



# INTERNATIONAL COTTON ADVISORY COMMITTEE

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## Cost of Producing a Kilogram of Cotton

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The International Cotton Advisory Committee (ICAC) undertakes a survey of the cost of production of cotton every three years. This paper is based on the data collected in 1995 for the year 1994/95. The report published by the ICAC in October 1995 has data from 31 countries and a summary of the report is presented here. The participating 31 countries cover all cotton producing areas and almost all types of cotton in addition to different types of cotton growing conditions i.e. rainfed, irrigated, small growers, etc. So, the total number of entries from 31 countries is 57. It is not possible to include all entries from all countries in this paper thus 10 important cotton producing countries and growing conditions are more extensively covered in this paper. These are Argentina (Rainfed), Australia (Irrigated NSW), Brazil (Northeast), China (National Average), India (Central South Rainfed), Pakistan (Punjab), Sudan (Acala), Turkey (Aegean Region), USA (National Average) and Zimbabwe. Detailed data for each country can be found in the ICAC publication *Survey of the Cost of Production of Raw Cotton*, October 1995. It is not an easy task to assess cost of production of cotton. Differences in the production practices and local methods to assess cost of production make inter-country comparisons extremely difficult. Individual input comparisons are probably more valid.

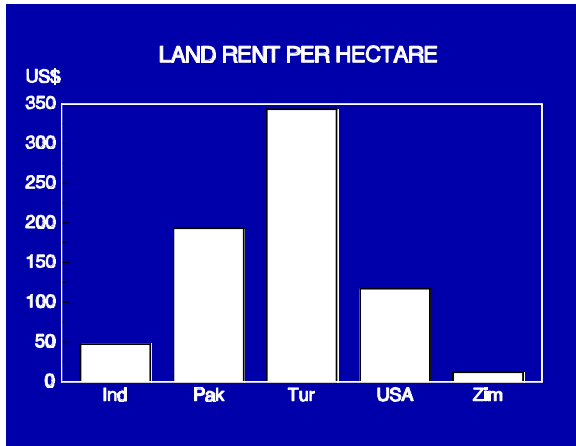
### COST OF PRODUCTION 1994/95

Argentina - Rainfed	Arg
Australia - NSW Irrigated	Aus
Brazil - Northeast	Bra
China (Mainland) - National	Chi
India - Central South Rainfed	Ind
Pakistan - Punjab	Pak
Sudan - Acala	Sud
Turkey - Aegean	Tur
USA - National	USA
Zimbabwe	Zim

### Land Rent

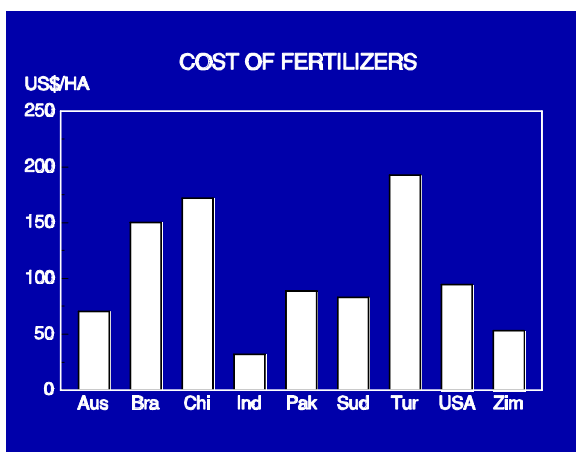
The vast majority of cotton grown in Argentina, Brazil, Mexico, Paraguay and Peru in the Latin American Region and Australia, Chad, China (Mainland), Sudan, Uganda and Vietnam is self cultivated and data for cost of renting land to grow cotton are not available. The data from other countries showed that the cost of renting one hectare to grow cotton is the highest

in Spain which is over US\$ 500/ha. It costs almost US\$ 200 or even more in Iran, Syria, South Africa, Colombia, Philippines, Delta and Southwest regions of the USA and Pakistan to rent land for growing cotton. In all these countries high land cost is due to irrigation facilities and high yield level.



