A chapter from

Adaptation of Chickpea in the West Asia and North Africa Region

Edited by

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5.8. Current Status of Chickpea in WANA and South Asia: Analysis of Trends in Production, Consumption, and Trade

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Introduction

World production of pulses is estimated at 58 million t (1989–91 average). Chickpea ranks second among the pulses. India is the world's leading producer of chickpea with 68% of the total production, followed by Turkey (with about 11%) and Pakistan (with 8%).

Despite significant gains in the world pulse production during the last 2 decades (1.9% annual growth rate), chickpea production has grown only slowly (0.3% growth rate). Yields have risen by only 0.08 t ha^{-1} worldwide and the area under chickpea has been virtually stagnant. It accounted formerly for 15% of the world pulse production (1971–73), compared with 12% (7.1 million t) at present (Table 5.8.1) (FAO 1992a).

WANA and South Asia (i.e. India, Pakistan, Myanmar, Bangladesh, and Nepal) account for more than 90% of the world chickpea production and area. This section examines the trends in production, area, and yield of chickpea over the last 20 years and discusses the importance of supply and demand constraints to chickpea production in these regions.

Trends in Production, Area, and Yield in WANA

Pulse production in the WANA region increased by 1.5 million t (53% rise) during the last 2 decades (Table 5.8.1). Almost half of the gain (0.7 million t) can be attributed to increases in chickpea production. During 1971–73, chickpea represented 16% of the total pulse production in WANA. By 1989–91, it had risen to 27%, indicating the crop's increasing importance in the region.

Trends in chickpea production, area, and yield for WANA between 1971 and 1991 are shown in Figure 5.8.1. An almost secular rise in production is observed for the WANA region. The overall compound growth rate in production is 5.6% per year. The growth rate during the last 10 years is even higher (8.3% per year). Regional averages,

Table 5.8.1 Production of total pulses and chickpea in South Asia, WANA, and the world

	Pulses			Chickpea			Chickpea share of total pulse production (%)		
	Production ('000 t)			Production ('000 t)					
Year	South Asia	WANA	World	South Asia	WANA	World	South Asia	WANA	World
1971–73	12547	2753	42537	5615	438	6474	44.7	15.9	15.2
1981–83	13320	3348	44948	5371	607	6266	40.3	18.1	13.9
1989–91	15371	4215	58030	5562	1115	7116	36.2	26.4	12.3

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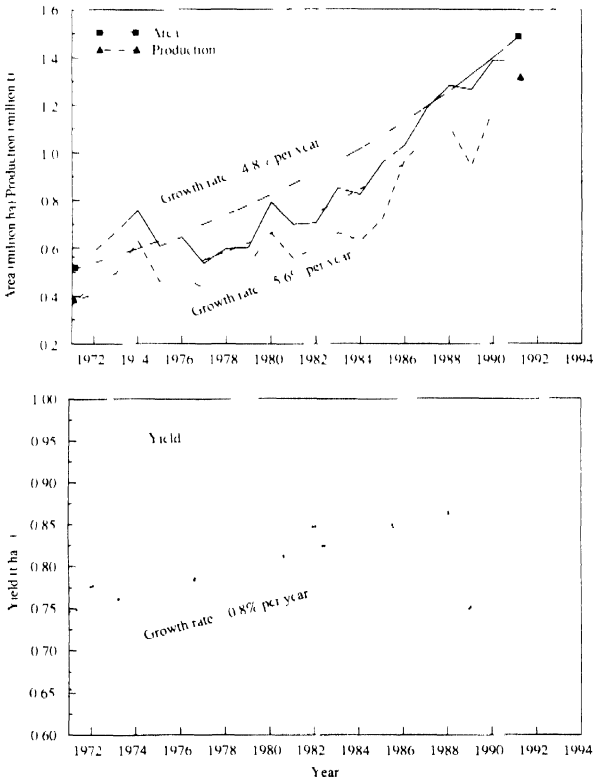

Figure 5.8.1 Trends in chickpea area, production, and yield in WANA, 1971–91

however mask deviations from this trend by several WANA countries (e.g. Ethiopia, Syria, Algeria, Iraq, and Sudan) as they are strongly influenced by the performance of Turkey. Turkey accounts for 65% of the production in the region and 70% of the cultivated area under chickpea.

Growth rates in production, area, and yield for WANA are given in Table 5.8.2. Turkey had an impressive 10% compound growth rate from 1971 to 1991 in production which rose from 170 000 t to 800 000 t during the last 2 decades. This growth is nearly equivalent to the net gain in chickpea production for the entire WANA region. Production increases in Turkey have come about mainly through expansion in chickpea area. Research and extension efforts aimed at better utilization of fallow areas have been highly successful. The area under fallow fell by 37% since 1982, chickpea accounting for about a third of this (Section 2.5). Turkey's phenomenal growth has also been spurred on by a strong demand from importers and an attractive export incentive policy of the government. Other WANA countries that registered positive—if less impressive—growth rates in production are: Lebanon (5.9%), Egypt (4.7%), Tunisia (3.6%), Iran (2.5%), and Morocco (2.3%). Sudan (–1.6%), Iraq (–1.3%)[1], and Ethiopia (–0.6%) however had negative growth rates in production. Ethiopia is the second largest producer of chickpea in WANA (115 000 t annually), so its failure to increase production is of some importance to the WANA region.

Despite good growth rates in production for WANA, production variability is high. The coefficient of variation (CV) in production is 17%[2]. Most of this variability can be attributed to large year-to-year variability in area (CV of 15%). Yields fluctuate significantly less (CV

1. Compound annual growth rate for chickpea production in Iraq between 1970 and 1980 (i.e. prior to the war) was 8.4%.
2. Calculated after detrending.

