and the requirement for the kiwifruit industry across the country was estimated to be around 11,000 workers. Picking & packing required most of the seasonal labour with the peak in May.



The information presented in the above figure is a breakdown of the total Bay of Plenty seasonal labour requirement by individual seasonal operations. The peak labour use in May (about 8,600) coincides with the peak harvest (about 3,400) and additionally packing (5,200) seasonal labour use. The labour use in June for picking and packing is almost high as in June and during the shoulder month of April the use is about 6,000. The smaller peak in August of about 4,000 coincides with some re-packing and pruning while seasonal labour the use for summer canopy management is about 2,000.

Seasonal Labour Demand: Harvest Trail across Regions



It has been known among those working with the seasonal industries related to Horticulture & Viticulture that there is something known as the harvest trail. This is evident when the survey responses from the different key regions are combined together as in the above graph. The peak labour requirement in the Hawkes Bay region for picking pipfruit (during March-April) is followed by the peak requirement in the Bay of Plenty for picking kiwifruit (during May-June). This is then followed by the labour requirement for winter pruning (during June-August) in the major wine growing regions, Marlborough in particular.

The Survey Results: Supply by Regions

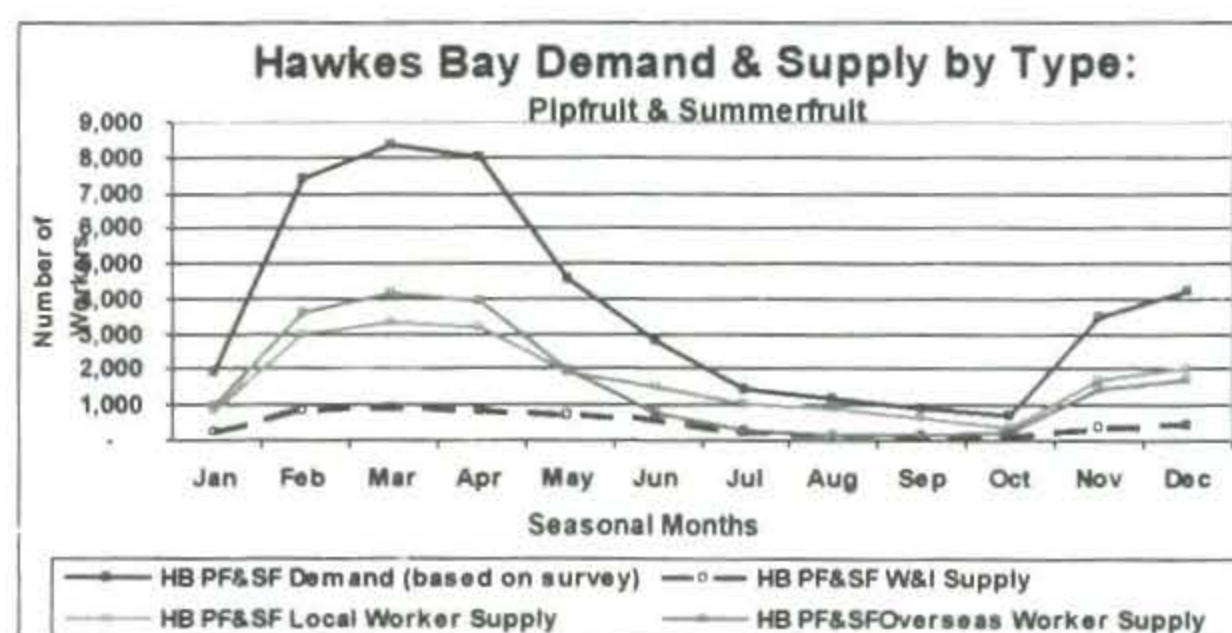
The second major focus of the Regional Seasonal Labour Surveys was to elicit the nature and the level of the source of workers used for the different operations. This covered the local workers, including those coming-off benefits

from Work & Income and the overseas workers of different permit and visa types.

Hawkes Bay

Survey based Parameters	Overseas %	W&I %	Other Kiwis %	Total
Harvesting	55%	5%	40%	100%
Winter Pruning	10%	10%	80%	100%
Summer Thinning	40%	10%	50%	100%
Packing	35%	25%	40%	100%

Based on the responses of pipfruit and summerfruit growers to the Hawkes Bay survey, about 40-50% of the workers involved in harvesting as well as summer thinning and packing were locally sourced outside of those coming-off benefits. The share of these local workers for pruning was extremely high at about 80%. Given low unemployment levels, only a very small proportion (5-10%) of the workers in Hawkes Bay came from W&I in 2007 except for packing, where the share was about 25%. Overseas sourced workers made up about 35-40% in the case of summer thinning and packing and about 55% in harvesting but their share in pruning was quite low.



