C H A P T E R - IV

THE AREA, OUTPUT AND YIELD OF PULSES

4.1 INTRODUCTION :

Pulses production in India was about 15 million tonnes in 1953-54. It did not reach that level till 1981. The yield barrier (about 550 Kg. per hectare, on an average) is yet to be broken. In indivudual crops some varieties have been evolved recently that are yielding more than 2 tonnes per hectare of arhar (Pigeon pea) gram and mung, but averages remain as low as before.[1]

There was a consensus that due to the expansion in area under irrigation and spread of high yielding varieties of wheat and paddy the farmers have shifted away from pulses. However, there are regional variations in this shift. Since there are several varieties of pulses and many of them are region specific, there is a need to (region specific analysis of change in area and production of pulses.

Adoption of high yielding varieties of cereals depended not only on yield but also on the cost of production and the price of the output due to increasing costs of chemical inputs, the total cost per unit of output has been increasing for whear and rice. At the same time, the prices of pulses have been

increasing. This may change the comparative advantage, and therefore it becomes difficult to make long term forecastes for pulses production on the basis of past trends. For the last 20 Years the area under pulses have been fluctating between 18 to 22 Million hectares without any noticable trend. One opinion was that pulses crops in unirrigated areas may have to be accorded a differential treatment.[2]

The importance of pulses both rabi and Kharif, as food, fodder and manure in the cropping pattern can not be minimised. Most of pulses contain a high percentage of protein as compared to even superior cereals like rice and wheat. Gram blackgram and masure contain 17.1, 24.0 and 25.1 percent of protein respectively, whereas wheat and rice have only 11.8 and 8.5 percent of protein content respectively.[3] In a developing economy like India, the population depends mainly on vegetable proteins rather than on animal proteins. Pulses are the main source of protein for the cast majority of the population and hence the consumption of pulses and cereals go hand in hand, particularly in India.

Apart from being a main source of protein for a vast majority of population pulses occupy an important place in crop rotations and as crop mixtures. Moreover pulses are leguminous crops which help to improve fertility of soil by

developing nitrogen in the soil. Cultivation of pulse crops, simultaneously with an application of organic manure helps to maintain the fertility of the soil and to bring about a sharp increase in yield of the other crops in rotation.

The different kinds of pulses, the farmers cultivate in this taluka are either kharif or rabi pulse crops. The kharif pulses are mainly mixed crops i.e. they are sown along with other cereals like kharif jowar. The rabi pulses are mainly pure crops in the sense that they are not sown along with other cereals as in the case of kharif pulses. The variety of pulses grown in the taluka are gram, tur, mung, hourse gram.

In this chapter we intend to analyse the behaviour of area, output and yield of the pulse crops like gram, tur, mung, and horsegram over the period separately though the method of analysis will be the same.

4.2 GRAM :

The principal pulse crops grown in Kopargaon taluka are mainly gram tur, Horse gram mung and other pulses. Among these pulse crops grown in the taluka, gram occupies a predominate place among other pulse crops as the area under gram forms nearly 50% of the area under total pulse crops.

We have worked out of the index numbers and percentage to the net area sown and total pulse crops. Similarly we have worked out the index numbers of production and yield of each pulse crops under study.

Area, Production and Yield of Gram during the Period 1965-66 to 1980-81.

The area under Gram measured 1720 hectares in the base year of 1965-66. It's percentage to the net area sown in the taluka formed just 2.00. However, the percentage to the total area under pulses formed to 45.00. Similarly the percentage of its total production to the production of all the pulses grown in the taluka formed 47.91 percent. This itself indicates' the predominate position occupied by the gram among the pulses. The area under gram did not show any voilent changes during the earlier part of the period i.e. 1965-70. Only in the year 1967-68 the area under gram increased by 46.76 percent over the base year. The area index of the crop as a result changed from 100.00 to 144.76. The percentage under the area of the crop to the total area under pulses increased to 54.75 in that year. In the remaining four years of the sub period, the area under gram remained almost constant as the area index number reveals. The production of the crop showes an increasing trend during this period as the index number changed from 100.00

(1965–66) to 149.75 (1969–70). As we noted above as the area under gram increased during the 1967–68 the production of the crop increased as the index number worked out to be 155.07 for that year. Despite the increasing area under gram the yield per hectares in that year declined, the index number of the yield as a result worked out to be 107.05. From this it seems that as the area under the crop in question increases the productivity per hectare tends to fall. In the subsequent two years the area declined as a result of which production also declined as compared to 1967–68 levels of area and production yield of the crop during these two years tended to increase as a result of decline area. The percentage of the area under the crop varied between 44.98 (1965–66) and 54.75. 1967–68). Similarly the percentage of crop production varied between a wide range of 47.91 (1965–66) and 63.83 (1968–69). However, the percentage of the production to the production of all pulses showe's an increasing trend. The increasing production trend could be accounted for by both increasing trends of the area and yield of crop during this period.

