

2009 UPDATE OF THE WORLD'S ASPARAGUS PRODUCTION AREAS, SPEAR UTILIZATION AND PRODUCTION PERIODS

B. L. Benson
California Asparagus Seed and Transplants, Inc.
2815 Anza Ave., Davis, California 95616 U.S.A.

Keywords: *Asparagus officinalis* L., green asparagus, white asparagus, consumption, export, import, hemispheres, canned, fresh, frozen and production periods

Abstract

The estimates of asparagus producing areas, the periods of spear production and the utilization of spears are presented for the world's asparagus producing countries. These data are based on contacts with international asparagus researchers, growers and industry representatives. This poster presentation was a working poster display at the 12th International Asparagus Symposium held in Lima, Peru from October 29 to November 1, 2009. All participants at the symposium were asked to update and amend the 2005 data that was presented. The amended and updated data presented in this paper show a decrease of 30,176 ha in production area from 2005 to 2009 while domestic consumption increased 4%. Green spear production and fresh marketed asparagus increased to 62% and 78% respectively in 2009.

INTRODUCTION

The changes that occur in the world's asparagus production areas and spear utilization are difficult to monitor through government data bases because asparagus is considered a minor crop in most countries. From 1995 to 2007, large increases in production were seen in countries in the Southern Hemisphere and China and in countries with low labor rates where they can produce spears relatively cheaply and/or market their production during a higher priced market window in another country or hemisphere. Increased internal consumption and higher market prices have helped to stabilize the production in the countries with long histories of asparagus production, although increased imports and higher production costs in these countries has negatively affected some production areas. The production and international movements of fresh, frozen and canned asparagus are inter-related and dependent upon the consumption and production and production periods of the various countries.

Previous reports on the development of the international asparagus industries have relied upon the authors first hand knowledge of changes that have occurred in this industry (Nichols, 1990 and Nigh, 1999). Updated data of the estimates of the areas of asparagus spear production, the periods of production and the utilization of the spears that were collected in this manner have been published by the author in the proceeding of the 9th, 10 and 11th International Asparagus Symposium (Benson 1999, 2002 and 2008).

MATERIALS AND METHODS

The author presented the 2005 World asparagus production estimates collected at the 11th International Asparagus Symposium, in poster form, the numbers of hectares in each country that is known to have asparagus production, the areas are further estimated as to the changes that are taking place in each country, i.e., areas increasing, decreasing or stable and the spear type harvested, white or green, is presented in Table 2. Table 3 contains the estimates on the percent of production as white or green spears. Percents of spears used for fresh, canned or frozen spear markets are found in Table 4 and the percent of spears consumed in the domestic market or exported are presented in Table 5. The time during which there is any marketable spear production is found in Table 6 as the spear production periods for each country.

The above 2005 data was presented in a poster display at the 12th International Asparagus Symposium as a working display. All of the participants attending this symposium were invited to update and amend the data that was presented so that any changes in areas and spear type or utilization could be corrected prior to publishing this paper. The 2005 and the 2009 amended data are included in this paper. The data on the separation of the worlds asparagus production by continents (Table 1) was calculated from the information in the Tables 2, 3, 4 and 5.

Data for the countries of Austria, Australia, and the Philippines was provided by “Aceera”, Asperge Centrum, following the Euro Asper Symposium held in Coventry, UK on March 24, 2010. The data for countries which did not have participants at the 12th IAS was collected by the author from scientists, growers and grower organizations. Those countries that has previously reported asparagus production in the 2005 update but did not contribute data for the 2009 update to are listed in the 2005 data sections of the tables, but without any data in 2009 update sections in the tables.

RESULTS AND DISSCUSSION

There are at least 62 asparagus producing countries in the world with an estimated total area of 195,819 hectares (Table 1). With the exception of 10 countries, all of the asparagus producing countries are estimated to have either a stable production area or an increasing production area (Table 2). The countries with stable or increasing areas are assumed to be so due to continued or increased consumption of either white or green asparagus for internal markets or for export.