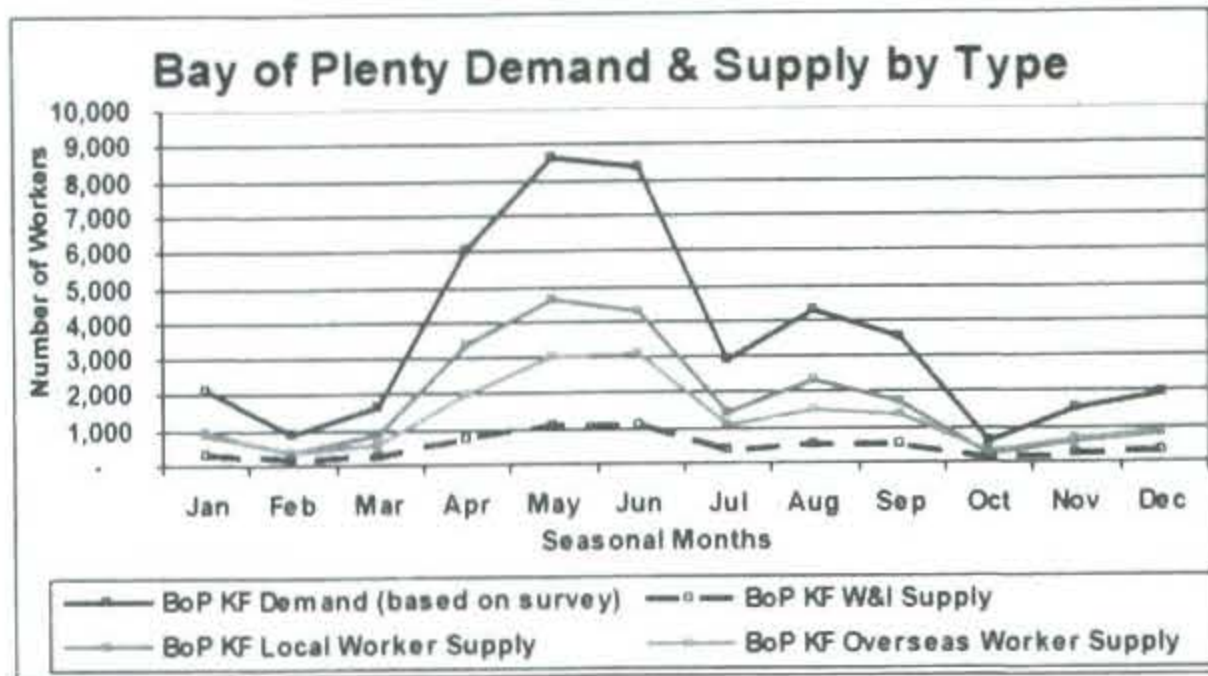
Overall, the peak Hawkes Bay pipfruit and summerfruit seasonal labour demand in 2007 of about 8,000 workers around March-April appear to have been met from about 4,000 overseas workers, over 3,000 local workers and the remaining (under 1,000) supplied by W&I sources. The proportions of workers during the smaller peak during November-December coinciding with summer thinning activities suggest similar share of local and overseas workers.

Bay of Plenty

Survey based Parameters	Overall Source Shares				Overseas Type Shares			
	Overseas %	W&I %	Other Kiwis %	Total	AIP	SWP	WHS	Total
Harvesting	50%	15%	35%	100%	45%	40%	15%	100%
Winter Pruning	45%	15%	40%	100%	55%	40%	5%	100%
Summer Canopy Mgt	45%	15%	40%	100%	0%	70%	30%	100%
Packing	25%	10%	65%	100%	20%	70%	10%	100%

Based on the responses to the BoP kiwifruit survey, about 45-50% of the workers involved in harvesting as well as winter pruning & summer canopy management were from overseas sources. Conversely, only 25% of the workers involved in packing were overseas workers and 65% were locally sourced excluding those coming-off benefits. Given low levels of unemployment, only 10-15% was from W&I sources during 2007.

Of the overseas workers, about 40% involved in harvesting and winter pruning and about 70% of those packing and doing summer canopy management appear to have had a SWP in 2007. AIP accounted for between 45-55% of those overseas workers undertaking harvesting and winter pruning.