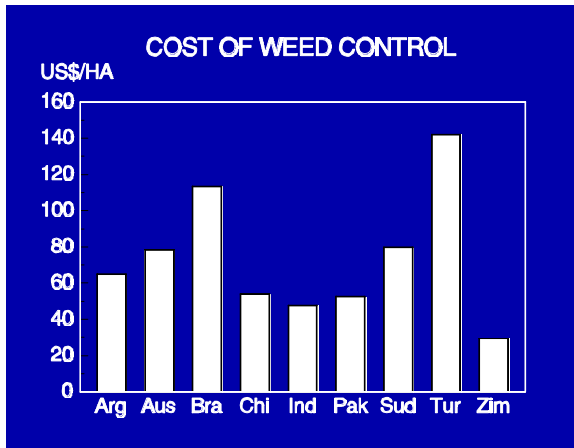
## Fertilizers

Among 31 countries who participated in the survey, cotton is generally grown without the addition of fertilizers or only a small percentage of the total area gets synthetic fertilizers in Argentina, Bolivia, Chad, some parts of South Africa and Uganda. Cost of fertilizers in the Northern Cape area of South Africa where cotton is irrigated is the highest in the world and exceeds US\$ 300/ha. Fertilizer costs are more than US\$ 200/ha in Peru, Spain, Southwest region of the USA and Israel. Among the ten countries more extensively covered in this paper, cost of fertilizers is the highest in Turkey followed by China and Brazil. Cost is high in China and Turkey because of higher doses of nitrogenous fertilizers and it is high in Brazil because, in addition to nitrogen, phosphorous and potassium are also commonly applied to cotton.



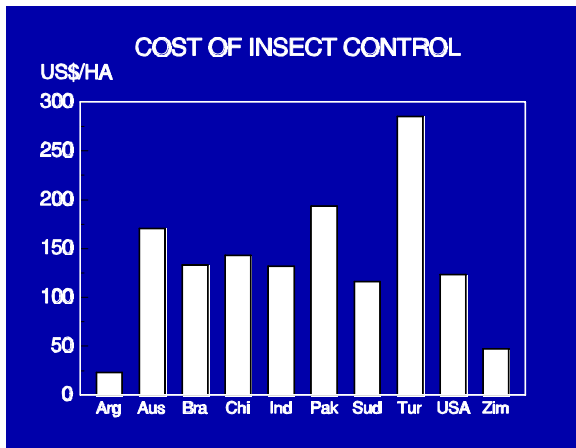
## Weed Control

Weeds can be controlled manually, mechanically or chemically but herbicides are still not applied in many countries. More than 90% of the total cotton area is treated with herbicides in Colombia, Greece, Israel, Spain and the USA. In China, India and Pakistan herbicides are still used on less than 10% of the total cotton area and weeds are removed through cultivation or manually. The cost of weed control operations is more than US\$ 200/ha in Israel, Colombia and Spain. The data from 10 major producing and exporting countries showed that cost of weed control operations is the highest in Turkey(US\$ 142) followed by Brazil(US\$ 113).



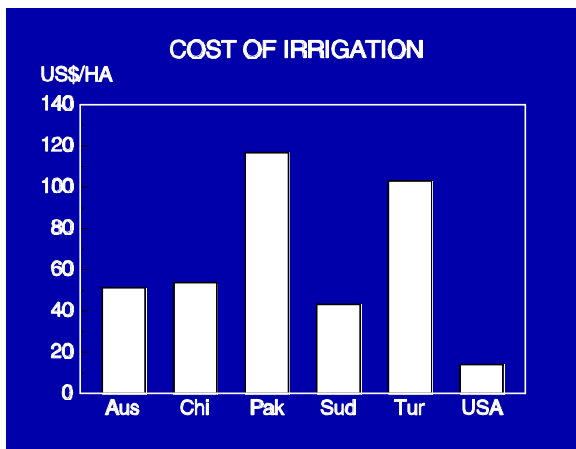
## Insect Control

Insecticides are used to control insects in almost all cotton producing countries but the area sprayed and number of applications depend on the insect pressure. As a result, cost of insect control operations varies accordingly from year to year. However, the need for insecticides is the minimum in Syria because of least insect pressure. In most other countries, the cost of insect control is the highest among all other individual inputs in the cotton production system. Though the total number of sprays does not exceed six in Israel, total cost is the highest because of higher insecticide and application costs. However, in Nicaragua, Mexico, Australia, Spain and Colombia cost is high because of the higher number of sprays. The data for ten countries showed that Argentina and Zimbabwe spend the least amount on insect control. In the Aegean region of Turkey close to US\$ 300 are spent to control insects in one hectare. The cost of insect control operations has increased significantly in China (US\$ 143) and Pakistan (US\$ 194) in the last few years due to bollworm resistance and leaf curl virus caused by whitefly respectively.