Table 5 8 2 Chickpea area, production, yield, and compound growth rates in WANA and South Asia

	1989–91 average			Compound growth rates (1971–91)		
Country	Area (000 ha)	Production (000 t)	Yield (t ha^{-1})	Area (000 ha)	Production (000 t)	Yield (t ha^{-1})
Turkey	850	801	0 94	11 0**	10 0**	−1 1**
Ethiopia	130	114	0 88	1 7**	0 6	1 1**
Morocco	73	55	0 76	1 8	2 3	4 2*
Iran	120	49	0 41	3 9**	2 5**	1 4**
Tunisia	55	30	0 54	1*	3 6	1 5
Syria	49	26	0 52	1 8	1 1	0 7
Algeria	50	18	0 36	4 3**	0 9	3 3**
Egypt	6	11	1 83	4 5**	4 7**	0 1
Lebanon	4	5	1 25	3 4**	5 3**	−2 5**
Iraq	5	3	0 60	2 0	−1 3	0 7
Jordan	2	1	0 57	1 8	1	
Sudan	2	1	0 67	−1 9	−1 6	0 3
WANA	1346	1115	0 83	4 8**	5 6**	0 8**
India	6897	4847	0 70	0 7**	−0 4	0 3
Pakistan	1023	534	0 52	0 1	−0 5	−0 4
Myanmar	129	97	0 75	0 6	3 9**	3 4**
Bangladesh	102	67	0 66	0 6	0 1	0 5
Nepal	28	17	0 61	−1 3*	1 2	0 1
South Asia	8180	5562	0 68	−0 6**	0 2	0 5
World	10078	7116	0 71	−0 2	0 3	0 5*

** Significant at $P = 0.05$
* Significant at $P = 0.10$
1 Data not available

Source: FAO (1992a)

of 6%). Because chickpea is primarily spring-sown, the decision to sow the crop is made with reasonably good information about moisture availability. When winter rains are insufficient to sustain reasonable crop yields, farmers leave their land fallow. On the other hand, winter rainfall in this region being highly variable, the CV values are high for winter chickpea area.

Growth rates in chickpea area for the WANA region match closely those for production, suggesting that the source of growth in production lies in area expansion and not yield growth. The area under chickpea in WANA has more than doubled in the last 20 years and now exceeds 1.3 million ha (Fig. 5.8.1). Again, this is largely due to the impact of Turkey, which registered an 11% annual growth rate in area from 1971 to 1991. Area expansion through fallow replacement is likely to continue, but at a slower rate. Substantial increases in chickpea area and production are projected in Turkey's Sixth 5-Year Plan (Section 2.5). The absolute growth in area under chickpea cultivation for Turkey between 1971–73 and 1989–91 (700,000 ha) nearly matches that for WANA, which indicates that the rest of WANA neither gained nor declined appreciably in area. Five countries in particular do not follow the overall WANA trend. Table 5.8.2 shows that Ethiopia and Morocco, the second and third largest producers of chickpea in WANA, as well as Iraq, Jordan, and Sudan had negative growth rates in area. The reasons for the decline vary between countries, but generally, chickpea has become less competitive than other crops. High production costs (principally labor for hand harvesting) and lack of appropriate machinery are the most cited economic reasons for this (Sections 2.2, 2.3, and 2.4).

Chickpea yields in WANA during the last 2 decades, despite considerable fluctuation, show a positive trend (Fig. 5.8.1). Yields in WANA rose from 0.77 to 0.85 t ha^{-1} between 1971–73 and 1989–91. Turkey, though, had a negative growth rate in yield (−1.1% per year): the yields fell from 1.10 to 0.94 t ha^{-1} between 1971–73 and 1989–91. Negative

yield trends were reported also from several other WANA countries including Algeria (–3 3%) Iran (–1 4%), and Syria (–0 7%) Yet at the regional level the yield trend was positive even though yields in these four countries which together represent 80% of chickpea production in WANA—fell because yields in Turkey, even in 1989–91 were still considerably higher than the average for WANA The yield was low in Turkey because chickpea cultivation was extended to fallows which are generally of much poorer quality than existing cultivated land Kusmenoglu and Meyveci (Section 2 5) mention that much of the expansion of cultivation through fallow replacement has been on marginal lands in eastern and central Turkey Farmers consider chickpea to be a crop well suited to stony steep and nutritionally poor soils

Trends in Production, Area, and Yield in South Asia

During the past 2 decades pulse production in South Asia rose from 12 4 to 15 4 million t (Table 5 8 1) Chickpea has added nothing to the growth in pulse production during this time Its production has in fact stagnated losing ground to other pulses in the region Whereas 20 years ago it represented 45% of the total pulse production it now represents only 36% Though South Asia remains the largest chickpea producer (with more than 87% in 1971–73) in the world its relative share is declining (78% in 1989–91) WANA produced less than 8% of the world s chickpea production 20 years ago compared with 16% today

Trends in chickpea production area and yield for South Asia between 1971 and 1991 are shown in Figure 5 8 2 Stagnant growth and large year to year fluctuations in production are evident, in sharp contrast to the rising trend in production observed for WANA Indeed from 1971 to 1981 production declined at a compound rate of 1 1%