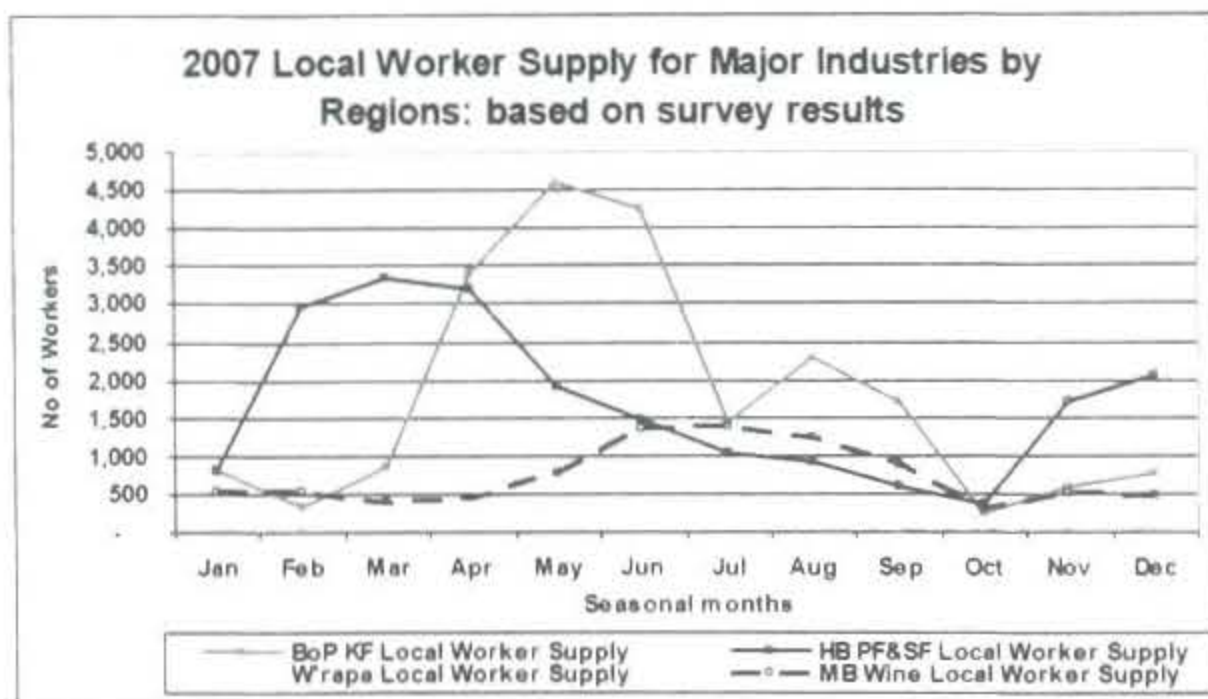


Overall, the peak Bay of Plenty seasonal labour demand in 2007 of about 8,600 workers around May-June appear to have been met from about 4,600 local workers, about 3,000 overseas workers and the remaining supplied by W&I sources. Similar proportions are evident in the smaller peak during August coinciding with winter pruning activities.

The Survey Results: Supply by Source

In this section, the survey responses received from the 2007 survey across three major regions and one minor region are summarised in order to provide some perspectives on the relative importance of the different sources of seasonal labour supply at the time of the survey.