The 195,819 ha production area reported in the 2009 data in the asparagus industries throughout the world shows a loss 30,176 ha production since 2005. This reduction is the result of the worldwide economic depression that occurred from 2007 though 2009. The largest decrease in area (23,000 ha) was found in China's asparagus production area was caused primarily by the decline in the consumption of exported canned white asparagus to the European countries. The Untied States, Spain, the Philippines and Australia all showed losses of production areas. Peru and Mexico however, have increased their production areas to meet the continued demand from the countries they export to.

Table 1 shows significant changes in green and white spear production and the utilization of spears. In 2009 world spear production was 62% green and 78% of the

production was marketed as fresh asparagus, up from 2005 when 57% was green production and 65% was marketed fresh spears. Canned and frozen spear utilization dropped from 17% canned and 18% frozen in 2005 to 13% canned and 9% frozen in 2009. Domestic consumption of asparagus increased from 2005 to 2009 by 4%, (53% to 57%) and, conversely, worldwide export percentages decreased to 43% in 2009 from the 2005 percentage of 47%.

The data that was collected in this working presentation gives us an appreciation of the complexities in the inter-relationships between the consumption and production of asparagus by countries (Tables 2, 3, 4 & 5). For example, the larger producing countries both consume and export asparagus and the spears that are consumed in these countries are produced by that same country or by other countries that can either produce asparagus cheaper or produce during a period of non-production by the consuming country. The spears that are exported, rather than consumed, are sold for more than they can be sold for in their own internal market, i.e., USA shipments to Europe and Chinese and Peruvian asparagus shipments of canned white asparagus to Western Europe.

Those countries with relatively small areas of asparagus production are also those countries with developing economies and are primarily exporting their production. In most cases the asparagus spear production in the exporting countries is during a period when the importing country has little or no asparagus production. Many of the southern hemisphere and equatorial countries can produce asparagus during periods of low production in the northern hemisphere (Table 6). These countries have found that the exportations of fresh asparagus have been more profitable than either canned or frozen asparagus, (Tables 4 & 5).

In the last four years there have been some effects of political or social activities in asparagus production. In China, a government directive to produce more green asparagus for fresh market export and for increasing internal consumption has altered the production areas of both green and white spear production. The increase the Chinese in fresh market green asparagus production for export to Japan has impacted the fresh market green exports of California, New Zealand, Australia and the Philippines to Japan. As the infrastructures of countries improve, the author anticipates a movement toward more fresh market production of both green and white spears for export and internal consumption.

Prior to 2005, most asparagus was consumed as white spears in the western European countries. While white spear production continues to be predominant in European countries, green spear production for both export and domestic consumption has increased 5% globally. The western hemisphere is primarily a green spear consuming area (Table 3). Peru produced 65 percent of its asparagus as white spears in 1997, but only 17 percent in 2009 for export to Western Europe. As production costs increase for white spear production in the western European countries an anticipated increase is expected in the production of green spears and also an increase in imported fresh white spears from the eastern European countries.

Literature Cited

- Benson, B. L. , 1999. World asparagus production areas and periods of production. Proc. of 9th Int. Asparagus Symp. Ed. B. Benson. Acta Hort. 479: 43-50.
- Benson, B. L. , 2002. Update of the world's asparagus production areas ,spear utilization and production periods. Proc. of 10th Int. Asparagus Symp. Ed. A. Uragami. Acta Hort. 589: 33-40.
- Benson, B. L. , 2008. 2005 update of the world's asparagus production areas spear utilization,yields and production period. Proc. of 11th Int. Asparagus Symp. Ed. J.H. Mulder et al. Acta Hort. 776: 495-507.
- Nichols, M.A., 1990. Asparagus-the world scene. , Proc. of 7th Int. Asparagus Symp. Ed. A. Falavigna et al. Acta Hort. 271: 25-31.
- Nigh Jr., E.L., 1999. The explosion of new production world wide and what it means. Proc. of 9th Int. Asparagus Symp. Ed. B. Benson. Acta Hort. 479:11-15

Table 1. 2009 total areas by continent and the percentages and areas within continents of the white and green spear production, the fresh, canned or frozen spear utilization and the exported and domestic consumption.