## Irrigation

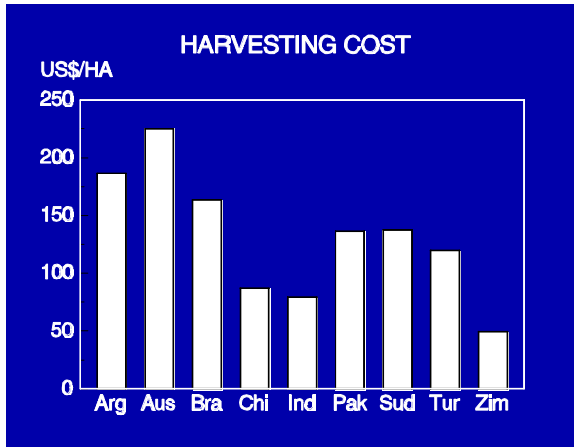
About 55% of the world cotton area uses water from canals or pumped from underground. The remaining 45% is either partially irrigated or depends entirely on rain water. Total rainfall may sometime be more than the delta of water for cotton, but the crop is still considered non-irrigated because of the irregular supply of water and referred to as rainfed in this paper. Irrigation water is the most expensive input in Israel where it costs more than US\$ 640 to grow one hectare of cotton. In Syria, cost of irrigation to grow cotton is US\$ 466/ha. In the Southwest region of the USA and Pakistan, cost of irrigation is one third of the cost in Syria. In China and northern India, the cost of irrigation is US\$ 54 and US\$ 32 respectively.



## Harvesting

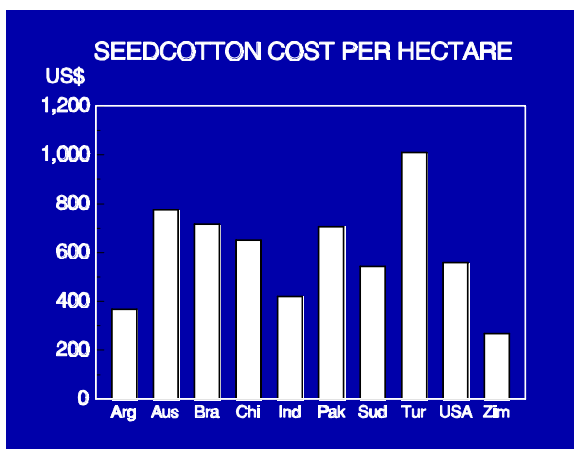
The cost of picking cotton varies drastically among countries mainly due to differences in the labor wages. Cotton is 100% machine picked only in Australia, Israel and the USA. About 90% of the total cotton is picked by machines in the two European Community cotton producing countries. Irrespective of the picking method, the cost of harvesting one hectare of cotton ranges from US\$ 442 in the case of Spain to US\$ 14 in Côte d'Ivoire. It costs US\$ 225

to pick one hectare of irrigated cotton in New South Wales of Australia. It is also expensive to pick cotton in Argentina and Brazil mainly because of expensive labor. Scarcity of labor for picking is becoming a problem in many countries but growers are willing to pay more rather than to adopt machine picking. Cost of machine pickers and need for change in the layout of fields are also hindering adoption of machine picking.