The increasing trend of the area set in in the earlier part seems to have been reversed during the succeding sub period of 1975 as area index dropped from 113.43 (1969–70) to 63.83 (1974–75). In the year 1972–73 the area index dropped from

105.93 during the preceding year to 40.34. The abrupt fall of the hectarage could be attributed to the failure of the north-east monsoon in that year. It's percentage to the net area sown in the taluka fell from 2.27 to 1.36 (1974-75). The falling trend of the area under the crop seem's to have caused the production trend too to fall in downward direction during this period. The production index number fell from 115.94 to 96.61 (1974-75). During 1971-72 the production index shot up to 153.14. This unusual production index could be held responsible for both substantial increases in both the area and yield of the crop in that year. The extension of the area under the crop and improvement in yield could be attributed to the good agricultural season. In the subsequent year 1972-73 the abnormal fall in the production could be explained by the substantial fall in both area and yield. There after (1973-75) production index tended to increase but remained below the level of base year, despite the yield index tended to increase to 138.17 and 151.45 during the same years. The increase in the yield seems to have been more than offset by the fall in the area under the crop during these years. It is quite disquiting to note that the area percentage to the total area under pulses dropped from 57.97 (1971-72) to just 28.69 (1974-75). Similarly it's percentage share in the total production of pulses dropped from 71.55 to 32.78 in the same

years. Only the productivity of the crop seems to have remained on the increase as the index numbers reveal. The productivity index changed from 129.46 (1970-71) to 151.45 (1974-75) barring the drought year of 1972-73 in which index fell to 103.73. From this we conclude that as the area under the crop in question contracts, the yield per hectare improves. This means that the most suitable lands remained under cultivation of the crop.

During the latter part of the period 1975-81 the area under the crop tended to fluctuate voilently as the index numbers reveal. Despite the increase in the area (1975-76) the area tended to decline in the subsequent years as the area index moved down from 127.84 (1975-76) to 94.86 (1980-81). It's percentage to the net sown area during this period remained almost constant excepting the year 1977-78 in which it rose to 4.88. This rise in the percentage could be attributed to the abrupt fall in the net area sown. Not with standing, its percentage to the total area under pulses varied between 43.63 and 48.52, in 1976-77 it has gone up to 79.12. This unusual rise in the percentage of the area could be explained by the non-availability of the figures of area and production of horse gram in that year. So we calculated percentage of the area under the crop to the total area under the pulses. The production of gram during the latter part of the period has exhibited a firm

tendency towards a rise as compared to an earlier sub period The production index however, declined from 221.98 (1975-76) to 164.97 (1980-81). The index of the yield too, shows the rising trend as the index number reveals. In the drought year of 1978-79 the index numbers of area, production and yield fell abruptly to 85.69, 60.14 and 70.53 correspondingly. Barring this drought year, the increasing trends of all area production and yield are due to the increasing awareness of the relative importance of gram in the agricultural product mix among the farmers in the recent years. However, the area percentage to the total area under all pulses seems to have remained more or less unchanged. Because of the increasing productivity of the crop per hectare the relative percentage share of the production in the total production of pulses has increased from 56.94 (1975-76) to 83.70 (1980-81). This indicates a relative rise in the productivity per hectare of gram during the latter part of the period in the taluka.

4.3 TUR :

Tur is another important pulse crop grown in the taluka. This pulse crop is sown along with the cereals either with kharif jawar or with bajari. This is why, this crop could be described as a mixed crop. However, the percentage of the area under tur to the net area sown and to the total area under pulses formed

just 22.33 in the same year. During the succeding years of the period 1965-70 the area index of the crop tended to decline. It fluctuated between a wide range of 55.14 (1968-69) and 106.28 (1966-67). Analogously the production index fluctuated rather voilently. It varied between 54.92 (1968-69) and 133.16 (1966-67). The percentage share of its production in the total production of the pulses declined from 22.33 (base year) to 19.74 (1969-70). The productivity index also declined from 125.54 (1966-67) to 113.22 (1969-70).

In the next sub period (1970-75) the area and production of tur tended to decline sharply as the index numbers reveal. In the year 1972-73 which was the drought year. The area, production and productivity indices fell to 16.57, 5.69 and 37.13 respectively. In the succeding two years (1973-75) all these indices resumed their upward trend. Since the year 1974-75 was the agriculturally good year, the area index shot up to 184.85 and its percentage share in the total area under pulses increased to 16.90. The production index more than doubled (207.77) and the percentage share of it's output in the aggregate output of all pulses increased to 32.86. Similarly the production index which remained less than the base year level during the preceding years reached to 112.05 which was above the base year level.

In the last sub period of 1975-81 the area index once again tended to decline. However, the area index remained above the base years level throughout the period excepting the year 1978-79 in which the area index dropped to 37.71. In the remaining year's the area index fluctuated between 155.14 (1975-76) and 107.14 (1977-78). The production of the crop behaved in sympathy with the area under the crop. The production index remained below the base year's level through 1979-80. The productivity index also reveals a decling trend. It remained below the base years level during 1978-79. Both the production and productivity indices fell sharply to 24.35 and 64.49 respectively. The falling trends of the both production and productivity during the latter year's of the whole period reveal that this pulse crop has been losing its importance as a mixed crop in the cropping pattern of the farmers. Even though the high yielding varieties of kharif jawar and bajari were introduced in the year 1965-66, they took a rather long time to establish themselves in the taluka. The high yielding varieties of K.jawar and bajari do not allow other pulse crops specially tur to be sown as a mixed crop along with new varieties of K.jawar and bajari technically. So the falling area under the tur pulse crop could be attributed to the expansion of the area under hybrid K.jawar and bajari. As the new varieties

bacame more established in the latter part of the period under study the farmers have increasingly shown their perference over local varieties of K.jawar and bajari. Hence we may conclude that because of the new techniques of cultivation and increasing vulnerability of tur to various diseases, the ultivation of tur seems to be in the process of being dropped out from the croppong pattern of the taluka.