	Total HECTARES	% of WORLD Hectares	% WHITE Hectares	% GREEN Hectares	% FRESH Hectares	%CANNED Hectares	% FROZEN Hectares	% EXPORT Hectares	%DOMESTIC Hectares
ASIA	69462	35.5	41	59	71	15	14	31	69
		69462	28672	40790	49455	10317	9690	21758	47704
EUROPE	56198	28.7	70	30	91	6	3	19	81
		56198	39544	16654	51128	3450	1620	10816	45382
NORTH AMERICA	33965	17.3	0	100	89	5	5	57	43
		33965	0	33965	30353	1806	1806	19207	14758
SOUTH AMERICA	31875	16.3	15	85	56	31	13	94	6
		31875	4917	26958	17875	9940	4060	29841	2034
AFRICA	2080	1.0	44	56	83	17	0	57	43
		2080.0	906	1174	1734	346	0	1176	904
AUSTRALIA & NEW ZEALAND	2240	1.1	4	96	90	8	2	56	44
		2240	86	2153	2014	175	50	1246	993
TOTALS	195,819		38	62	78	13	9	43	57
			74125	121694	152559	26034	17226	84044	111775

Table 2. World's asparagus production areas, changes in production area and average yields
per hectare in 2009 and 2005.

COUNTRIES	Change in Area	AVE. YIELD Kgs./Ha	HECTARES	Change in Area	AVE. YIELD Kgs./Ha	HECTARES
	2009	2009	2009	2005	2005	2005
ASIA						
China	down	12,000	57,000	up	8,000	80,000
India				up	3,500	50
Indonesia	up	10,000	200	up	3,000	150
Israel	up	4,000	50	up	3,800	25
Iran	up	3,000	1,000	stable	1,430	700
Japan	stable	5,000	6,500	stable	3,700	6,800
Korea	up	7,000	60	up	3,000	30
Malaysia	up	4,500	100	stable	4,500	100
Pakistan				up	1,500	10
Philippines	down	13,900	536	up	4,900	2,800
Sri Lanka	up	1,000	6			
Taiwan	down	7,000	1,100	down		1000
Thailand	up	11,500	2,840	up	15,000	2,200
Turkey	up	4,200	60	up	4,200	30
Vietnam	up	4,500	10			
Total			69,462			
EUROPE						
Austria	up	5,200	475	stable	6,000	350
Belgium				stable	4,600	300
Bugaria				stable	5,200	200
Cyprus				stable	4,000	250
Czech Rep.				up	6,000	180
Denmark				stable	2,800	70
France	stable	5,000	7,000	stable	3,500	7,000
Germany	stable	6,200	22,000	up	6,000	20,000
Greece	stable	3,700	4,280	down	6,000	4,500
Hungary				up	5,000	1,000
Italy	stable	6,775	6,000	stable	5,300	6,700
Lithuania	up	3,000	5			
Moldova	up	3,500	10			
Netherlands	up	6,120	2,450	stable	8,000	2,350
Norway				up	3,500	20
Poland	stable	3,000	1,500	up	3,000	1,000
Portugal				stable	4,200	200
Romania				stable	4,00	50
Slovakia				up	6,000	45
Slovinia				up	6,000	250
Spain	down	6,500	11,000	stable	4,500	15,000
Switzerland				down		100
United King.	up	3,200	1,478	up	3,000	1,000
Total			56198			

Table 2. World's asparagus production areas, changes in production area and average yields

per hectare in 2009 and 2005. (Continued)