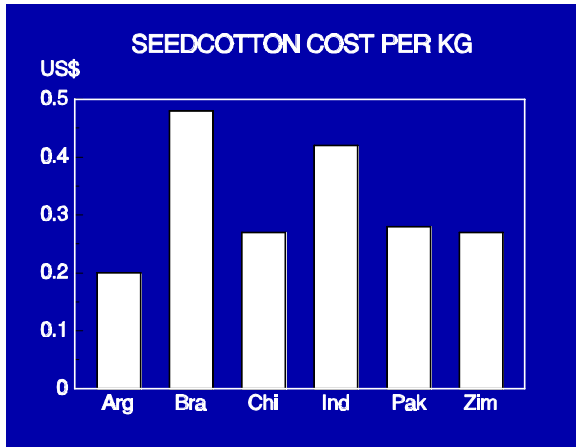
### Cost of Seedcotton

In addition to land rent, weeding, fertilizers, irrigation, insecticides and harvesting, there are some other field operations which are not mentioned here but they have been taken into account for calculating per hectare and per kg cost of seedcotton. The cost of growing and harvesting one hectare of seedcotton is about US\$ 2,000 in Israel and Spain. In the Latin American region almost US\$ 1,300 are spent to grow and harvest one hectare of seedcotton in Colombia, Mexico and Peru. In Chad, Côte d'Ivoire, some part of rainfed cotton in South Africa, Vietnam and Zimbabwe not more than US\$ 300 are spent to grow and harvest one hectare of seedcotton. The cost of producing a hectare of seedcotton in Australia, Brazil, China and Pakistan ranges between US\$ 650 and US\$ 775 but in Turkey over US\$ 1,000 are spent to produce a hectare of cotton.



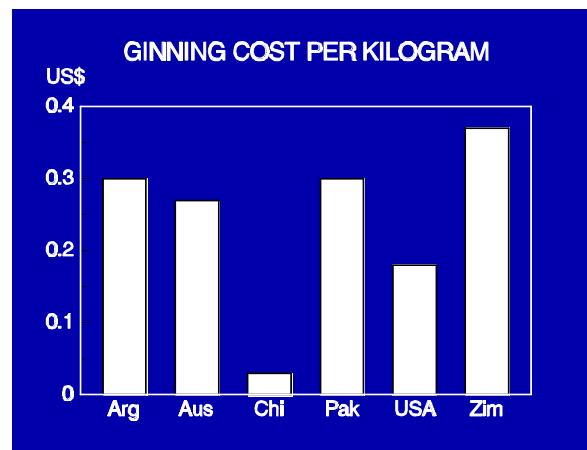
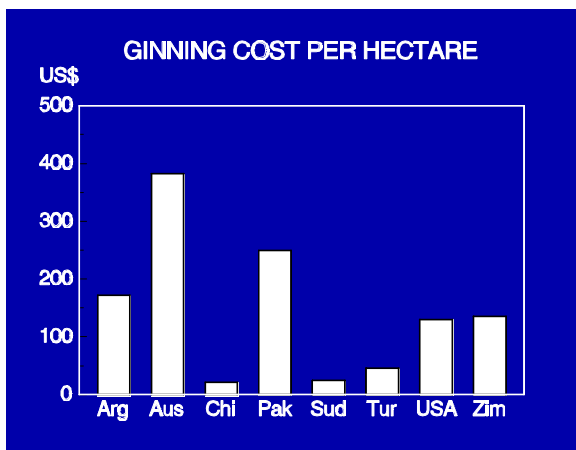
Due to non-availability of seedcotton yield data, it was not possible to calculate cost per kg of

seedcotton for all countries. Data from other countries showed that it is least expensive to produce a kg of seedcotton in Vietnam, Iran, Chad and Côte d'Ivoire. Among ten major cotton producing and exporting countries, it costs only 20 cents to produce a kilogram of seedcotton in Argentina as against 48 cents in Brazil and 42 cents in India respectively. Low yields in Brazil and India are responsible for higher cost per kg of seedcotton.



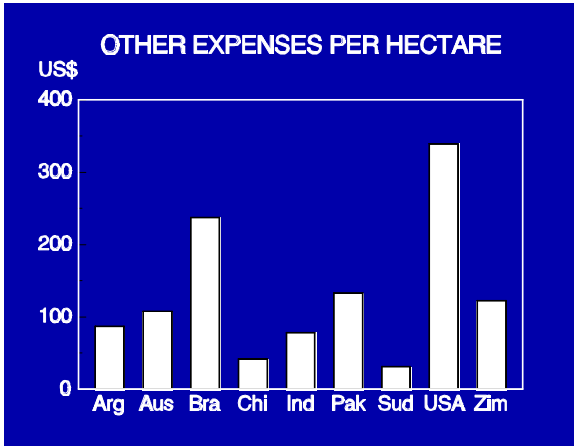
## Ginning

Cost of ginning includes transportation charges for delivering seedcotton to the factory, actual ginning charges and cost of classing and grading, if any. If ginners pay some taxes to the government for research etc., these are also covered under ginning cost. Because in many countries there is no system of custom ginning and seedcotton is ginned as a property of a ginner, ginning costs were not available from all countries. It costs 55 cents to gin a kilogram of lint in Spain. The cost of ginning ranges from 30-37 cents/kg in Argentina, Pakistan, Philippines and Zimbabwe. Less than 10 cents/kg is the cost of ginning in Nicaragua, Iran and China; only three cents in China because of ginning in the public sector (Bureau of Cotton and Jute).