4.4 HORSE GRAM :

Horse gram (Kulathi) is another pulse crop cultivated both for human and animal consumption in the taluka. However, the area under horse gram remains to be insignificant considered in terms of it's percentage to the net area sown in the taluka. It's percentage share in the net area sown remained all most constant throughout the period barring some upward and downward changes in the intervening years. The relative share of its production in the production of all pulses in the taluka remained almost unchanged throughout the period. However, we notice minor ups and downs in the in between years according to drought and good agricultural years.

In the first sub period 1965-70 the area index tended to fell and touch to 86.32. Similarly it's percentage share in the total area under pulses came down from 11.08 (1965-66) to 9.28

(1969–70). The production index, contrary to the area index moved in a upward direction. It changed from 100.00 (1965–66) to 160.00 in the last year of the sub period. Because of the increasing trend of the production, its percentage share in the total production of pulses rose from 3.47 to 4.36. This rise in the production could be attributed to the rising trned in the productivity of the crop as revealed by the productivity index. The productivity index shot up from 100.00 to 183.33 in 1969–70.

The falling trend in the area in the preceding period continued for further three years.(1970–73). The fall in the area during these three years was mainly on account of bad agricultural seasons. During the last two years (1973–75) the area index reasumed its upward trend and reached 141.50 (1974–75). Despite the abrupt fall in the area in 1971–73, the area under the crop tended to rise in the subsequent two years (1973–75). As a result its percentage share in the total area under total pulses rose from 9.36 (1970–71) to 15.67 (1974–75) The production index reveals the similar trend as noticed in respect of area. The production tended to fluctuate in accordance with the fluctuations in the area. During the year 1972–73 the production index dropped to 13.33. This was mainly on account of reduction in both area and productivity of

the crop. In the subsequent two periods, both the production and productivity tended to rise (250.00) and 173.61 respectively). Both area and yield of the crop seem to have contributed to a substantial rise in the production.

The rising trend of the area, production and yield of the crop continued in the subsequent year (1975-76) too, as the index number reveals. Thereafter, we notice a falling trend from the behaviour of the incidentally index numbers of area, production and yield. Incidentaly, the data with regard to area, production and yield, of the crop for the year 1976-77 were not available. We did not work out the indices for that year. In the year 1977-78 the area index fell to 128.06 and thereafter the area index tended to fall down. It touched 65.56 in the year 1980-81. The production index fell down abruptly (80.00) despite the area under the crop remained at high. This abnormal fall in the crop was caused by the fall in the productivity of the crop. The production index fell down from 170.83 (1975-76) to 62.5 (1977-78). In the subsequent year's 1978-81 both production and productivity indices tended to fall. However, they remained above the base years level. In the last year of the period, the area and yield seem to have fallen as the respective indices touched 96.66 and 147.22; Looking to the behaviour of area, production and yield of the crop one may

notice, despite minor variations caused by bad and good agricultural seasons, falling trend throughout the whole period under study. This concluding remark could be corrborated by the fall of the percentage share of its area in the total area under all pulses, from 11.08 (1965-66) to 8.27 (1980-81). However, the relative percentage share of its production in the total production of the pulses seems to have remained almost unchanged as the percentages worked out for the years 1965-66 and 1980-81 indicate.

Despite the fall in the area in the latter part of the period one may notice the gradual improvements in the production as the index numbers point out. This is exclusively because of the rising trend of the productivity, noticed after the drought year of 1977-78. Barring some abnormal agricultural years the over all trend of the productivity seems to have remained on the decline throughout the period. The declining trend of the productivity might have been one of the main reasons responsible for gradual contrations in the area under the crop.

4.5 MUNG :

Cultivation of mung rank's second considered in terms of percentage of its area to the total area under all pulses. However, considered in terms of the percentage of its production

to the total production of all pulses it ranks third.

During the first three year's (1965-68) the percentage share of its area remained constant. In the last two years of the period (1965-70) i.e. 1968-70 it declined slightly by just 1.00 percent that is 16.46 and 16.88 consecutively. The index number of the area tended to rise in the first two years 1966-68 (102.11 and 119.63) consecutively. There after the index number fell sharply to 85.04 (1968-69) and again it rose to 100.60 (1969-70). The percentage share of mung of production fluctuated year to year during this sub period b between 13.28 (1969-70) and 16.89 (1965-66). The production index tended to fluctuate in sympathy with the fluctuations in the area. The production index changed from 100.00 (base year) to 123.97 (1967-68) and thereafter it again fell down to 83.56 and 100.00 (1968-70) consecutively. The yield index, however, rose from 100.00 (base year) to 103.15 (1967-68) and there after it declined to 98.19 and 99.09 (1968-70).