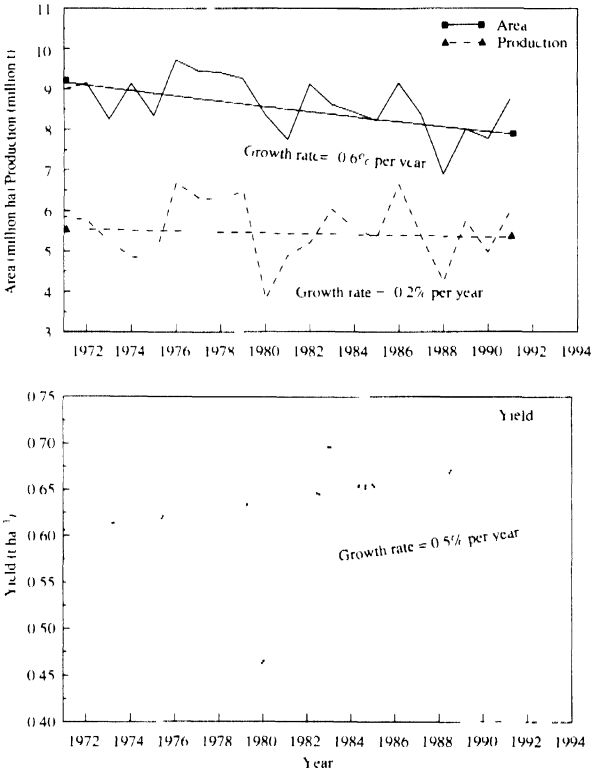

Figure 5 8 2 Trends in chickpea area, production, and yield in South Asia, 1971–91

per year in South Asia. Since 1981, growth rates are also negative but not significant. Variability in production is actually less in South Asia than in WANA (CV of 13 versus 16%). Whereas most of the production variability in WANA is due to year to year changes in area, the variability in South Asia can be attributed largely to that of yield. The CV for chickpea area in South Asia is only 6%; it is almost twice that for yield (11%).

In South Asia, chickpea is grown under relatively less favorable conditions (e.g., the drought environment in Pakistan and central/southern India, and the disease pressures in northern India), where farmers generally neither weed nor apply inputs. This results in significantly higher yield variability than that observed in the WANA region. Yield levels are quite different too for both the regions. Average yields in Turkey are about 1.0 t ha^{-1}; those of India (0.7 t ha^{-1}) and Pakistan (0.5 t ha^{-1}) are relatively low.

India dominates the chickpea production trend for South Asia. Thus, stagnant production in South Asia largely reflects the situation of India. Pakistan, the second largest producer in South Asia, and Nepal have similar trends of declining production. Only Myanmar shows positive growth rates in chickpea production (Table 5.8.2).

Chickpea area in South Asia fell by 620,000 ha between 1971–73 and 1989–91 (Fig. 5.8.2), in contrast to the 750,000 ha of additional land brought under chickpea cultivation in the WANA region. In India, chickpea area was lost to other crops such as wheat and mustard/rape. Pakistan only marginally increased its area under chickpea during these two periods. The overall declining trend in chickpea area in South Asia is likely to continue barring any major breakthrough in chickpea yield to enhance its competitiveness.

Though chickpea yields have fluctuated dramatically in South Asia, positive (but nonsignificant) growth rates have been observed. Yields rose from 0.64 to 0.68 t ha^{-1} between 1971–73 and 1989–91, probably due to good monsoons and availability of improved technology—both more evident in the 1980s. From 1971 to 1981, yield rate was actually negative (but insignificant). Only during 1981–91, a period with just two unfavorable monsoons, did it become positive. In addition, anecdotal evidence suggests that farmers in India are beginning to adopt improved and wilt resistant cultivars. The Socioeconomics and Policy Division at ICRISAT is presently trying to document the spread of these varieties. Besides India, only Myanmar has a positive (and significant) growth rate in chickpea productivity in South Asia.

Chickpea in India. Past Trends and Present Status

A closer look at the status of chickpea in India is relevant since world area, production, and yield of chickpea are still dominated by the situation of its largest producer. Trends observed in India will moreover provide important insights for prospects of chickpea elsewhere (e.g., in the WANA region).

Chickpea Area

Between 1971–73 and 1988–89, chickpea area declined by 1.7 million ha in the traditional chickpea growing states of northern India: Haryana, Punjab, Rajasthan, Uttar Pradesh, and Bihar (Table 5.8.3). The states that increased the chickpea area were the central and southern states of India, including Madhya Pradesh, Gujarat, Orissa, Maharashtra, Andhra Pradesh, and Karnataka, which added 880,000 ha to their total chickpea growing area. The latter three states represent new production environments for chickpea. These changes represent a significant shift in the production area in India. While 70% of India's chickpea area was concentrated in the five northern states in 1971, chickpea area in the central/southern states is now nearly equal to that in the north (Fig. 5.8.3).

Table 5 8 3 Area and yield for selected crops in North, Central, and South India

Crop	Region	Area ('000 ha) Average of 1971–73	Average of 1988–89	Absolute change	Yield (t/ha) Average of 1971–73	Average of 1988–89	Absolute change
Chickpea	North[1]	5072	3362	−1660	0.67	0.77	0.15
	Central	1771	2792	521	0.65	0.68	0.03
	South[2]	868	907	334	0.82	0.82	0.70
	India	7547	6653	−894	0.61	0.70	0.10
Wheat	North	12907	17480	4573	1.45	2.49	1.03
	Central	3894	4069	174	0.89	1.39	0.50
	South	1226	1115	−111	0.43	1.01	0.72
	India	19062	23783	4721	1.28	2.18	0.91
Rape	North	2812	3233	421	0.48	0.90	0.42
Mustard	Central	277	728	455	0.45	0.93	0.54
	India	3463	4911	1448	0.48	0.87	0.39
Groundnut	South	278	868	590	1.24	1.51	0.27
(postrainy)	**India**	643	1416	773	1.39	1.46	0.07
Sunflower	South	61	1214	1153	0.84	0.37	0.17
	India	157	1263	1106	0.68	0.38	−0.30
Cotton	Central	2497	1700	−796	0.15	0.20	0.05
	South	3724	3936	212	0.08	0.15	0.06
	India	7684	7337	−347	0.42	0.71	0.29
Pigeonpea	Central	606	818	212	0.72	0.98	0.26
	South	1003	1755	752	0.43	0.51	0.08
	India	2472	3537	1065	0.08	0.77	0.09
Soybean	Central	17	1635	1618	0.82	0.84	0.02
	India	38	1934	1896	0.71	0.84	0.13
Coarse	Central	350	243	107	0.84	0.87	0.04
cereals	South	3767	3645	−122	0.37	0.47	0.10
(postrainy)	**India**	8606	6915	1691	0.56	0.72	0.16

