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Production Analysis of Chickpea: A Case Study of District Layyah

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Abstract:

The current review has been intended to decide the productivity of chickpea cultivators, to appraise the consequence of diverse elements on creation of chickpea and to recognize the example and limitations associated with its showcasing. Chickpea (Cicer Arietinum) is a significant vegetable harvest. It has high dietary worth; particularly high items in protein (22-24%) which are adequate to adjust the everyday person's eating routine. This study depends on essential information. Tehsil Chobara of locale Layyah is chosen as test region. For assessment of data, money related evaluation gauges, for instance, net return and benefit cost extent are use, and a Cobb-Douglas type creation capacity in the log structure is apply to perceive the factors impacting the yield of chickpea. The drawing in estimations is used to survey the monetary profile of the chickpea cultivators. The chow test is furthermore use to conclude the security of the backslide model. R square is 0.526 in the backslide model surveyed for chickpea created in watered district. For this situation F esteem is 9.685. This suggests that the creation capability utilized for watered chickpea in the current review is by and large measurably huge. In the assessed relapse model for chickpea developed in downpour took care of region, R2 0.601 with F esteem 17.697 shows the genuinely meaning of creation capability utilized for the downpour took care of chickpea. Seed rate highest affects the yield of chickpea among any remaining data sources remembered for creation examination. The advantage cost proportion of 3.12 and 3.07 for the chickpea developed in the watered and downpour took care of regions separately proposes that chickpea development is the beneficial in the review region.

Key Words: Chickpea, economic analysis, district Layyah, chickpea cultivation

1. Introduction:

Chickpea (Cicer Arietinum) is one of the main heartbeat crops developed in minimal and downpour took care of regions. It has high dietary worth; particularly high items in protein i.e., 22-24% (Stallknecht et al. 1999) which are adequate to adjust the everyday person's eating regimen. There are two significant kinds of chickpeas, recognized by seed size, shape and variety. The primary generally little cultivated in light tan to dull tone is called Desi while tremendous developed in white to pale cream is called Kabuli (Regan et al., 2006; Margheim et al., 2002). Chickpea is a one of a kind yield for Thal regions, since it has the qualities like shaggy plant type with little flyers and long taproot frameworks, reasonable for sandy soil, and it

can possibly bear the dry spell conditions. It is developed all around the Pakistan however Punjab area contributes significant offer in its creation as 88% of the all out yield is delivered in the 'Punjab. Out of 'which the significant offer comes from the Thal' zone, as the Thal' Region doesn't uphold other money crops due to the non-accessibility of counterfeit water system sources and the low richness of soil. The creation and region under chickpea have enormous changes additional time because of the different factors, for example, fluctuating info levels, cost risk and dubious climatic circumstances. It is developed on around 1205 thousand hectares with a yearly creation of 920 thousand tones (GOP, 2019). The summing tension on our economy to take care of additional individuals has expanded the significance of using the potential downpour took care of zones of Pakistan' to further develop food security (Mahmood et al. 1991). The current chickpea assortments don't give the ideal yield due to the financial and specialized imperatives. Conventional chickpea assortments have the low potential to battle with the prevalent arrangements of oat crops. In Pakistan, there is a wide opening between the veritable and conceivable yield of chickpea because of numerous financial and specialized imperatives. The main considerations influencing the yield of chickpea areas; improper culturing rehearses, season of planting, seed rate, presence of weeds, number of water systems in the event of flooded land, collecting time and the climatic circumstances. The precipitation to a great extent affects the yield.

The between managing or the turn of vegetables crops with the grain cereals extends the soil productivity by nitrogen fixation through the bacterial activities, disturbs the vermin/bug cycle, fabricates the yields and returns of the farmers and chickpea is a huge vegetable collect for the between altering of the oat crops (Whish et al. 1999). Financial aspects of developing chickpea is affected by different elements including yield created, costs of data sources and the costs of result got by the ranchers. The precipitation is the vital variable for the result of gram harvest to be created; the downpour at reasonable time goodly affects crop creation while the downpour at unsatisfactory time seriously influences the yield creation. Chickpea creation, promoting and the handling is gone up against with various issues. The costs of data sources are slowly rising, particularly the costs of fuel, which bring down the productivity of ranchers. The costs for yield are likewise expanding however with less rate as contrast with costs of information sources.