During the next subperiod (1970-75) the area under the crop tended to fluctuate rather voilently as the area index reveals. Barring the first year(1970-71) in which the index number rose to 115.86 in the succeding two years (1971-73) the area under the crop dropped to 412. hectares and 411 hectares. (in absolute terms). As a result the area index

dropped to 62.23 and 62.08. (1971-73). In the last two years (1973-75) the area index remained above the base years level i.e. at 116.46 and 107.55. The production index continued its declining trend which was set in during the last two years (1968-70) of the preceding subperiod. The production index fell off from 91.09 (1970-71) to 13.01. (1972-73). There after the production remained constant as the index number remained at 113.01 in both the years (1973-75). The productivity index reveals that theproductivity of the crop tended to decline during this subperiod. During the first four years (1970-74) it remained below the base year level and fluctuated between 96.84 (1973-74) and 21.62 (1972-73) During this subperiod both the area and productivity seem to have been affected adversely by the occurrence of drought years Both falling area and productivity have contributed to the substantial fall in the production of mung during this period. Only during the last year of the subper od (1974-75) all the three area, yield and production tended to rise. Despite the fall in the area in absolute terms the percentage share in the total area under pulses shot up to 24.72 and 27.68 (1972-74) This rise in the percentage share of the area could be accounted for a nearly corresponding fall in the area under gram during those years.

During the last subperiod again the area fluctuated from year to year. Leaving aside the drought year (1976-77),

the area index consistently decreased from 132.02 (1975-76) to 70.69.(1979-80). The production index also moved down consitently from 204.10 to 110.27 in the corresponding years. Contrary to the area and production indices the productivity index tended to rise. The productivity index remained substantially higher than the base years level throughout the period. Incidentaly, during the drought year (1976-77) it reached at 160.81, despite an abrupt fall in both the area and production. During the subsequent years the contribution of productivity to the total output of the crop seems to have been greater than the area contribution. On the contrary the productivity contribution seems to have more than offset the fall in the production caused by the decline in the area under the crop. Given the normal agricultural years, it seems that, the inverse relationship between the area and productivity existed in respect of this crop. As the area under the crop goes on falling, the productivity per hectare tends to rise. This is substantiated by the behaviour of respective index numbers during the latter part of the period. Again the last year of the period indicates a substantial fall in area, production and yield as the index number fell to 72.20, 58.21 and 80.18 correspondingly.

Looking at the table and especially to the column of the area we notice that the fluctuations in the area from

year to year have occurred in accordance with the variations in the monsoon precipitation. Since mung pulse crop being a kharif crop and a pure crop, the early monsoon precipitation causes extension of the area under the crop while late monsoon precipitation causes the contraction of the area under the crop. On the whole the behaviour of the area seems to have been governed by the behaviour of the south west monsoon.

4.6 OTHER PULSES :

Area, Production and Yield of Other Pulses :

Other pulses grown in Kopargaon taluka include mainly black gram (udid) math, chavali etc. The area under other pulses did not exceed even 1 percent of the net area sown in the taluka throughout the period under study. However, the relative percentage share of the area under other pulses tended to increase during the whole period.

During the first subperiod 1965-70 the area index of the other pulses declined from 100.00 (1965-66) to 91.76 (1969-70) Similarly the percentage of the area to the total area under pulses declined from 17.46 to 15.54 in the corresponding years. The production index of other pulses show a similar trend towards decline excepting the year 1966-67 in which the production index touched 124.05. There after it declined continuously in the subsequent three years in sympathy with

the area index. The relative percentage share of the production of other pulses decreased from 9.14 (1965-66) to 6.01 (1969-70). The yield index also tended to decline from 100.00 (base year) to 91.59 leaving aside the year (1966-67) in which it crossed the base years level i.e. 126.05. Decreases in the area and productivity have contributed to the fall in the production in this period.

In the first year of the second subperiod (1970-71) all area, production and yield indices remained at substantially higher levels i.e. 119.46, 135.44 and 113.44 respectively. Consequently the percentage shares of area and production rose to 21.23 and 11.97 respectively. In the subsequent three years i.e. (1971-74) both area and production indices continuously declined and reached quite abnormal low levels of 25.59 and 27.84 respectively on account of the occurrence of drought. Contrary to the behaviour of area and production indices, the productivity index behaved abnormally during these three years. It fluctuated between 131.09 (1971-72) and 58.82 (1972-73). The last year of the subperiod (1974-75) seem to have favoured the cultivation of the other pulses in the taluka as both the area and production indices touched on all time record levels of 115.26 and 244.05. The putput of the other pulses in the taluka more than doubled in that year. The productivity index also reached an all time high

level of index. (194.11). The relative percentage shares of area and production also increased to 20.12 and 14.50 respectively.