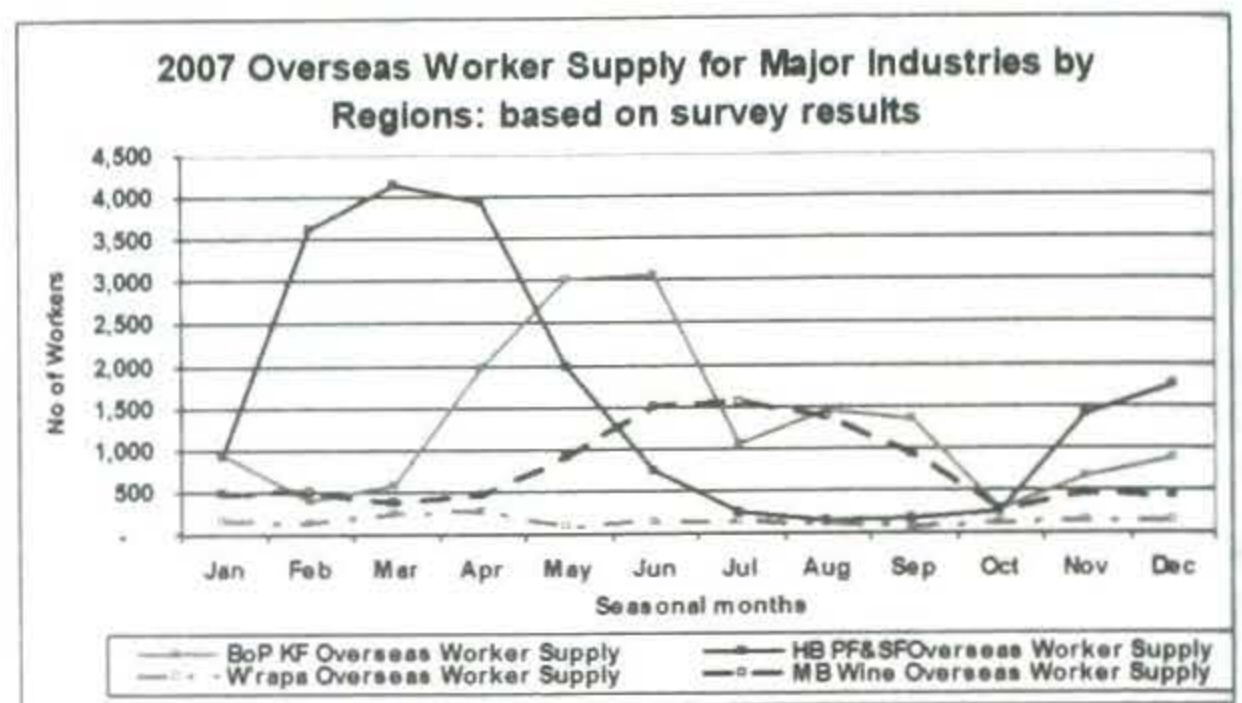
Local Worker Supply



The above graph provides the relative size, share and the timing of supply of local workers in these four regions. The number of local workers (not including those coming-off benefits) available at the peak in Hawkes Bay was about 3,000 workers or 40% across all crop growers surveyed and for all seasonal operations. The number of local workers available in Bay of Plenty at the peak (a few months later) was about 4,500 workers or about 50% across all kiwifruit operations. The corresponding number for Marlborough wine at the peak for pruning was about 1,500 workers or about 45% across all vineyard operations. The figures for Wairarapa wine was about 150 workers or about 40% across all operations.

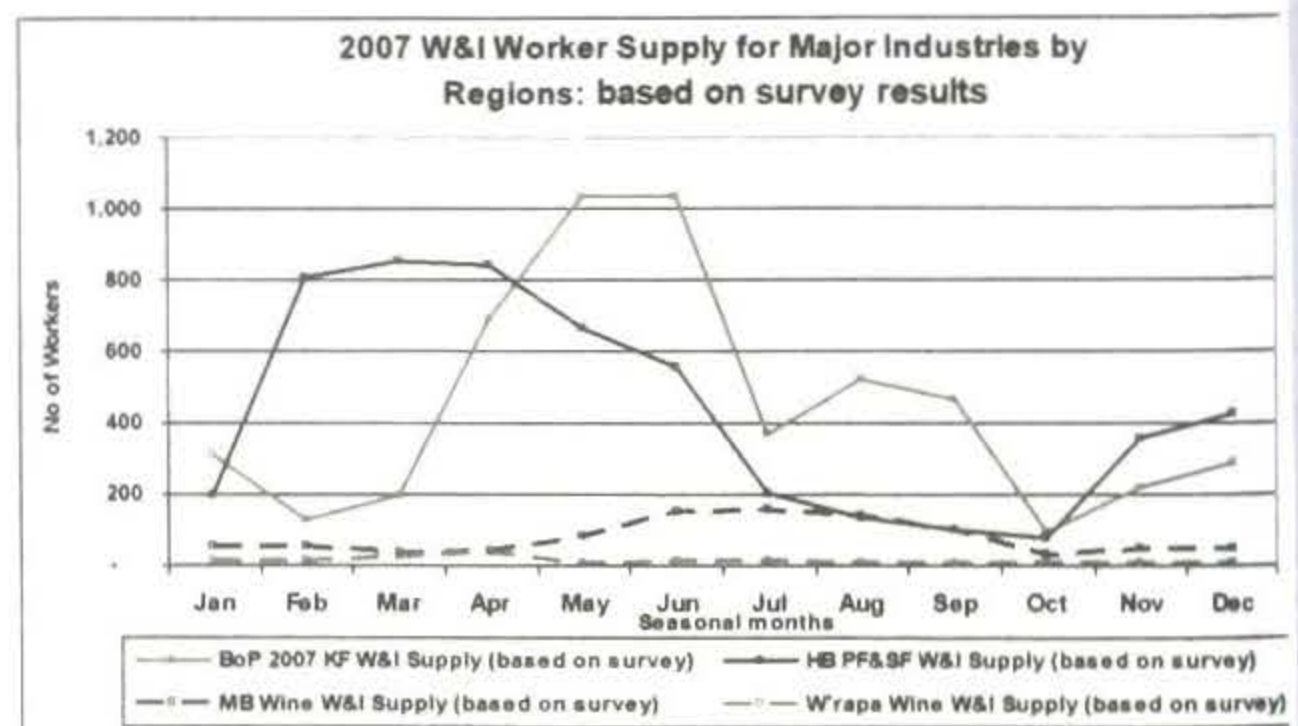
Overseas Worker Supply

The next graph looks at the relative size, share and the timing of the supply of overseas workers in these four regions. In Hawkes Bay, around 50% or about 4,000 workers carrying out seasonal operations across all crops grown at the peak were from overseas. The corresponding figure for kiwifruit in Bay of Plenty was around 35% or about 3,000 workers and for wine in Marlborough was around 45% or about 1,500 workers from overseas sources. In Wairarapa, the share of overseas workers was around 40% or about 150 workers, a similar number as local workers.



W&I Worker Supply

This source of seasonal labour supply is distinguished from local worker supply to represent those who undertake seasonal work by choice and to cover specifically those who come-off benefits. The 2007 survey suggested that this source only accounted for about 5-10% in most regions when those receiving unemployment benefits across the country was quite low, especially in the feeder regions of Horticulture & Viticulture activities.