1 Rajasthan, Bihar, Punjab, Haryana, and Uttar Pradesh
2 Madhya Pradesh and Gujarat
3 Andhra Pradesh, Karnataka, and Maharashtra

Source: Government of India (1970–91)

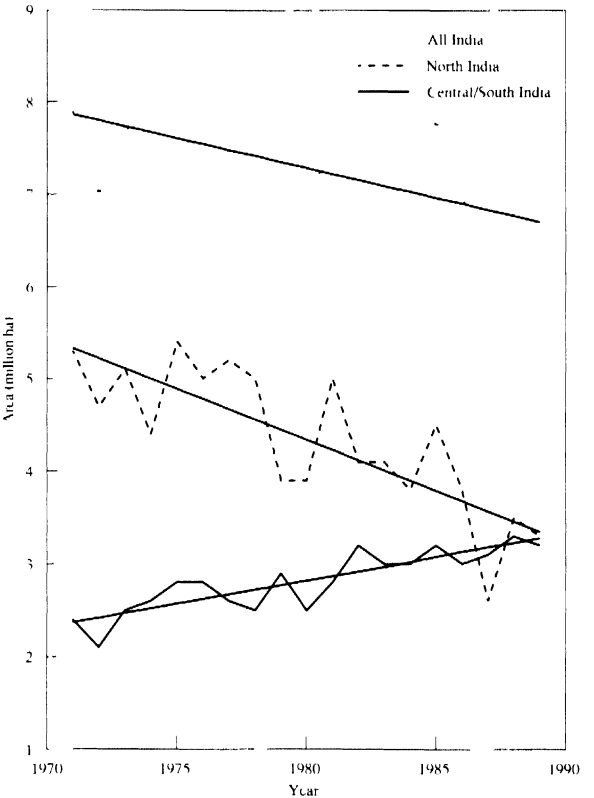

Figure 5 8 3 Trends in chickpea area in India, 1971–89

The trend observed in the northern states is likely to continue due to the substitution of chickpea by more profitable postrainy season crops. With the expansion of irrigation in the north (favoring high input crop technology) and the rapid advances in wheat productivity through research, chickpea's competitive position has weakened. As a consequence, wheat replaced chickpea in the most favorable areas. The area under wheat in the north increased from 12.9 to 17.5 million ha between 1971 and 1989. Chickpea was therefore relegated to the less favorable and more marginal environments. Yet in spite of this, chickpea producers in the north did remarkably well by actually *increasing* chickpea yields during the last 20 years from 0.63 to 0.77 t ha^{-1}.

The positive trend in chickpea area in the central/southern states is likely to continue since new desi and kabuli cultivars (e.g., short duration varieties well adapted to drought prone environments) and improved management practices (e.g., early sowing) are made available to farmers (Jagdish Kumar, ICRISAT, personal communication). The data in Table 5.8.3 indicate less substitution of wheat for chickpea in the central and southern states. Even here, however, wheat and other postrainy season crops have replaced chickpea in the more favorable areas. Farm level data from selected villages in central and peninsular India confirm that chickpea is losing its position to competing crops like wheat and postrainy season sorghum (Jodha and Subba Rao 1987).

Competitiveness

Perceptions about profitability drive crop choices. Changes in per unit production costs (i.e., technical change) and relative prices together determine the relative profitability or the competitiveness of a crop over time. An analysis of growth rates in trends for yield (as a proxy for technical change) and product prices may provide some insight for the shifts in area under various crops in India.

Time series data from 1970 to 1989 for yield, area, and real prices for wheat, rape/mustard, and chickpea in India are used to examine the impact of yield and relative prices on area changes in these crops[1]. Figure 5.8.4 shows the linear trends estimated for each of these variables. In the case of wheat, a higher growth rate in yield (3.1 percent) more than offsets the declining trend in real prices (−2.6 percent), translating into a 1.4 linear increase in area sown to wheat. Chickpea, despite a strong positive trend in price, shows a decline in area largely because its yield growth has significantly lagged that of other crops.

Rape/mustard have the fastest growth in area due to a high growth rate in yield accompanied by a modest decline in real prices. A much more thorough analysis is required before the relative impacts of yield and prices on area can be separated out more definitively, but even this brief analysis provides evidence that chickpea is losing its competitiveness mainly because of inadequate gains in yield growth.

Consumption

With chickpea production having become virtually stagnant during the last 2 decades, imports negligible (except very recently), and population expanding at the rate of 2.1 percent (World Bank 1991), the per capita availability of chickpea in India has declined. Table 5.8.4 shows per capita availability of the five major pulses in India for two points in time. Per capita availability of pulses in India has declined by about 1.2 percent per year since 1970. This is almost exclusively because of chickpea (the major pulse food crop in India), which registered a steep 32 percent decline in per capita availability from 24 g day^{-1} to 16 g day^{-1}.