COUNTRIES	Change in Area	AVE. YIELD Kgs./Ha	HECTARES	Change in Area	AVE. YIELD Kgs./Ha	HECTARES
	2009	2009	2009	2005	2005	2005
N. AMERICA						
Canada (Ont.	down	4,000	1200	stable	3,000	2,850
Costa Rica	stable	3,500	50	stable	3,500	50
El Salvador				stable	3,500	50
Guatemala	down	3,000	15	stable	4,000	100
Honduras				stable	4,000	20
Mexico	up	4,500	18,300	up	3,700	15,825
Nicaragua				stable	3,500	210
Panama				stable	3,500	40
U.S.A.	down	3,660		down	3,650	20,000
California	down	3,250	5,400	stable	4,000	9,000
Washington	down	4,800	4,000	down	5,000	5,000
Michigan	down	3,200	5,000	stable	2,000	6,000
Total			33965			
S. AMERICA						
Argentina	down	3,400	1,200	stable	3,780	1,850
Brazil				stable		600?
Chile	stable	5,000	2,700	stable	4,500	4,000
Colombia	stable	4,700	850	stable	4,700	850
Ecuador	down	3,500	300	up	3,500	400
Peru	up	9,500	26,800	stable	14,100	18,000
Uruguay	down	5,000	5	up	4,000	100
Venezuela	up	4,000	20			
Total			31,875			
AFRICA						
Egypt	stable	3,500	150	up	4,000	100
Kenya	up	3,500	200			
Morocco	up		650	stable	?	600
South Africa	stable	3,580	1080	down	3,500	2,000
Tunisia				stable	3,500	80
Total			2080			
AUSTRALIAN AREA						
Australia	down	6,100	1604	stable	5,000	4,000
New Zealand	Stable	4,500	630	down	3,700	1,200
Vanuatu	up	4,000	5			
Total			2239			

Table 3. Percentage of white and green spear production in 2009 and 2005.

	2009	2009	2005	2005
COUNTRIES	WHITE	GREEN	WHITE	GREEN
ASIA				
China	50	50	50	50
India			90	10
Indonesia	10	90	10	90
Israel				
Iran				
Japan	1	99	1	99
Korea	0	100	0	100
Malaysia	1	99	0	100
Pakistan	0	100	0	100
Philippines	0	100	0	100
Sri Lanka				
Taiwan	0	100	95	5
Thailand	2	98	0	100
Turkey	50	50	50	50
Vietnam	0	100	0	0
EUROPE				
Austria	97	3	97	3
Belgium	99	1	99	1
Bulgaria	100	0	100	0
Cyprus	100	0	100	0
Czech Rep.	100	0	100	0
Denmark	100	0	100	0
France	85	15	85	15
Germany	96	4	96	4
Greece	99	1	99	1
Hungary	99	1	99	1
Italy	20	80	15	85
Lithuania				
Moldova				
Netherlands	98	2	97	3
Norway			0	100
Poland	95	5	95	5
Portugal	90	10	90	10
Romania	100	0	100	0
Slovakia	100	0	100	0
Slovinia	40	60	40	60
Spain	25	75	70	30
Switzerland	35	65	35	65
United King.	0	100	0	100

Table 3. Percentage of white and green spear production in 2009 and 2005. (Continued)

	2009	2009	2005	2005
COUNTRIES	WHITE	GREEN	WHITE	GREEN
N. AMERICA				
Canada (Ont.)	0	100	1	99
Costa Rica	0	100	0	100
El Salvador	0	100	0	100
Guatemala	0	100	0	100
Honduras	0	100	0	100
Mexico	0	100	0	100
Nicaragua	0	100	0	100
Panama	0	100	0	100
U.S.A.	0	100	0	100
California	0	100	0	100
Washington	0	100	0	100
Michigan	0	100	0	100
S. AMERICA				
Argentina	30	70	30	70
Brazil	80	20	80	20
Chile	0	100	0	100
Colombia	0	100	0	100
Ecuador	0	100	0	100
Peru	17	83	30	70
Uruguay	20	80	20	80
Venezuela	0	100		
AFRICA				
Egypt	70	30	50	50
Kenya	0	100		
Morocco	75	25	75	25
South Africa	29	71	30	70
Tunisia				
AUSTRALIAN AREA				
Australia	5	95	5	95