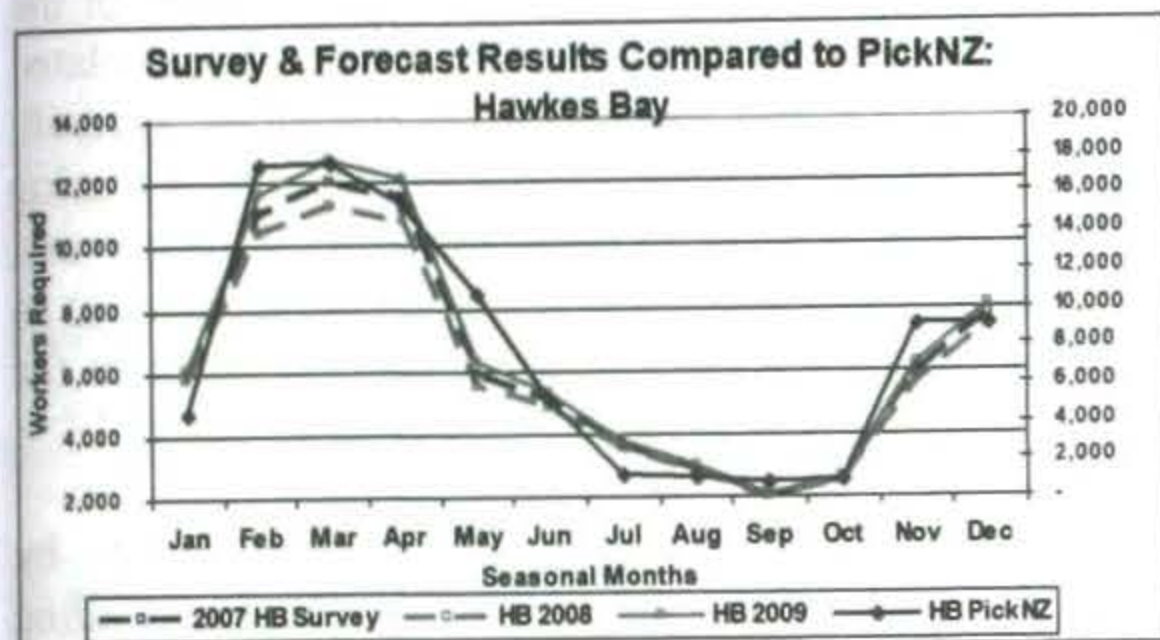
Seasonal Labour Forecast Results: 2007, 2008 and 2009 Seasons

This section reports and discusses the assessments of seasonal labour demand for three consecutive seasons: past (2007), "present" (2008) and forecast future (2009). These are computed to reflect the varying conditions related to crop acreage and harvest situations in different regions and for the major crop activities over these three years. Also considered are the changing work practices reflecting the type and mix of seasonal labour sourced during this period in these regions based on availability.

The Scope and Coverage of the Results

The forecasts are made for the three major Horticulture & Viticulture regions with significant export crops of economic significance: Hawkes Bay, Bay of Plenty and Marlborough.

The graph provided below summarises the demand assessed from the 2007 Hawkes Bay survey, estimated for the 2008 season based on the 2007 survey labour ratios as well as work practices and intensity and forecast for the 2009 season, but for a larger or smaller area and crop estimates and forecasts. They are also compared with the PickNZ figures reported in the HortNZ website for the Hawkes Bay region.



The peak seasonal labour requirement in the Hawkes Bay region during the pipfruit harvest period of February to March (covering different varieties) illustrate the "medium" level of labour requirement during the 2007 survey year (around 12,000 workers), lower requirement in 2008 (around 11,000 workers) due to the smaller crop and the much higher requirement forecast during 2009 season (about 12,500 workers) when a crop larger than in 2007 was anticipated.

while the rapid expansion in acreage increases the seasonal labour required for pruning and thinning activities in particular.

Supply Estimates

The estimates of supply are made on the basis that the seasonal labour demand assessed for the particular season is met by supply arising from different sources. Hence the level of overseas worker requirement is influenced by the reliance on the different sources suggested by the survey conducted in 2007 but during 2008 and 2009 a greater share of this source was supplied by RSE & TRSE workers.

Due to the unknown quantity of the supply of local seasonal workers who did this work by choice, the approach adopted was to assess the changes in anticipated supply from the W&I (domestic) source between seasons and compare this with the estimated seasonal labour demand changes between these seasons to assess the likely imbalance between demand and supply that is likely to require overseas workers to fill the gaps.

Demand & Supply Imbalances

The results for the 3 different & diverse seasons are also compared with the PickNZ figure included in the above graph. This suggests that during the peak period of seasonal labour need these PickNZ estimates are closer to the estimate when favourable crop conditions similar to that expected in 2009 are experienced but tended to over-estimate the requirement during other years, of both "average" and poor crop conditions. In contrast, they also under-estimated the needs in lower demand months such as July-August.