[1]

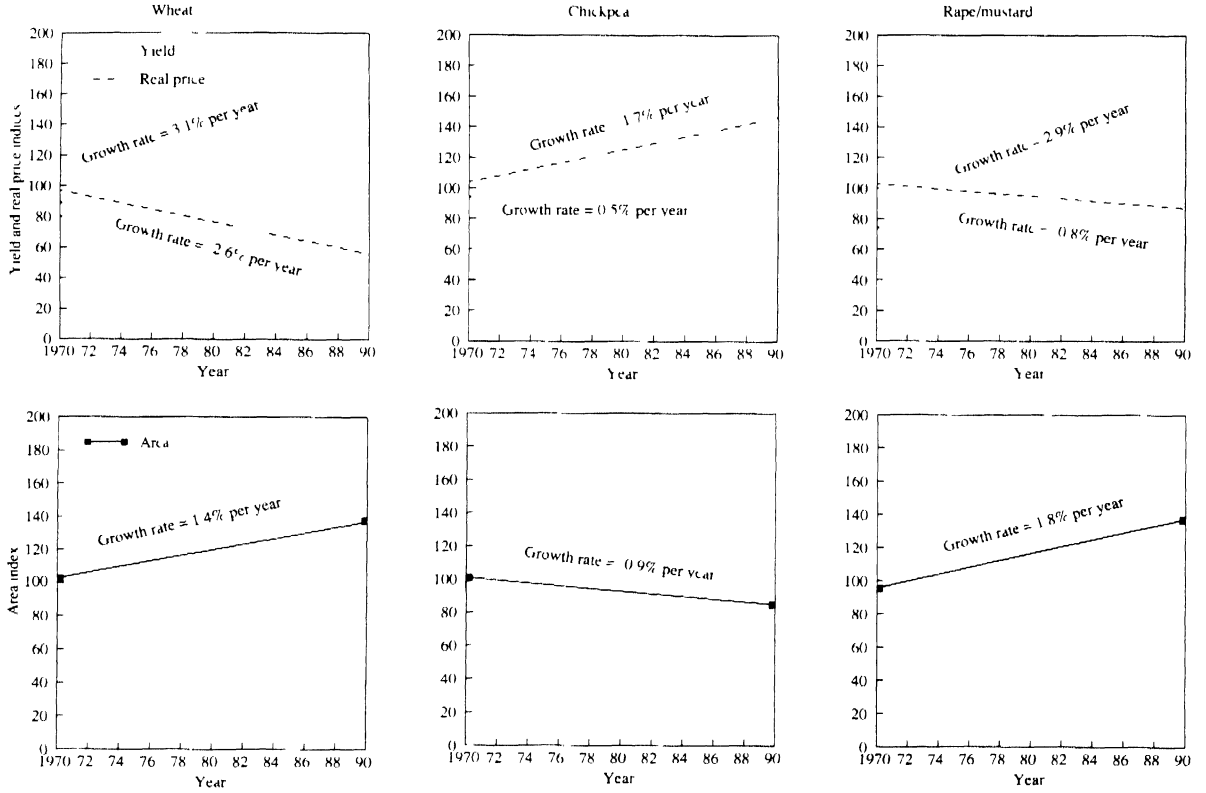

Figure 5 8 4 Trends in crop price, yield, and area indices in India, 1970–90 (base 1970=100)

The decline in production and per capita availability of chickpea in India accounts for the significant rise in its price. Real prices of chickpea increased at the rate of 1.9% per year throughout the 20 year period. However real prices of pigeonpea rose by 1.1% mung bean by 0.9% and lentil by 0.8% per year. These pulse crops maintained production levels high enough to increase (or at least sustain) per capita availability over the level of 1970 and still register significant increases in real prices. This suggests that the demand for chickpea has not been strong enough to push its prices higher or has not been sufficient to induce higher production to maintain the per capita consumption at 1970 levels. As a result of this consumers have shifted away from chickpea to other pulses and to other commodities such as livestock products. Also it is more efficient to increase supplies of pulses through the rainy season production of pigeonpea green gram and black gram by increasing the area than through postrainy season production of chickpea. This is due to strong competition from wheat and mustard/rape in areas where the expansion in irrigation and rapid technical change have favored these crops. Pigeonpea faces much less competition from low yielding and low value rainy season crops e.g. sorghum and pearl millet.

Further evidence of preference for other pulses by consumers can be seen from Table 5.8.5 where data on expenditure and price elasticities of demand for chickpea and other pulses are presented. These elasticities provide information on the change in the quantity demanded for a particular commodity as its price changes (price elasticities) and the income of consumers changes (expenditure elasticities). Expenditure elasticities for other pulses are higher than for chickpea in both rural and urban areas of India indicating that as incomes go up consumers spend a higher share of their income on pulses other than chickpea. Higher negative price elasticities are observed for chickpea indicating that consumers reduce their purchases of chickpea proportionately more than they do for other pulses for equivalent increases in price.

Table 5.8.4 Production, per capita availability, and price index for major pulses in India

	Production ('000 t)			Per capita availability (g day^{-1})				Real price indices (1970 – 100)			
	1970–72	1988–90	Change (%)	1970–72	1988–90	Change (%)	Growth rate (%) (1970–90)	1970–72	1988–90	Change (%)	Growth rate (%) (1970–90)
Chickpea	4939	4852	−2	24.3	16.4	−33	2.5**	101.4	173.3	71	1.9**
Pigeonpea	1831	2625	43	9.0	11.9	32	0.0	99.8	125.2	25	1.1**
Green gram[1]	595	1336	124	2.9	4.5	55	2.1**	112.2	150	34	0.9*
Black gram[1]	601	1553	158	3.0	5.2	42	2.9**	126.6	127.1	0	0.0
Lentil[1]	350	718	105	1.7	2.9	71	1.6**	120	155.6	30	0.8*
Total pulses	10940	13509	23	53.8	46	−15	1.2**	106	157	48	1.5**

** Significant at $P = 0.05$
* Significant at $P = 0.10$
1 1988–89 (2 year average only)

Source: Government of India (1970–91); Government of India (1990); FAO (various years) and FAO (1992b).