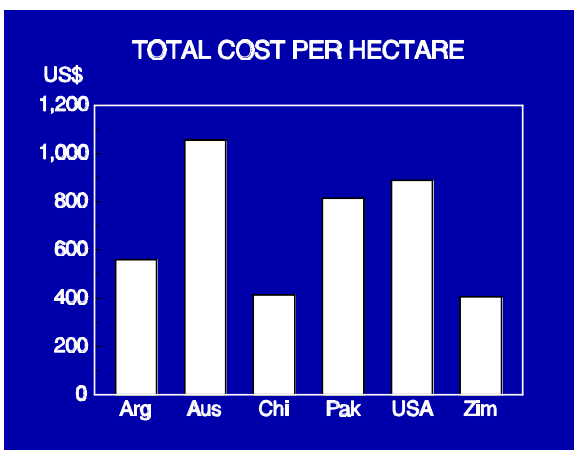
## Other Expenses

Other expenses include management and technical services, interest on the capital invested, all repairs, general farm overheads and depreciation cost of fixed items on the farm including buildings, roads and farm machinery.

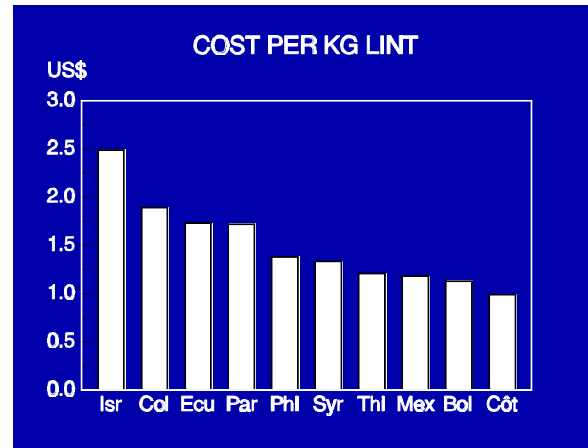
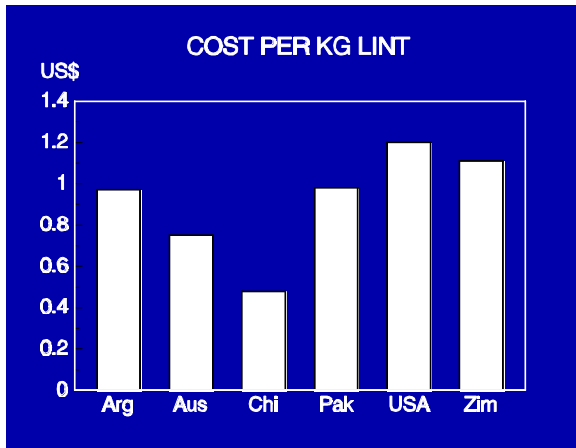


### Net Cost

To calculate the net cost of producing lint from one hectare, the value of seed and land rent were excluded from the total cost. Due to non-availability of ginning costs and in some cases economic and cost of fixed items, it was not possible to calculate the net cost of producing a hectare of cotton for many countries. The available data showed that almost US\$ 4,000 are spent to produce one hectare of upland cotton in Israel. Cost of producing Pima varieties is even higher by almost US\$ 500/ha. As regards the net cost of production for the 10 main cotton producing and exporting countries, net cost was the highest in Australia(US\$ 1,056) followed by the USA( US\$ 889), Pakistan(US\$ 814), Argentina(US\$ 562), Zimbabwe(US\$ 426) and China (US\$ 416).