Financial examination assists a rancher with coming to conclusions about designation of scant assets in a reasonable manner to meet designated targets. A financial examination has been finished on account of chickpea creation to feature the monetary motivations under downpour took care of conditions where obvious gets back from other horticultural yields can't be acquired. The current review is intended to decide the benefit of chickpea cultivators, to assess the consequence of diverse variables on the harvest of chick-pea and to distinguish the example and limitations engaged with its showcasing.

2. Materials and Methods:

The current review depended on essential information. Tehsil chobara of the locale Layyah was chosen, on the grounds that the deserts of tehsil chobara are more appropriate for this yield. Information were gathered from 159 respondents including both flooded and downpour took care

of chickpea cultivators from five towns of the Tehsil. A very much planned and exhaustive poll was utilized to gather data from the chose respondents. The survey contained questions in regards to utilization of various assortments of gram, techniques for planting, utilization of different data sources, cost of various activities, yield and costs of result and information sources, wellsprings of advances and promoting rehearses for the two kinds of chickpea development (flooded and downpour took care of). Data about the homestead and family attributes, for example, land property, trimming design, the region under downpour took care of and inundated crops, age, family size, instructive level and cultivating experience of the rancher was likewise gathered. A sum of 18 ranchers from every town were chosen haphazardly with the underlying data that they were chickpea cultivators inside the review region. To analyze the expenses and returns, the ranchers were partitioned into three classifications in light of the homestead size as under, (Hassan et al. 2005).

a. Little Ranchers: Developing area up to 12.5 sections of land.

b. Medium Ranchers: Developing area more noteworthy than 12.5 sections of land and under 25 sections of land.

c. Huge Ranchers: Developing area in excess of 25 sections of land.

The talked with respondents comprised of little ranchers (half), medium ranchers (30%) and huge ranchers (20%). Unmistakable measurements were utilized to register the mean qualities, frequencies and rates of different factors like age, family size, ranch insight, family work utilized for cultivating, instructive level, functional land possessions and other homestead attributes. This multitude of qualities decided the situation with the rancher and played an imperative part in ranch efficiency. To assess the expenses brought about and returns got by the chickpea producers, different monetary measures, for example, net returns and benefit cost not entirely settled by the procedure used by Demircan et al. (2006). The net still up in the air by removing the variable cost of creation from gross worth of creation or gross returns as given underneath:

$$N/R = G/R - T/VC$$

Where

N/R = Net/Revenue

G/R = Gross/Revenue

T/VC = Total/Variable Cost

Benefit-cost proportion was considered by divid-ing the gross-income by the absolute factor cost as given underneath:

$$B.C.R = G.R/T.\ V.C$$

Where

B.C.R = Benefit-Cost-Ratio

G.R = Gross-Revenue

T.V.C = Total-Variable-Cost

To recognize the different elements influencing the yield of the chickpea, a Cobb-Douglas type model in the log structure was utilized as;

$$\mathbf{Ln(Y)= ß_o + ß_i \sum LnX_i + \alpha_i \sum .D_i + \mu_i}$$

Here; Y= control variable, X_i = explanatory variable,

D_i = Dummy variable,

Which were, X_2 = Lạnd' grounding cost per acre, X_3 = Seed amount per acre

X_4 = Tidying cost per acre, X_5 = Ranch practice per year
D_1 = Dummy' variable' for ranch size, (1= Small ranch size, 0= others)
D_2 = Dummy' variable' for rainwater at pillaring stage, (1= yes, 0= no)
D_3 = Dummy' variable for rainwater at flowering stage, (1= yes, 0= no)
$ß_i$ = Coeffi-cient of independent variables

α_i = Coeffi-cients of dummy variables,

β_o = Intercept

μ_i = Error term

This research contained the development of chick-pea in the downpour took care of a well as the watered region. To test measurably that the upsides of the boundaries were same or different for entire information, a proper test typically known as Chow test was likewise utilized.