Table 4. Percentages of spears utilized as fresh, canned or frozen in

	2009	2009	2009	2005	2005	2005
COUNTRIES	FRESH	CANNED	FROZEN	FRESH	CAN	FROZ
ASIA						
China	65	18	17	38	30	32
India	100	0	0	100	0	0
Indonesia	100	0	0	100	0	0
Israel	100	0	0	100	0	0
Iran	100	0	0	100	0	0
Japan	100	0	0	100	0	0
Korea	100	0	0	100	0	0
Malaysia	100	0	0	100	0	0
Pakistan	100	0	0	100	0	0
Philippines	100	0	0	100	0	0
Sri Lanka	100	0	0			
Taiwan	100	0	0			
Thailand	98	2	<1	100	0	0
Turkey	100	0	0	100	0	0
Vietnam	100	0	0			
EUROPE						
Austria	100	0	0	100	0	0
Belgium	100	0	0	100	0	0
Bulgaria	100	0	0	100	0	0
Cyprus	100	0	0	100	0	0
Czech Rep.	100	0	0	100	0	0
Denmark	100	0	0	100	0	0
France	100	0	0	100	0	0
Germany	99	0	1	99	0	1
Greece	100	0	0	100	0	0
Hungary	100	0	0	100	0	0
Italy	95	0	5	99	0	1
Lithuania	100	0	0			
Moldova	100	0	0			
Netherlands	100	0	0	100	0	0
Norway	100	0	0	100	0	0
Poland	90	10	0	90	9	1
Portugal	100	0	0	100	0	0
Romania	100	0	0	100	0	0
Slovakia	100	0	0	100	0	0
Slovinia	100	0	0	100	0	0
Spain	60	30	10	70	20	10
Switzerland	100	0	0	100	0	0
United King.	100	0	0	100	0	0

2009 and 2005.

Table 4. Percentages of spears utilized as fresh, canned or frozen in 2009 and 2005. (Cont.)

	2009	2009	2009	2005	2005	2005
COUNTRIES	FRESH	CANNED	FROZEN	FRESH	CAN	FROZ
N. AMERICA						
Canada (Ont.	99	0.5	0.5			
Costa Rica	100	0	0	100	0	0
El Salvador	100	0	0	100	0	0
Guatemala	100	0	0	100	0	0
Honduras	100	0	0	100	0	0
Mexico	100	0	0	100	0	0
Nicaragua	100	0	0	100	0	0
Panama	100	0	0	100	0	0
U.S.A.	100	0	0			
California	100	0	0	100	0	0
Washington	100	0	0	65	30	5
Michigan	28	36	36	20	40	40
S. AMERICA						
Argentina	96	2	2	75	15	10
Brazil						
Chile	20	0	80	25	0	75
Colombia	100	0	0			
Ecuador	100	0	0	100	0	0
Peru	56	37	7	60	30	10
Uruguay	100	0	0	100	0	0
Venezuela	100	0	0			
AFRICA						
Egypt	100	0	0	100	0	0
Kenya	100	0	0			
Morocco	100	0	0	100	0	0
South Africa	68	32	0	55	45	0
Tunisia	100	0	0	100	0	0
AUSTRALIAN AREA						
Australia	95	5	0	95	5	0
New Zealand	77	15	8	40	55	5
Vanuatu	100	0	0			

Table 5. Percentages of production exported or used domestically in 2009 and 2005.

COUNTRIES	2009 Export	2009 Dom.	2005 Export	2005 Dom.
ASIA				
China	35	65	55	45
India	0	100	0	100
Indonesia	0	100	25	75
Israel	0	100	0	100
Iran				
Japan	1	99	1	99
Korea	0	100	0	100
Malaysia	25	75	0	100
Pakistan	0	100	0	100
Philippines	98	2	98	2
Sri Lanka				
Taiwan	0	100		
Thailand	42	58	70	30
Turkey	0	100	0	100
Vietnam	0	100		
EUROPE				
Austria	5	95	5	95
Belgium	6	94	6	94
Bulgaria				
Cyprus	50	50	50	50
Czech Rep.	100	0	100	0
Denmark	0	100	0	100
France	10	90	10	90
Germany	2	98	1	99
Greece	99	1	95	5
Hungary			80	20
Italy	10	90	5	95
Lithuania	0	100		
Moldova	0	100		
Netherlands	19	81	40	60
Norway	0	100	0	100
Poland	70	30	67	33
Portugal	80	20	80	20
Romania	0	100	0	100
Slovakia	100	0	100	0
Slovinia	0	100	0	100
Spain	30	70	30	70
Switzerland	9	91	9	91
United King.	0	100	0	100