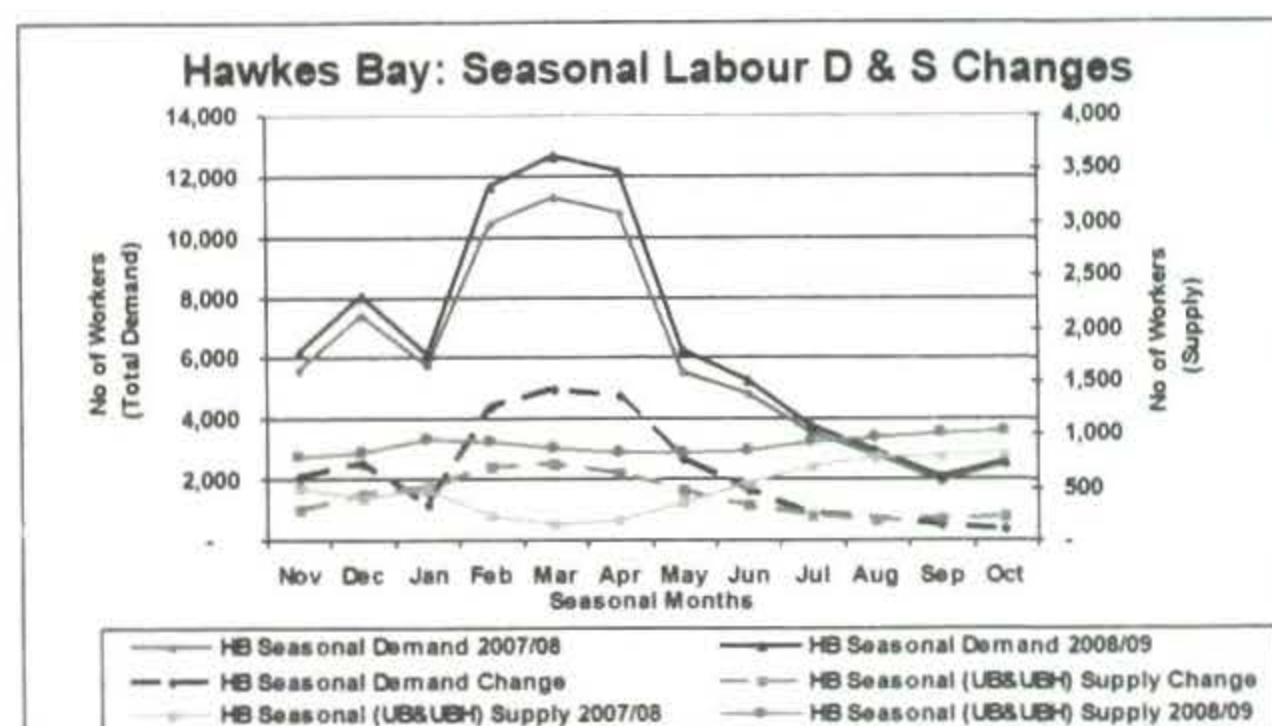
Use of Regional Surveys & Forecasts in Overseas Worker Allocation Decisions

Previous sections of this paper covered the development of the Seasonal Labour Forecast Tool and the subsequent Regional Seasonal Labour Surveys used mainly to verify the seasonal labour ratios, work practices and intensity of work across different seasonal operations. This enabled seasonal labour demand to be estimated and/or forecast as appropriate. These demand results when compared with the seasonal labour supply results by source, which were based on the supply proportions arising from the 2007 regional surveys provided an assessment of the likely level and the relative reliance on overseas workers by the key Horticulture & Viticulture regions.

Demand Assessment

Differences in both crop conditions and acreage expansions for the activities of importance in different conditions influence the assessments of seasonal labour demand along with the labour ratios and work intensity as well as labour turn-over. The level of crop activities influence the seasonal labour required for harvest and also for packing pipfruit and kiwifruit