In the last subperiod (1975-81) the area under other pulses tended to fluctuate rather voilently. However, the area index points out a firmly tendency towards a continuous decline. The area index fell from 116.31 to 87.12(1980-81). The production index remained, however, above the base year's level excepting the year of 1976-77 in which both area and production seem to have hit hard. If fluctuated between 181.01 (1979-80) and 135.44 (1978-79). The productivity of other pulses continuoued to increase through 1979-80. It rose from 142.85 (1975-76) to 170.58 (1979-80) and it slightly declined to 159.66 (1980-81). In these latter part of the period the productivity of the other pulses seems to have improved rather substantially and contributed to the rise in the production. The improvement in the productivity of the other pulses has more than offset the loss caused by the decline in the area. However, the relative percentage shares of the area remained unchanged by the end of the period. i.e. 17.32. But the relative percentage share of their production has gone up from 9.14 to 13.48 percent in the total output of other pulses. This has been mainly because of improvement in the productivity of other pulses as we notice from the

behaviour of the productivity index numbers. This can be considered as an indication of improvement in the cultivation of the pulses in the taluka.

4.7 TOTAL PULSES :

After having considered in detail, the behaviour of area, production and yield of the important pulse crops cultivated in Kopargaon taluka, we turn our attention towards the behaviour of area, production and yield of all pulses taken together throughout the period under study.

The area under the total pulses fluctuated throughout the whole period as the area index reveals. In some years especially in severe drought and bad agricultural yeqrs the area seems to have declined rather sharply while in good agricultural years the area under pulses seems to have increased slightly higher than the base years level. Barring some agriculturally good years 1977-78, 1967-70, and 1975-76 in which the area index remained slightly higher than the base year level, in the remaining years the area index remained below than that of the base years level. This points out to the fact that the area under pulses has been declining throughout the period. The area released by the pulses has gone under the cultivation of other crops, mainly cereals and fruit crops. The production of all pulses taken together fluctuated more

voilently than the area as the production index numbers reveal. The production index, however, seems to have remained above the base years level expect 1972-74 throughout the whole period under study. Looking at the yield column of the total pulses we may notice that the productivity index to have remained above the base years level except the two years of drought. The productivity index reveals the improvement in the productivity of the pulses. The improvement in the productivity has contributed to the putput growth of the pulses in the taluka. The farmers in the taluka seem to have been paying more attention to the systematic cultivation of the pulses. The relative rise in the prices of the pulses all over the country in the recent year's must have provided an incentive to the farmers to cultivate pulses more sysematically and to devote the area more suitable for cultivation of pulses. Besides, the relative rise in prices have compelled the farmers to increase the putput to satisfy their family consumption requirements. The increasing trend in the production of pulses might help remove to some extent the imbalance in agriculture production that has arisen in recent years.

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Year	Net Area	GRAM			TUR			HORSE GRAM			MUNG			OTHER PULSES			TOTAL PULSES		
	Sown	Area	Yield	Production.	Area	Yield	Production.	Area	Yield	Production.	Area	Yield	Production.	Area	Yield	Production.	Area	Yield	Production.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1965-1966	85962	1720	-	414	350	-	193	424	-	030	662	-	146	668	-	079	3824	-	864
	(2.00)	(2.00)	241	-	(0.40)	552	-	(0.49)	72	-	(0.77)	222	-	(0.77)	119	-	(4.43)	226	-
		100.00	100.00	100.0	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		44.98*	-	(47.91)	9.15*	-	(22.33)	11.08*	-	(3.47)	17.31*	-	(16.89)	17.46*	-	(9.14)	-	-	-
1966-1967	85365	1773	-	579	372	-	257	354	-	046	676	-	155	657	-	098	3832	-	1138
		(2.07)	327	-	(0.44)	693	-	(0.41)	132	-	(0.79)	230	-	(0.77)	150	-	(4.48)	297	-
		103.08	135.68	139.85	106.28	125.54	133.16	83.49	183.33	153.33	102.11	103.60	106.16	98.35	126.05	124.05	100.20	131.41	131.71
		46.26*	-	(50.87)	9.70*	-	(22.58)	9.23*	-	(4.04)	17.64*	-	(13.65)	17.14*	-	(8.61)	-	-	-
1967-1968	87227	2490	-	642	321	-	180	277	-	035	792	-	181	668	-	073	4548	-	1112
		(2.85)	258	-	(0.37)	561	-	(0.32)	128	-	(0.91)	229	-	(0.76)	110	-	(5.21)	245	-
		144.76	107.05	155.07	91.71	101.63	93.26	65.33	177.77	116.66	119.63	103.15	123.97	100.0	92.43	92.40	118.93	108.40	128.70
		54.75*	-	(57.73)	7.05*	-	(16.18)	6.09*	-	(3.15)	17.41*	-	(16.27)	14.68*	-	(6.56)	-	-	-
1968-1969	87324	1725	-	586	193	-	106	387	-	043	563	-	122	551	-	059	3419	-	918
		(1.98)	340	-	(0.220	553	-	(0.44)	112	-	(0.64)	218	-	(0.63)	108	-	(3.91)	269	-
		100.29	141.07	141.54	55.14	100.18	54.92	91.27	155.55	143.33	85.04	98.19	83.56	82.48	90.75	74.68	89.40	119.02	106.25
		50.45*	-	(63.83)	5.64*	-	(11.54)	11.31*	-	(4.68)	16.46*	-	(13.28)	16.11*	-	(6.43)	-	-	-
1969-1970	85748	1951	-	620	348	-	217	366	-	048	666	-	146	613	-	066	3944	-	1099
		(2.27)	318	---	(0.40)	625	-	(0.43)	132	-	(0.78)	220	-	(0.71)	109	-	(4.59)	279	-
		113.43	131.95	149.75	99.42	113.22	112.43	86.32	183.33	160.0	100.60	99.09	100.0	91.76	91.59	83.54	102.13	123.45	127.19
		49.46*	-	(56.41)	8.82*	-	(19.74)	9.28*	-	(4.36)	16.88*	-	(13.28)	15.54*	-	(6.01)	-	-	-
1970-1972	85301	1539	-	480	303	-	136	352	-	037	767	-	133	798	-	107	3759	-	894
		(1.80)	312	-	(0.36)	449	-	(0.41)	106	-	(0.90)	174	-	(0.93)	135	-	(4.40)	238	-
		89.48	129.46	115.94	86.57	81.34	70.46	83.01	147.22	123.33	115.86	78.37	91.09	119.46	113.44	135.44	93.30	105.30	103.47
		40.94*	-	(53.69)	8.06*	-	(15.21)	9.36*	-	(4.14)	20.40*	-	(14.87)	21.23*	-	(11.97)	-	-	-
1971-1972	86300	1822	-	634	246	-	083	246	-	027	412	-	076	417	--	065	3143	-	886
		(2.11)	348	-	(0.28)	340	-	(0.28)	112	-	(0.48)	185	-	(0.49)	156	--	(3.64)	282	-
		105.93	144.39	153.14	70.28	61.59	43.00	58.01	155.55	90.00	62.23	83.33	52.05	62.42	130.09	82.27	82.19	124.77	102.54
		57.97*	-	(71.55)	7.82*	-	(9.37)	7.82*	-	(3.04)	13.11*	-	(8.58)	13.26*	-	(7.34)	-	-	-