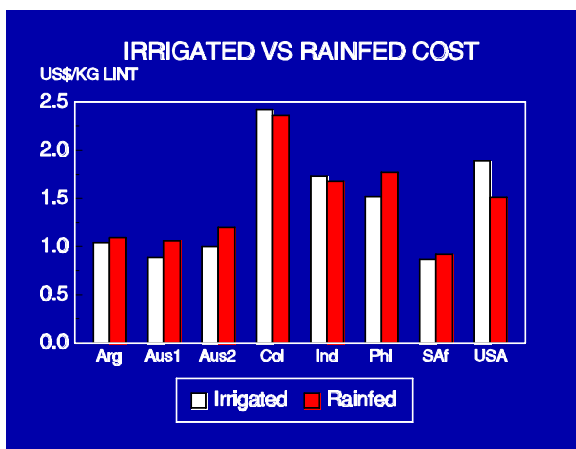


If the net cost of producing a unit area is high, this does not necessarily mean that cost per unit of lint is also high. High yields in some countries reduce a kg cost of lint and in other countries low yields increase cost per kg of lint. The data available for six major producers showed that it is most expensive to produce a kg of lint in the USA (US\$ 1.20) followed by Zimbabwe (US\$ 1.11), Pakistan (US\$ 0.98), Argentina (US\$ 0.97) and Australia (US\$ 0.75). In China, on the average only 48 cents are spent to produce a kilogram of lint. Data for ten other countries are also shown in descending order. In all other countries, it costs less than one dollar to produce a kilogram of lint.



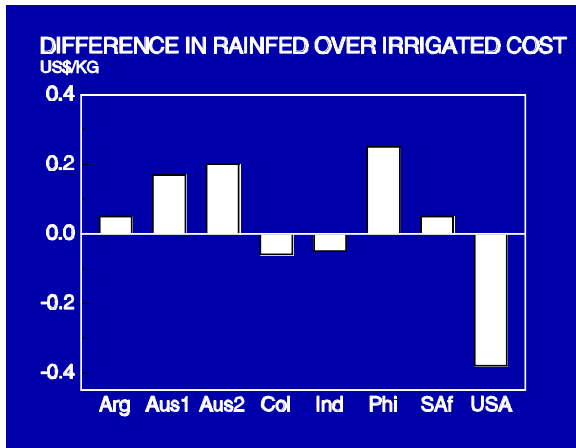
### Irrigated vs Rainfed Net Cost

As mentioned before, data for cost of production were available for different kinds of production practices. Here total cost of producing irrigated and rainfed cotton in the same country has been compared. It was possible to make such a comparison among seven countries. The data showed that the net cost of producing a hectare of cotton is always higher under irrigated conditions. Not only an additional expenditure is incurred on irrigation of cotton but the need for fertilizers and other operations also increases with the addition of irrigation water.



In some countries, addition of irrigation water and other inputs that result in higher yields

more than compensate for the additional cost incurred to grow cotton under irrigation conditions. Thus, higher yields under irrigated conditions result in lower cost per kg of lint compared with rainfed cotton in Argentina, Australia, Philippines and South Africa. Rainfed cotton is usually expensive to produce by 5-20 cents/kg of lint in these countries. However, in Colombia, India and the USA, it is less expensive to produce a kilogram of lint under rainfed conditions. Cost was lower by 38 cents per kg of lint in the Delta region of the USA compared with the Far West due to exceptionally high yields (almost 15% above average) in the Delta region during 1994/95.



### Growth in Total Cost over 1990/91

Out of 22 countries which participated in the 1990/91 survey, 16 countries also participated in the 1994/95 survey which made it possible to study growth in total cost over the last four years. Since 1990/91, cost of production has increased in Brazil, Central Southern Region of India, Israel, Pakistan, Peru, Philippines, Syria and Zimbabwe. But, in many countries cost of production has decreased due to various reasons. In Argentina there is slight decrease in cost of production due to lower ginning costs. In Australia, reduction in the average number of sprays from 13 to 9 and lower fertilizer and harvesting costs reduced cost of production by almost 25% over 1990/91. In Brazil and India, increase in the field operations and insect control costs are responsible for increase in the total cost of production. In Pakistan, in addition to increase in the cost of field operations and insect control, cost of land rent almost doubled in four years. Significant reduction in the picking charges accounts for almost 1/3 of the total cost of production decrease over four years in Sudan. In Aegean region of Turkey, lower harvesting cost and land rent depressed total cost by almost 10% in four years. In the USA, the average cost of production decreased by 9% over 1990/91. In Zimbabwe, significant increase in the total cost is attributed to general increase in prices.