3. Results and Discussion:

(i) Financial profile of the ranchers

The financial qualities of the tested ranchers like age, cultivating experience, family size and others are for the most part viewed as significant in receptivity of developments and homestead efficiency. On normal 58.9% of test respondents had a place with the age gathering of '30-40' years. This age bunch included 61.1%' huge, 55.6%, middle and 60.0%, little ranchers. Around 32% of the absolute respondents had ranch insight of 15 to 20 years in which the medium ranchers comprised 37%. Generally, the ranch insight of the example respondents was low in the study region in light of the fact that the matured individuals requested that their young ones be consulted. Overall, 35.6% of complete respondents were unskilled and in this, the level of the little ranchers was more for example 42.2%. The little ranchers had the most noteworthy proficiency pace of 40% in the instructive degree of 1-5 years. Generally speaking, the education level of the ranchers in the review region was extremely low because of the monetary imperatives and non-accessibility of the schools in the provincial regions. In general, 53.3% of respondents had a place with the family gathering of 5-8 individuals. The more family work utilized for cultivating supplant the employed work, decreases the expense and expands the net returns of the cultivating. The review shows that on typical 53.3% respondents involved 2 relatives in the cultivating in the overview region. The typical ranch size of the absolute respondents was 22.5 sections of land in which downpour took care of land

contributed around 72%. The enormous ranchers had normal functional holding of 58.5' sections of land. C-44' and Bittel-98' were the significant chick-pea assortments to be planted in the review region. On normal 86.7%' of the respondents' utilized their own 'seed created in the earlier year' with-out legitimate capacity necessities. Chickpea in the downpour took care of region is to be planted mid (first and second seven-day stretch of October) to get the advantage of the dampness accomplished during the storm season. By and large, 66.7% ranchers planted chickpea in the downpour took care of region on the planting date October 5-15. Around 90%' of the respondents' established their harvest from 15' to 25 October' as it is the finest time for the watered chick-pea in the review region. The majority of the ranchers showed hesitance in getting credit on account of the mind boggling systems of the Govt. Foundations' and exorbitant loan costs of private sources.

(ii) Financial matters of chickpea at flooded and downpour took care of ranches

The assessment of the expenses and returns empowers the chief to distribute the accessible assets in a more productive manner and gives the expression on the powerless and solid places of the undertaking. Typically, the chickpea cultivators showed hesitance in expanding the expense of creation of the harvest, particularly in the downpour took care of regions, on account of hazardous nature of the yield. Overall, seed rate' utilized by the ranchers was 27 kg/ac' and 20 kg/ac' in the watered and downpour took care of regions separately. More human work was expected for weed destruction and reaping in the watered region when contrasted with the downpour took care of region. Likewise, the seriously sifting cost was brought about for the chickpea developed in the flooded land than the downpour took care of land on the grounds that the watered chickpea development gave better return and dry matter creation. The huge ranchers spend more around 1726 Rs/ac' on the land readiness in the flooded region' to accomplish the designated yield. By and large, the seed cost of over 1550 Rs/ac' had the most elevated share while the land planning cost of 1451.15 Rs/ac' involved the second situation in the complete variable expense. The reaping and weeding of chickpea crop were manual. By and large, the all-out factor cost assessed on the development of chickpea in the flooded region was '6344 Rs/ac'. This registered expense '(6344 Rs/ac)' of chickpea creation coordinated with the expense 6023 Rs/ac' as assessed by the Shah et al. 2007. The expense of development of chickpea in the downpour took care of region was an excessive amount of not exactly the expense of flooded land. Overall, the complete variable expense registered for the development of chickpea in the downpour took care of region was around 3631 Rs/ac'.