Table 5. Percentages of production exported or used domestically in 2009 and 2005.
(Continued)

	2009	2009	2005	2005
COUNTRIES	Export	Dom.	Export	Dom.
N. AMERICA				
Canada (Ont.)	23	77		
Costa Rica	50	50	50	50
El Salvador	100	0	100	0
Guatemala	95	5	95	5
Honduras	100	0	100	0
Mexico	98	2	95	5
Nicaragua	100	0	100	5
Panama	0	100	0	100
U.S.A.				
California	17	83	17	83
Washington	1	100	6	94
Michigan	0	100	0	100
S. AMERICA				
Argentina	30	70	50	50
Brazil	0	100	0	100
Chile	70	30	70	30
Colombia	90	10	90	10
Ecuador	98	2	100	0
Peru	99	1	99	1
Uruguay	0	100	0	100
Venezuela	0	100		
AFRICA				
Egypt	95	5	80	20
Kenya	100	0		
Morocco	100	0	98	2
South Africa	17	83	60	40
Tunisia	80	20	80	20
AUSTRALIAN AREA				
Australia	60	40	70	30
New Zealand	45	55	50	50
Vanuatu	0	100		

Table 6. Periods of spear production in asparagus producing countries.

COUNTRIES	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
ASIA												
China	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
India		xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx						
Indonesia	xxxxxx	xxxxxx	xxxxxx								xxxxxx	xxxxxx
Israel			xxx	xxxxxx	xxxxxx	xxx						
Iran			xxx	xxxxxx	xxxxxx	xx						
Japan	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	x	xxxxxx
Korea			xx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx		
Malaysia	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Pakistan				xxxxxx	xxxxxx	xxxxxx						
Philippines	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Sri Lanka												
Taiwan				xxxxxx	xxxxxx	xxxxxx		xxxxxx	xxxxxx	xxxxxx		
Thailand	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Turkey				xxxxxx	xxxxxx	xxxxxx						
Vietnam	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
EUROPE												
Austria				xxx	xxxxxx	xxx						
Belgium				xxx	xxxxxx	xxx						
Bulgaria			xxx	xxxxxx	xxxxxx	xxxx						
Cyprus			xxx	xxxxxx	xxxxxx	xxx						
Czech Rep.				xxxxxx	xxxxxx	xxxxxx	xx					
Denmark					xxxxxx	xxxxxx	xxx					
France			xxxx	xxxxxx	xxxxxx	xxxxxx						
Germany			x	xxxxxx	xxxxxx	xxxxxx						
Greece		xx	xxxxxx	xxxxxx	xxxxxx	xx						
Hungary				xxxxxx	xxxxxx	xx						
Italy		xxxx	xxxxxx	xxxxxx	xxxxxx							
Lithuania				xxxxxx	xxxxxx	xx						
Moldova				xxxxxx	xxxxxx	xx						
Netherlands		xxxxxx	xxxxxx	xxxxxx	xxxxxx	xx						
Norway				xx	xxxxxx	xxxx						
Poland				x	xxxxxx	xxxx						
Portugal			xxxxxx	xxxxxx	xxxxxx	xxxxxx						
Romania			xx	xxxxxx	xxxxxx	xxxxxx						
Slovakia				xxx	xxxxxx	xxxxxx						
Slovenia	xxxxxx			xxxxxx	xxxxxx	xx						
Spain		xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	x		x	xxxxxx	x	
Switzerland				xxxxxx	xxxxxx							
United King.		xx	xxxxxx	xxxxxx	xxxxxx	xxx						

Table 6. Periods of spear production in asparagus producing countries. (Continued)

[illegible]