TABLE NO.4.3

THE INDEX NUMBERS OF AREA, PRODUCTION AND YIELD OF GRAM, TUR, HORSE-GRAM MUNG, OTHER PULSES AND TOTAL PULSES IN KOPARGAON TALUKA DURING 1965-66 to 1980-1981.

Area in Hectares.
Production in M.Tonnes.
Yield in K.G. per hectare.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1972-1973	72522	0694 (0.96) 40.34 41.75*	- 250 103.73 -	173 - 41.78 (74.89)	058 (0.08) 16.57 3.49*	- 205 37.13 -	011 - 05.69 (4.76)	198 (0.27) 46.69 11.91*	- 25 34.72 -	004 - 13.33 (1.73)	411 (0.57) 62.08 24.72*	- 0048 21.62 --	019 - 13.01 (8.22)	301 (0.51) 45.05 18.11*	- 70 58.82 --	021 - 26.58 (9.10)	1662 (2.29) 43.46 -	- 139 61.50 -	231 - 26.73 -
1973-1974	84600	1159 (1.37) 67.38 41.61*	- 333 138.17 --	385 - 92.99 (52.81)	283 (0.33) 80.85 10.16*	- 393 71.19 -	111 - 57.51 (15.22)	401 (0.47) 95.57 14.40*	- 110 152.77 -	044 - 144.66 (6.03)	771 (0.91) 116.46 27.68*	- 215 96.84 -	165 - 113.01 (22.63)	171 (0.20) 25.59 6.14*	- 134 112.60 -	022 -- 27.84 (3.01)	1785 (3.29) 72.82 -	- 262 115.92 -	729 -- 84.37 -
1974-1975	80800	1098 (1.36) 63.83 28.69*	- 365 151.45 -	400 - 96.61 (32.78)	647 (0.80) 184.85 16.90*	- 621 112.05 -	401 - 207.77 (32.86)	600 (0.74) 141.50 15.67*	- 125 173.61 -	075 - 250.0 (6.15)	712 (0.88) 107.55 18.60*	- 232 104.50 -	165 - 113.01 (13.52)	770 (0.95) 115.26 20.12*	- 231 194.11 -	177 - 244.5 (14.50)	3827 (4.73) 100.07 -	- 319 141.15 -	1220 - 141.20 -
1975-1976	80800	2199 (2.72) 127.84 43.63*	- 418 173.84 -	919 -- 221.98 (56.94)	543 (0.67) 155.14 10.77*	- 537 97.28 -	291 - 150.77 (18.02)	647 (0.80) 152.59 12.83*	- 123 177.80 --	079 - 263.33 (4.89)	874 (1.08) 132.2 17.34*	- 342 154.05 -	298 - 204.10 (18.46)	777 (0.96) 116.31 15.41*	- 170 142.85 -	132 - 167.08 (8.18)	5040 (6.23) 131.79 -	- 326 144.24 -	1618 - 186.80 -
1976-1977	79110	1872 (2.37) 108.83 79.12*	- 388 161.00 -	726 - 175.36 (78.23)	378 (0.49) 108.00 15.97*	- 478 86.59 --	180 - 93.26 (19.40)	N.A. - - -	- N.A - - -	N.A 0005 (0.006) 0.75 0.21*	- 357 160.81 -	001 - 0.68 (0.11)	111 (0.14) 16.61 4.69*	- 176 147.89 -	019 - 24.05 (2.05)	2366 (3.006) 61.87 -	- 392 173.45 -	928 - 107.40 -
1977-1978	41000	2001 (4.88) 116.33 44.94*	- 336 139.41 -	672 - 162.31 (52.38)	375 (0.91) 107.14 8.42*	- 474 85.86 -	177 - 91.70 (13-79)	543 (1.32) 128.06 12.19*	- 45 62.05 -	024 - 80.0 (1.87)	796 (1.94) 120.24 17.88*	- 351 158.10 -	279 - 191.09 (21.74)	737 (1.80) 110.32 16.55*	- 176 147.89 -	129 - 163.29 (10.05)	4452 (10.85) 116.42 -	- 288 127.43 -	1283 - 148.49 -
1979-1980	62200	1734 (2.79) 100.81 46.46*	- 427 177.17 -	739 - 178.50 (60.13)	393 (0.63) 112.28 10.53*	- 350 63.40 (-	137 - 70.98 (11.15)	430 (0.69) 101.41 11.52*	- 110 152.77 -	047 - 156.66 (3.82)	468 (0.75) 70.69 12.54*	- 345 155.40 -	161 - 110.25 (13.10)	707 (1.14) 105.83 18.94*	- 203 170.58 -	143 - 181.01 (11.63)	3732 (6.00) 97.59 -	- 330. 146.01 -	1229 - 142.24 -
1980-1981	69871	1630 (2.33) 94.76 48.52*	- 419 173.85 -	683 -- 164.97 (83.70)	391 (0.55) 113.98 10.64*	- 563 101.99 --	220 - 113.98 (26.96)	278 (0.39) 65.56 8.27*	- 106 147.22 -	029 - 96.66 (3.55)	478 (0.68) 72.20 14.23*	-- 178 80.18 -	85 - 58.21 (10.41)	582 (0.83) 87.12 17.32*	- 190 159.66 -	110 - 139.25 (13.48)	3359 (4.80) 87.61 -	- 243 107.52 -	816 - 94.44 -

