Views

Chickpea: A Preferred Pulse?

T.G. Kelley and **P. Parthasarathy Rao**
(ICRISAT Center)

With chickpea (*Cicer arietinum* L.) production stagnant or declining during the last two decades in India, imports being negligible until very recently, and population expanding at the rate of 2.1% per annum (World Bank 1991), it is not surprising that the per capita availability of chickpea has fallen. The per capita availability of pulses in India has declined by about 1.2% per year since 1970 (Table 1). This is almost exclusively because of chickpea, the major pulse food crop in India, which registered a sharp 33% decline in per capita availability, from 24 g day^{-1} to 16 g day^{-1}.

The decline in production and per capita availability of chickpea in India accounts for the significant rise in chickpea prices. The real price of chickpea increased at the rate of 1.9% per year during the 20-year period. On the other hand, the real price of pigeonpea rose annually by 1.1%, of mung bean by 0.9%, and of lentil by 0.8%. This is significant because these pulse crops maintained production levels high enough to increase (or at least sustain) their per capita availability over the 1970 level but still registered significant increases in real prices. This suggests two things. First, there is probably a greater capacity (i.e., it is more efficient) to increase supplies of pulses through rainy-season production of pigeonpea, mung bean, and black gram (primarily by increasing the area under production) than through post-rainy-season production of chickpea. This is due to strong competition from wheat and mustard/rape seed which have benefited from expansion in irrigation and rapid technical changes. Pigeonpea faces much less competition from low-yielding and low-value rainy-season crops like sorghum and pearl millet. Second, the demand for chickpea has not been strong enough to push prices higher or at least induce suppliers to produce enough chickpea to maintain per capita consumption at the 1970 level. As chickpea prices have risen in response to production shortfalls, consumers have shifted from chickpea to other pulses and commodities such as livestock products. As a result of this shift, the prices of chickpea have adjusted somewhat downwards.

Further evidence of a preference for other pulses can be had from Table 2 in which 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 of a particular commodity as its price changes (price elasticities) and as the income of consumers changes (expenditure elasticities). Expenditure elasticities for other pulses are higher than that for chickpea in every expenditure group in both rural and urban areas of India indicating that as incomes rise,

Table 1. Production, per capita availability and price indices of major pulses in India during 1970-72 and 1988-90.

	Production ('000 t)			Per capita availability (g day^{-1})				Real-price indices (1970 = 100)			
	1970-72	1988-90	Growth (%)	1970-72	1988-90	Growth (%)	Growth rate (1970-90)	1970-72	1988-90	Growth (%)	Growth rate (1970-90)
Chickpea	4939	4852	-2	24.3	16.4	-33	-2.5**	101	173	71	1.9**
Pigeonpea	1831	2625	43	9.0	11.9	32	0.0	100	125	25	1.1**
Mung bean[1]	595	1336	124	2.9	4.5	55	2.1**	112	150	34	0.9*
Black gram[1]	601	1553	158	3.0	5.2	73	2.9**	127	127	0	0.0
Lentil[1]	350	718	105	1.7	2.9	71	1.6**	120	156	30	0.8*
All pulses	10940	13509	23	53.8	46	-15	-1.2**	106	157	48	1.5**

* Significant at $P = 0.05$.
** Significant at $P = 0.01$.
1. 1988-89 (2-year average only).

Sources: Government of India Bulletin on Food Statistics (1987-89), 1990.
FAO Production Yearbook, 1991, 1992.
FAO Production and Trade Data Tapes (1992).

Table 2. Estimated mean expenditure elasticities (Expenditure η) and mean direct-price elasticities (Price η) of demand for chickpea and other pulses in India.

	Rural expenditure classes[1]					Urban expenditure classes				
	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	0.430	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. Expenditure classes 1-5: 1 = very poor; 5 = not poor.

Source: K.N. Murty, 1983. Consumption and nutrition pattern of ICRISAT mandate crops in India. ICRISAT Economics Program Progress Report no. 53.

consumers spend a higher share of their income on pulses other than chickpea. For price elasticities in most expenditure groups, higher negative price elasticities are observed for chickpea. This indicates that consumers reduce their purchases of chickpea proportionately more than they do for other pulses for equivalent increases in price.

It must be remembered that these data apply throughout India. There are regions where demand for chickpea is very high, and will remain so. Nevertheless, aggregate figures indicate a significant decline in the per capita consumption of chickpea compared to other pulses, roughly similar price trends over a period of time, and higher price elasticities and lower expenditure elasticities for chickpea than for other pulses. All this suggests that demand for chickpea—relative to other pulses in India—is declining. The caveat to this hypothesis is that if alternative uses for chickpea can be developed and marketed, then this scenario may change. However, there is not much to indicate that this will happen.

New production technology in chickpea, if adopted, has the potential to realize significant gains in productivity, decrease per-unit production costs, and ultimately, ensure relatively lower prices in the market. This would improve chickpea's competitiveness, expand the consumption of traditional chickpea foods, and encourage the substitution of chickpea for other commodities in new uses. Without such gains in productivity, per capita chickpea consumption in India will continue to decline. To maintain the present (low) levels of consumption until 2000 A.D., average yields of chickpea will have to increase from the present level of 700 kg ha^{-1} to 875 kg ha^{-1}, assuming there is no increase in the cropped area and no significant increase in imports.

Crop-improvement scientists can focus on two broad agroclimatic zones: (a) the relatively better endowed chickpea-growing areas of northern India, where presently ascochyta blight and botrytis diseases limit yield potential (and the amount of inputs farmers are willing to risk on the crop), and (b) the drier and more marginal environments of peninsular central and southern India, where drought is the most serious constraint to higher yields.

Reference

World Bank. 1991. World Development Report. 1991. Washington, USA: World Bank.