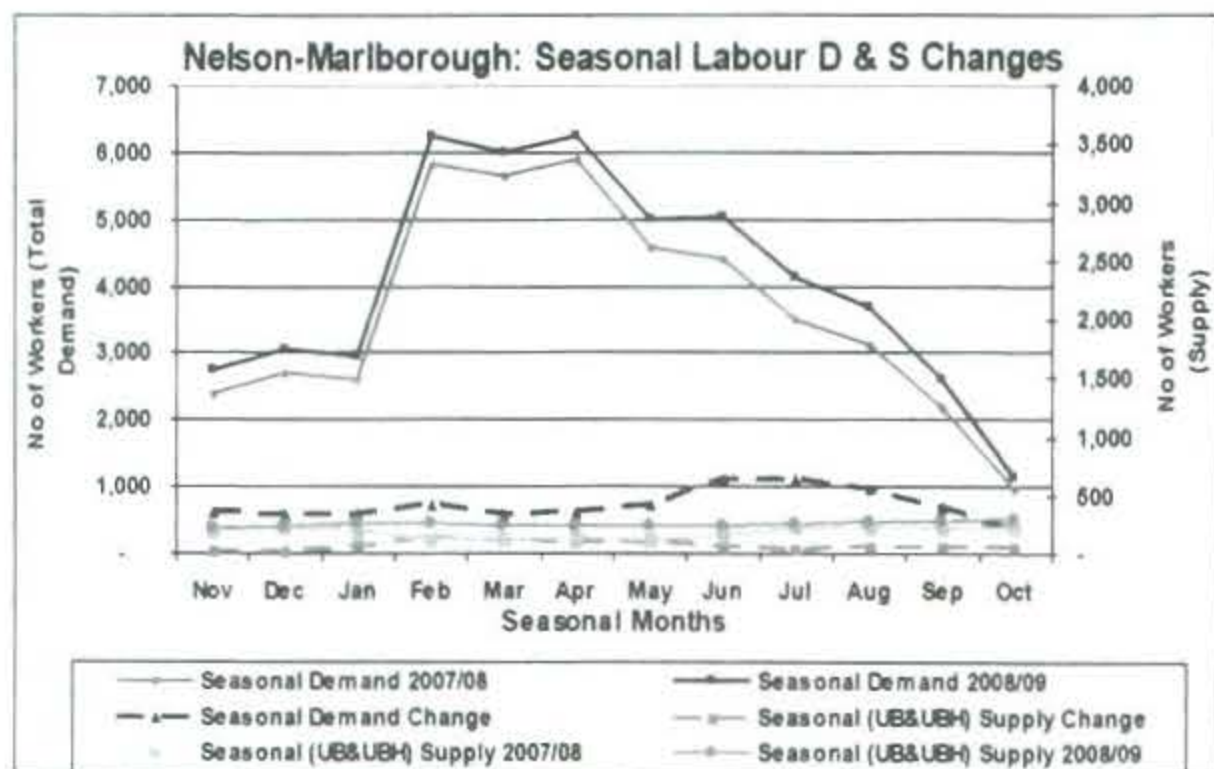
In this section, the comparative seasonal labour demand and supply assessments and changes between the 2007/08 and 2008/09 seasons are provided for two regions as an illustration.



The above graph demonstrates this demand and supply imbalance or the gap analysis for the Hawkes Bay region. This assessed gap may have to be filled from additional overseas workers if the numbers of local workers who do seasonal work by choice do not change much.

The data is available and presented in the above graph for each of the seasonal months of interest to do this assessment as a guide for operational policy. The

additional seasonal labour requirement or demand in the 2008/09 season (compared to the previous season) during the peak harvest period is about 1,400 workers (read from the right or Y2 axis) while the additional "potential" supply due to an increased number of those from W&I sources available in the surrounding feeder regions is only about 600 workers. This indicates that the additional overseas workers required in the Hawkes Bay region during the 2008/09 season compared to the 2007/08 season is about 800 workers.



A similar assessment for the Nelson-Marlborough region covering pipfruit and wine activities is presented in the above graph. The results suggest that the additional demand in this region during the 2008/09 season mainly for pruning wine during winter months was about 600 workers while the additional "potential" supply is very small (much less than 100) indicating a need for an extra 500 workers from overseas sources, including RSE.

Implications for Temporary Worker Policy

The Department of Labour – Temporary Worker Policy Group has overall responsibility for determining the total number of overseas workers required and hence should be recommended to the Minister responsible for decision. The decision on the total number of these workers and its allocation across the various Horticulture & Viticulture regions (both major and minor ones) is carried out in consultation with the Horticulture & Viticulture Labour Governance group (HVLGG).

The survey and forecast analysis such as that presented in this paper and carried out by the Work Directions Branch of the Department of Labour is provided to both the Temporary Worker Policy Group of DoL and to HVLGG. It is presented as periodic updates of the Information sub-group 3 of HVLGG, referred to as "Information for Informed Management".

Summary and Conclusions

This paper has attempted to outline the steps involved in developing the seasonal labour demand and supply assessments by specific crops of importance for the major Horticulture & Viticulture regions of New Zealand. In some ways it is also an account of the activities of various administrative and organisational groups across Government and industry that facilitated the development

of this capability over a period of years and addressed the measures needed to fill the information gaps.

The development of the Forecast Tool in 2006 initially as a template and then as an operational framework was discussed first. The Regional surveys conducted by the industry during 2007 with assistance from the Department of Labour to field test and verify the key labour ratios and assumptions about the intensity of work practices was covered next. These are key steps along the way in facilitating the provision of this important information required for policy development and its subsequent implementation.

In this paper, some specific examples of the information sought, obtained and analysed from the surveys and from the forecast analysis were reported for illustration of the nature of this exercise and its use in the decisions related to the RSE policy and the allocation decisions. Overall, the forecast analysis on the demand-side involves using the total area and crop information from industry and administrative data sources (eg, Agricultural Census) to project the industry level labour needs elicited from the surveyed area and crop levels.