Table 5 8 5 Estimated mean expenditure elasticities (Expenditure η) and mean direct-price elasticities (Price η)

	Rural expenditure classes[1]					Urban expenditure classes[1]				
	1	2	3	4	5	1	2	3	4	5
Expenditure η										
Chickpea	0 499	0 790	0 471	0 469	0 073	1 262	0 992	0 254	0 067	0 013
Pulses	1 821	1 016	1 035	0 533	0 457	1 475	0 960	0 720	0 437	0 141
Price η										
Chickpea	1 033	1 611	0 806	1 058	0 203	2 898	2 894	1 014	1 002	0 153
Pulses	1 429	0 911	0 630	0 362	0 477	1 067	0 675	0 588	0 385	0 294

1 Based on a 1–5 scale where 1 = very poor and 5 = not poor

Source Murthy (1983)

However there are regions where demand for chickpea is very strong and will remain strong Nevertheless aggregate figures indicate a significant decline in per capita consumption of chickpea compared with other pulses with roughly similar price trends over time and, higher price elasticities and lower expenditure elasticities for chickpea than for other pulses

However, if alternative uses for chickpea could be developed and marketed, then this trend might change New production technology in chickpea, if adopted, can bring about significant gains in productivity, lower per unit production costs, and ultimately, ensure relatively lower prices on the market This would improve the crop's competitiveness, expand consumption of traditional preparations and encourage its substitution for other commodities in new uses Without such gains in productivity, per capita chickpea consumption in India will continue to decline To maintain present (low) levels of consumption up to 2000, average yields of chickpea will have to increase from the present level of 0 70 t ha^{-1} to 0 88 t ha^{-1}, assuming that there will be no increase in cropped area or significant change in imports

Trade

The world market for chickpea is relatively thin Less than 0 5 million t are traded annually about 6 5% of the total chickpea produced Exports of other pulses on the other hand represent about 11% of world production, exports of wheat represent 18% and rice 24% (Oram and Agcaoili 1992) Nevertheless an increasing trend in world trade is observed for chickpea (Fig 5 8 5) Since 1975–77, the market volume has expanded by a factor of three

Turkey ranks first in chickpea export (mainly kabuli), with 275 000 t exported annually between 1989 and 1991 (Table 5 8 6) This represents 58% of total world exports and 35% of the country's domestic production It is the principal supplier of imported kabuli chickpea to the European Union and a major supplier to India Except for a few years, e g , 1985 and 1989, when crop failures seriously curtailed domestic production, chickpea exports have risen steadily at a remarkable rate of 13 4% per year since 1975 This owes much to the attractive export subsidy the Turkish Government has given to chickpea There appears to be good potential for further growth in chick-

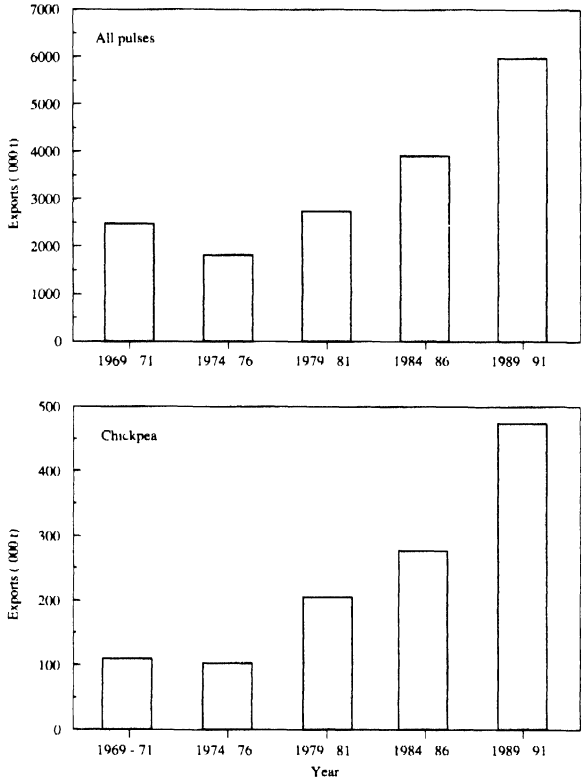

Figure 5.8.5. World pulse and chickpea exports (annual 3-year averages, 1969–91).

Table 5.8.6. Average annual chickpea imports and exports for WANA, South Asia and other countries, 1975–77 and 1989–91.