Source : 1) As in the table No. 2.1
2) Yield data collected from the Dept. of Agricultural M.S. - (Centrel Building) Poona.

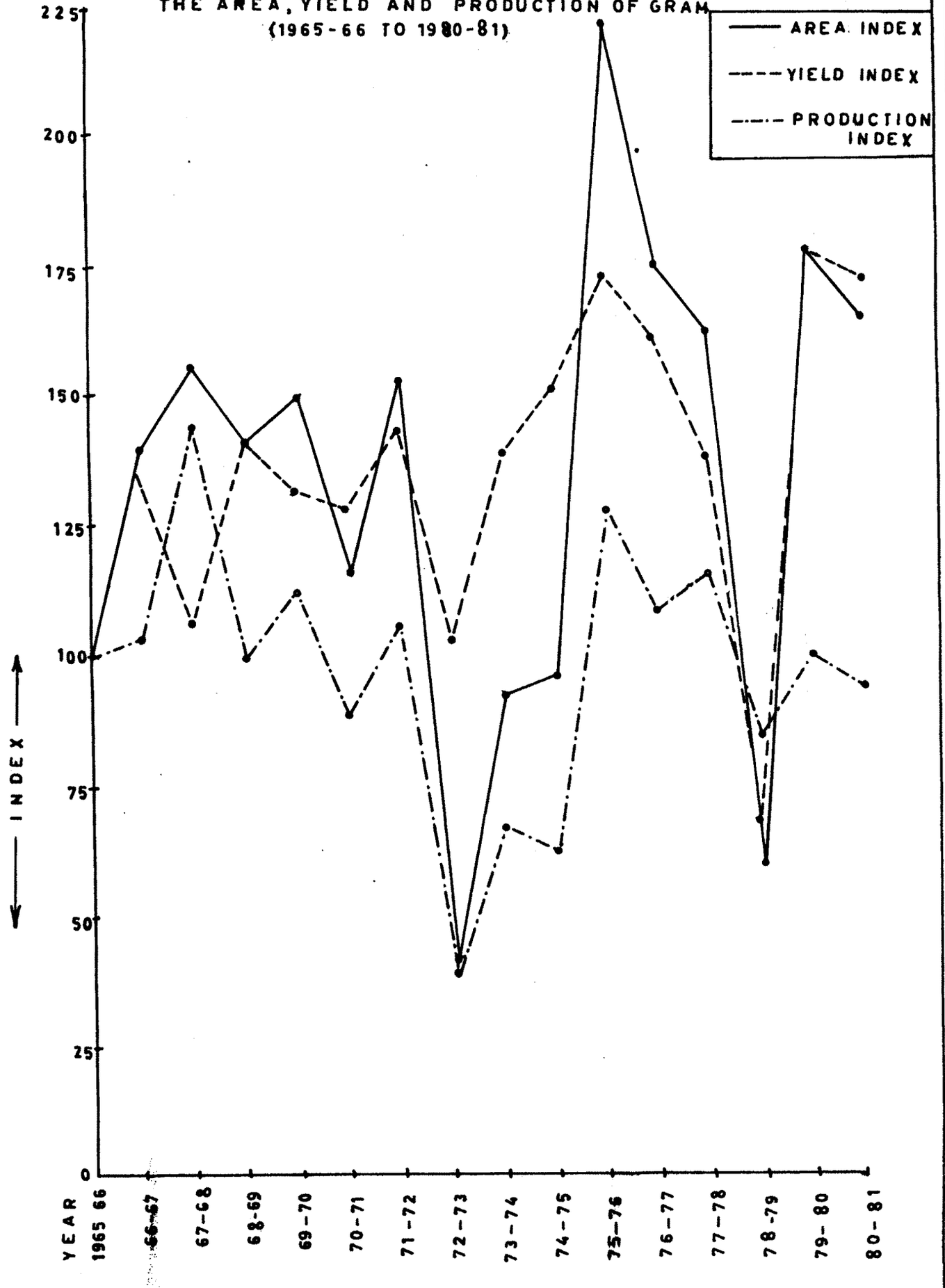
Note : Figures in the bracket indicate the relative percentage shares in the N.A.S, and the relative percentage shares of the production individual pulses in the total production of all pulses taken together.