The projection of industry seasonal labour needs by regions is based on the labour use and corresponding activity level covered by the regional surveys, which provided implicit labour ratios for certain level of work intensity (eg, hours per week) for the sample of respondents to these surveys. The labour demand assessments for the season in progress and forecasts for the season/s ahead are hence based on acreage and crop forecasts provided by MAF and/or by the industry itself when detailed crop estimates are made (eg, Pipfruit NZ).

While mean (average) and modal labour ratios (most common) are only summary measures, they provide the key assumptions to carry out high level assessments while also recognising the differences or variability in them. These often reflect the size and scale of operations and some indication of the "limits to productivity" improvements for various seasonal operations under different situations.

An important benefit of the approach adopted here is the transparency around the assumptions used not only related to the labour ratios but importantly also the level of labour turn-over and related work practices adopted by different growers. In the past, it has often been difficult or impossible to discern the assumptions behind some seasonal labour demand assessments leading to inconsistent comparisons and often some misinformation.

The information on the levels and relative reliance on different types or sources of seasonal labour, both domestic and overseas, for different seasonal operations across crops and regions has been seriously lacking. The Regional labour surveys were able to address and fill some of these gaps but not completely. The changes in general economic circumstances affecting the domestic supply "favourably" and other situations require periodic repetition of surveys, most likely every 2-3 years. The supply analysis utilises the national unemployment benefit forecasts made by the MSD-CSRE-Forecast group

and allocates this to the relevant Horticulture & Viticulture regions and their surrounding feeder areas.

Note

1. This Group was succeeded by the Horticulture/Viticulture Seasonal Labour Strategy Governance Group following the launch of the Seasonal Labour Strategy in December 2005.

References

- Chandler, N., Nana, G., Sanderson, K. and Leung-Wai J. - BERL**, (2006), "Food and Beverage Labour Forecasting Framework – Development and Indicative Applications", report to the Work Directions Group, Department of Labour, Wellington, May.
- Cochrane, B. and Poot, J.** (2005), "Description and Econometric Analysis of Employment Change in New Zealand Labour Market Areas", paper prepared for the Economic and Regional Development Conference, 27-30 September, Auckland, Population Studies Centre, University of Waikato, September.
- Department of Labour, Work Directions** (2007), "Hawkes Bay Seasonal Labour Survey: An assessment of the results of labour requirements, use & work practices", Internal report to the HB Seasonal Labour Governance Group based on the August 2007 survey responses, September.
- Department of Labour, Work Directions** (2007), "Kiwifruit Regional Seasonal Labour Survey: An assessment of the results of labour requirements, use & work practices", Internal report to the NZKGI based on the September 2007 survey responses, November.
- Department of Labour, Work Directions** (2007), "Nelson Pipfruit Seasonal Labour Survey: An assessment of the results of labour requirements, use & work practices", Internal report to the industry based on the October 2007 survey responses, November.
- Department of Labour, Work Directions** (2008), "Marlborough Wine Seasonal Labour Survey: An assessment of the results of labour requirements, use & work practices", Internal report to Wine Marlborough based on the November 2007 survey responses, February.
- Department of Labour, Work Directions** (2008), "Wairarapa Wine Seasonal Labour Survey: An assessment of the results of labour requirements, use & work practices", Internal report to the Wairarapa Economic Development Agency based on the January 2008 survey responses, February.
- Human Capability in Agriculture & Horticulture Working Group.** (2004), "Labour and Skills Forecasting – Modelling Approaches to Labour Forecasting, Data Stock take, End user Needs and Census Analysis", AgResearch Ltd, financial support from MAF-Sustainable Farming Fund, October.
- Horticulture/Viticulture Seasonal Labour Strategy Launch**, Department of Labour and Horticulture New Zealand, December 2005.
<http://www.dol.govt.nz/News/Media/2005/horticulture-strategy.asp>
- Labour Market Strategy: The Recognized Seasonal Employer (RSE) Work Policy**, Department of Labour, RSE Unit, 2007.
<http://www.dol.govt.nz/initiatives/strategy/rse/index.asp>
- Meagher, G.A., Adams, P.D., and Horridge, J. M.** (2000) "Applied General Equilibrium Modelling and Labour Market Forecasting", Working Paper No. IP-76, Centre of Policy Studies, Monash University, Melbourne, Australia, December.
- Ministry of Social Development (MSD), Centre for Social Research & Evaluation (CSRE), Forecasting & Modelling Group** (2008), "National Forecasts of Benefits by Categories of Recipients – Periodic Updates" July & December.
- Nana, G., Chandler, N., and Sanderson, K., BERL**, (2005), "Horticulture / Viticulture Seasonal Labour Projection Tool", report to the Horticulture and Viticulture Seasonal Working Group, Wellington, November.
- Nana, G., and Leung-Wai J., BERL**, (2004), "Employment by Occupation and Industry: 2001-2011", report to Career Services rapuara, April.

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