	Imports ('000 t)			Exports ('000 t)	
	Average of			Average of	
Country	1975-77	1989-91	Country	1975-77	1989-91
Algeria	11 9	46 8	Turkey	23 4	274 4
Iraq	4 1	21 7	Morocco	19 4	8 3
Jordan	1 2	13 9	Syria	3 5	6 3
Lebanon[1]	0 2	9 0	Ethiopia	10 7	0 0
Iran[1]	0 6	7 0	Tunisia	5 5	0 1
Tunisia	0 0	3 6			
WANA	18 0	102 0	WANA	62 5	289 1
India	0 6	123 4	India	1 5	4 9
Pakistan	0 0	32 6			
Bangladesh	0 0	3 3			
South Asia	0 6	159 3	South Asia	1 5	4 9
Greece	0 0	8 7	Mexico	38 5	52 2
Italy	0 0	22 4	Australia	0 0	110 1
Portugal	0 8	7 0			
Spain	30 3	39 4			
USA	6 8	14 8			
Israel	4 2	0 4			
Malaysia	3 0	4 5			
Saudi Arabia	2 4	11 0			
Sri Lanka	0 0	8 2			
Brazil	2 4	1 2			
Colombia	0 7	2 7			
Venezuela	1 5	4 0			
Total	78 0	414 4		112 3	474 3

1. Based on data up to 1985.

Data source: FAO (1992b)

pea production and export in the country as more land is put under chickpea through the fallow replacement program (Oram and Agcaoili 1992)

Australia and Mexico are the second and third largest exporters of chickpea Australia, virtually a non-producer of chickpea 15 years ago, today produces and exports more than 100 000 t annually Very little is used in the country Mexico has increased its exports only slightly since 1975–77 and presently exports about 50 000 t annually

Besides Turkey, the other WANA countries exporting chickpea are Morocco and Syria, although in relatively small quantities Morocco exports about 8000 t, (20 000 t in the mid-70s) and Syria, 6000 t, (3500 t in the mid-70s) Ethiopia, which formerly exported 11 000 t and Tunisia, 6000 t, no longer export chickpea Indeed Tunisia has gone from being a net exporter to a net importer

Many other countries including, Algeria, Iraq, Jordan, Lebanon and Iran[1], in WANA are or have recently become net importers of chickpea These countries together imported about 80 000 t of chickpea annually between 1989 and 1991 while earlier, they imported less than 20 000 t annually Except Turkey and Syria, exports have fallen or imports have risen for every chickpea-producing country in the WANA region

The European Union (EU) also imports a significant amount of chickpea[2] Whereas Spain Portugal, and Greece formerly exported chickpea (Rees 1988) since the mid-70s and early 1980s, they have become net importers of chickpea USA also imports chickpea, mainly from Mexico

India is now the largest importer of chickpea in the world, chickpea imports to the country rose significantly during 1988 92 The severe drought of 1987 during which chickpea production declined by almost 2 million t (30% drop from the previous year s production) was largely responsible for the dramatic increase in chickpea imports in 1987/88 Imports increased from 8000 to 223 000 t in a single year Imports have come down slightly since then (160 000 t in 1990 and 100 000 t in 1991) as domestic production recovered

In contrast to international trade, chickpea trade within India—by far the largest consumer of chickpea—is significant This is due to a widely distributed demand and regional concentration of production (von Oppen and Parthasarathy Rao 1987) Raju and von Oppen (1980) have estimated the marketable surplus of chickpea in India at 45%, while government statistics (Government of India 1980) gave lower estimates (35%) but showed a consistently increasing trend in the marketable surplus over time

Market Growth Potential

World trade in chickpea is rapidly expanding, as new countries are entering the market and traditional exporters are significantly expanding domestic production to meet increasing demand from both developed and developing countries Australia and Turkey in particular are expanding their exports as countries in the EU and India are increasingly importing

Turkey, the driving force behind increasing exports from WANA, can continue to do so if it can sustain production trends above growth rates in domestic demand This in turn will depend on such factors of supply as

- The rate at which the area under chickpea expands, e g , through fallow replacement, which in turn is a function of
- Domestic price policies and their impact on relative prices of chickpea and competing crops, and,

1 Chickpea imports to Lebanon and Iran between 1989 91 were negligible due to the war situation Prior to this they were each importing about 10 000 t annually

2 Some EU countries record chickpea as dry peas and therefore its imports may be underestimated This may partially explain the discrepancy between total exports and imports in Table 5 8 6

- The rate at which yields rise (or year to year fluctuations are reduced) through technical change and on such factors of demand as
- Population growth rates
- Income growth rates and associated expenditure elasticities of demand for chickpea
- Growth rates in chickpea production in major chickpea consuming countries (e.g. India, EU)
- Trade policies of the major potential importers like India
- Growth rates in supply from other exporters (e.g. Australia), and
- Growth in demand for specialty dishes in developed countries

According to Rees (1988), Australia is well positioned to become a consistent (and major) supplier of relatively low priced chickpeas for the world market depending on domestic trade policies of India, the major importer of Australian chickpea. The reduction of import duty on food grain pulses in India will help stimulate world trade in chickpea.

In an environment where a free exchange of commodities will prevail, world exports of chickpea are likely to increase as production shifts to areas of greater comparative advantage. This seem to be happening already (e.g. domestic production declines in India with simultaneous increases in imports from Australia), but the international market in chickpea is still very limited. The relatively high and sustained levels of chickpea imports to India during the last 5 years reflect the inability of domestic production to satisfy demand at current (domestic) prices, and suggests that for some countries, imports with simultaneous utilization of domestic resources for crops of greater comparative advantage are more efficient. If this happens, it would result in higher aggregate production and consumption of chickpea (von Oppen 1990).

Supply and Demand Projections

Projections of future supply of and demand for chickpea can help to identify the constraints to the expansion of chickpea production in WANA and South Asia.

Supply and demand projections for chickpea to the year 2000 are listed in Table 5.8.7[1]. Chickpea production in South Asia is not expected to rise from its 1989–91 level of 5.6 million t. This is set against a rising demand for chickpea well above (33%) predicted supply levels. Considerable amounts of imports (1.85 million t) will be necessary to satisfy demand, a favorable prospect for exporters like Australia and Turkey. Without these imports, chickpea prices in India and Pakistan, the major deficit countries, will continue to rise rapidly and thus discourage demand and ultimately reduce consumption. Bangladesh and Nepal too will have relatively large production shortfalls.