TABLE NO. 4.3 (Contd....)

GRAM

GRAPH NO. 4·6

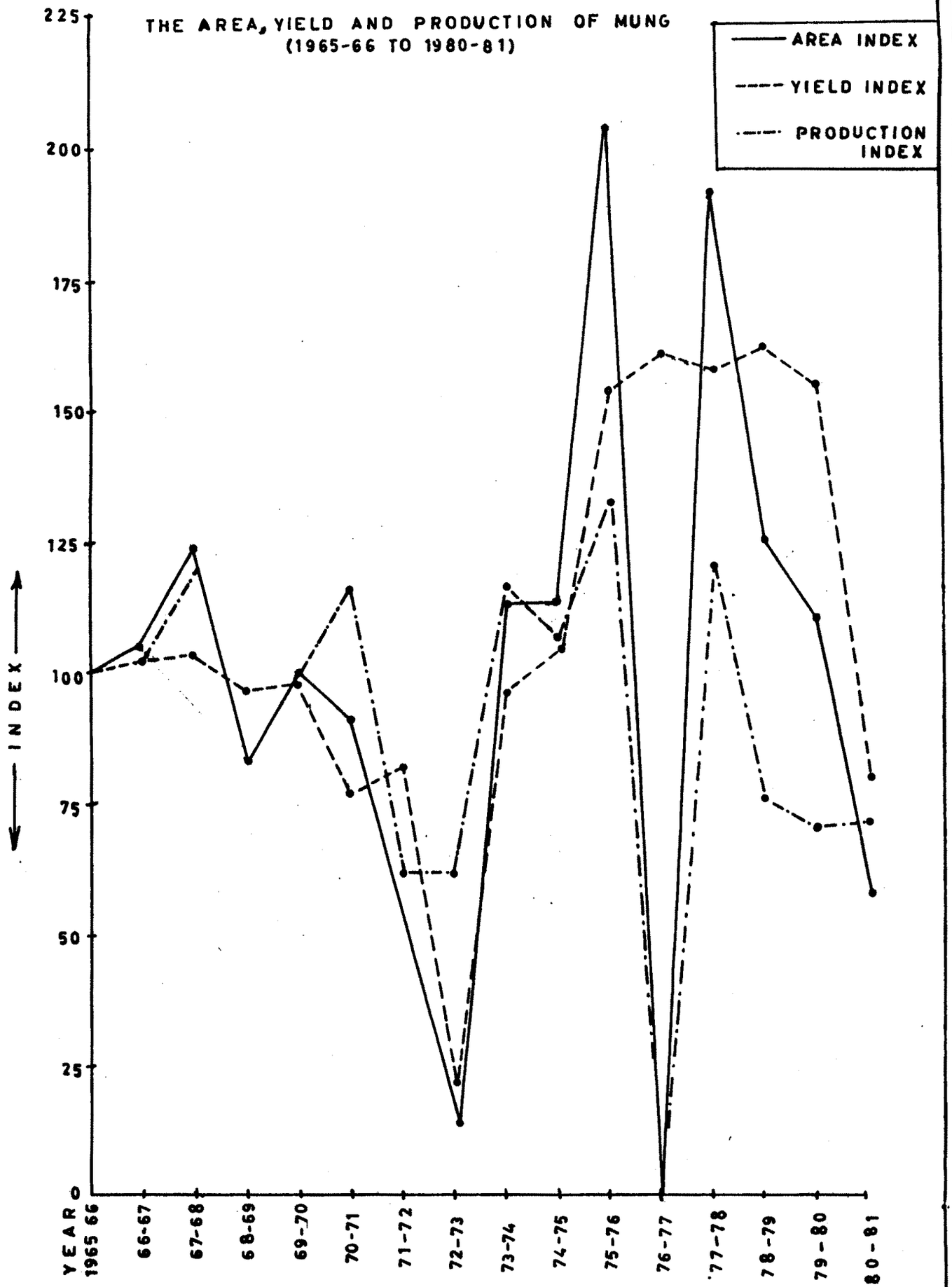
THE AREA, YIELD AND PRODUCTION OF GRAM
(1965-66 TO 1980-81)



MUNG

GRAPH NO. 4.9

THE AREA, YIELD AND PRODUCTION OF MUNG
(1965-66 TO 1980-81)



TOTAL PULSES

GRAPH NO. 4·8

THE AREA, YIELD AND PRODUCTION OF TOTAL PULSES (1965-66 TO 1980-81)