The supply prospects for WANA are brighter, largely based on Turkey's capacity to sustain production increases of 7% per year to the year 2000. This is not an unrealistic proposition considering its impressive 14% per year growth rate during the 1980s. Chickpea production in Turkey is estimated to double from 0.8 million t to 1.6 million t[2].

Production in WANA is estimated to be 2.1 million t in 2000 against a total regional demand of 1.2 million t, indicating that the potential for export growth is excellent. Unfortunately, most other countries in WANA including Ethiopia, Algeria, Lebanon, and Jordan will not follow that pattern and are likely to face serious shortfalls in domestic supply. Egypt, Tunisia, and Syria, formerly self sufficient or export oriented, are projected to become net importers.

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1. See Kelley and Parthasarathy Rao (1993) for details [illegible]
2. If Turkey [illegible] growth rate between 1990 and 2000 [illegible] the 1980s growth rate [illegible] 2000 will be [illegible]

Conclusions and Implications

The demand for chickpea does not appear to be limiting particularly in WANA, despite a favorable supply-demand ratio for the region as a whole. Most WANA countries have scaled up imports, or scaled down exports, to meet rising demand despite high growth rates in production (2 to 3% per year). This confirms the hypothesis of Oram and Belaid (1989) who have concluded that pulse production in WANA was generally constrained by supply rather than demand factors. With the rise in population, income, per capita consumption, and imports into the region, the strong demand for pulses is apparent. If the projections for the future are correct, Ethiopia which used to export 10 000 t will need to import 50 000 t of chickpea by the year 2000. In most WANA countries, high market prices for chickpea—reflecting

Table 5.8.7. Domestic production/consumption ('000 t) of chickpea in WANA and South Asia countries (1989–91) and projected to 2000.

	1989–91			Projection to 2000		
Country	Domestic production	Domestic consumption	Surplus (+) Deficit (–)	Domestic production	Domestic consumption	Surplus (+) Deficit (–)
India	4847	4970	–123	4642	6337	–1695
Pakistan	534	567	33	774	860	86
Myanmar	97	97	0	95	121	–26
Bangladesh	67	70	3	58	87	–29
Nepal	17	17	0	8	22	–14
South Asia	5562	5721	–159	5577	7427	1850
Turkey	801	527	+274	1305	658	+647
Ethiopia	114	114	0	109	159	–50
Morocco	55	47	+8	181	63	+118
Iran	49	56	–7	80	78	+2
Tunisia	30	34	–4	25	46	21
Syria	26	20	+6	15	32	–17
Algeria	18	65	–47	29	97	–68
Egypt	11	11	0	10	15	–5
Lebanon	5	14	–9	9	19	–10
Iraq	3	25	–22	26[2]	37	–11
Jordan	1	15	–14	2	20	–18
Sudan	1	1	0	2	1	+1
WANA	1115	930	+185	1793	1225	+568

1 Based on observed growth rates in production from 1981 to 1991.
2 Projected based on time series data from 1976 to 1981; production fell dramatically since 1986 due to the war.

strong local demand—offer good prospects for increasing production provided the right technology is available.

Our supply and demand projections to the year 2000 further confirm the view that supply, not demand, is the limiting factor. Most countries in WANA will fall into a deficit position with respect to production and will require large increases in imports to satisfy demand. Even Turkey, with its surplus production, is unlikely to face demand constraints[1], as the potential outlook for expansion of exports to WANA, South Asia, and the EU looks favorable.

Most of the reports from Syria, Morocco, Algeria, Tunisia, Egypt, Jordan, Iran, and Ethiopia seem to suggest that abiotic and biotic constraints are more important than policy, marketing, and other socioeconomic-related constraints in limiting chickpea production[2]. An exception may be Iraq and Sudan. In Iraq, large areas of chickpea were replaced by wheat following the government's decision to give more support to wheat prices. The report from Sudan suggests market distortions (low farm-gate prices relative to retail prices) as an important constraint to chickpea production.

Supply and demand projections to the year 2000 for South Asia also confirm that chickpea production will be more limited by supply factors than by demand. Population and income growth combined with the relatively high income elasticities of demand for chickpea imply continued growth in demand for this food legume. This would occur despite a gradual shift from chickpea to other pulses and livestock products, i.e., a demand constraint in the long run.

The possibility for significantly reducing per unit costs of chickpea production (primarily by raising yields) and making it more competitive with wheat and mustard should be explored. Higher productivity will simultaneously increase the profitability of chickpea to producers and reduce the price paid by consumers. Relatively high price elasticities of demand for chickpea will also ensure large consumption with falling prices.

In both WANA and South Asia, improved technologies are already available to at least double chickpea yields in many areas (Jagdish Kumar, ICRISAT, personal communication). Winter-sowing technology in WANA and improved short-duration cultivars in peninsular India, for example, have the potential to significantly raise productivity in these regions. Much still needs to be done in identifying the on-farm constraints that are limiting the uptake of these new technologies. Scientists and economists must work together to assess whether the technologies are appropriate and how they need to be transferred or whether the infrastructure needs to be improved in order to alleviate the constraints to chickpea production.

1 Soon Turkey too will face a supply constraint. Growth in production through area expansion is an option which has limited scope in the future. Without gains in productivity, these lands are likely to shift to other crops which are more productive and more remunerative.

2 Several country reports mention rising labor costs as an important reason for substitution of chickpea to other competing crops. It is necessary to develop innovative technologies such as machine harvesting and specific variety types adapted to this which can profitably reduce labor demand.

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