Table 1: Production and revenues in irrigated chickpea production

Items	Ranch Size			Total
	Minor	Middle	Huge	
Grain produce per acre	350.48	397.91	425.72	391.37
Grain value per kg	47.33	53.66	54.00	50.08

Profit from grain harvest per acre	16588.21	19389.00	22563.16	19599.73
Value of dry-stalk per acre	680.74	690.00	765.22	706.21
Gross revenues per acre	17268.97	20079.00	23328.38	19800.95
Net revenues per acre	11628.12	13660.61	15959.38	13972.94
Benefit-cost proportion	3.06	3.12	3.18	3.12

Table1 shows that colossal farmers got the better return of 425.72 kg/ac as difference with the medium (397.91 kg/ac) and little (350.48) farmers in the watered area. The net returns were the summation of the benefits from the grains and the value of the dry tail. Net returns of the colossal farm size (15959 Rs/ac) were more essential than the little (11628 Rs/ac) and the medium (13660 Rs/ac) farm size. Overall, the net returns of the immersed chickpea were 13972 Rs/ac. The benefit cost extent of the colossal farmers was more vital when stood out from nearly nothing and medium ones, since immense farmers sold their produce at additional over the top expenses and got the remarkable yields. The benefit, taking everything into account, cost extent of the watered chickpea was 3.12. It suggests that the improvement of the chickpea in the watered area returned the endeavor and gave the additional advantage of 2.12 per rupee contributed.

Table 2: Production and revenues in rain-fed chickpea

Items	**Ranch Size**			**Total**
	Minor	**Middle**	**Huge**	
Grain harvest per acre	227.70	214.81	277.77	223.85
Grain amount per kg	47.30	48.70	50.23	48.00
Profit from grain yield	10765.56	10434.26	11390.28	10791.11
Worth of dry stalk	374.55	377.96	415.27	383.72
Gross revenues	10040.11	10811.96		11174.83
Net revenues	7046.60	7159.20	7857.12	7542.94
Benefit-cost ratio	3.20	2.95	2.98	3.07

As given in Table 2, the ranch size significantly affected the yield got from the chickpea developed in the downpour took care of region. The net returns got from chickpea developed in the downpour took care of region were the practically equivalent for the all ranch size. The net returns' (7543 Rs/ac)' assessed in the current review' were in accordance with the profits' (8000 Rs/ac') as figured' by Shah et al. 2007. The advantage cost proportion of little ranchers was high as contrast with enormous and medium ranchers. The purpose for this was that huge and medium ranchers had greater expense of creation because of the recruited work for gathering and weeding for their enormous grounds while little ranchers had advantages of simple accessibility of own work for their little homesteads. The unexpected returns

of huge ranchers were sufficiently not to counterbalance the greater expense of creation. Overall, the advantage cost proportion of 3.07 implied that the development of the downpour took care of chickpea in the review region was beneficial venture regardless of numerous specialized and financial limitations.

(iii) Cobb Douglas production analysis of Ranchers

In this review, a Cobb-Douglas type creation capability was utilized to decide the effect of different variables on the yield of chickpea developed in flooded and downpour took care of land. To check the strength of relapse model, we utilized the Chow test. It was presumed that the boundary or coefficient of relapses for the inundated and downpour took care of chickpea were measurably unique, so we utilize the two relapse models for flooded and downpour took care of chickpea respondents independently. In the model for watered chickpea, R square' is 0.526', it shows that 52%' variety in subordinate variable' is made sense of by illustrative factors' that have been consolidated in the creation capability. It additionally demonstrates that the creation capability fit well to the given informational collection. The F' esteem' is 9.685' which is genuinely unique in relation to nothing. It implies that the creation capability utilized in the current review is in general genuinely huge. In the relapse examination for chickpea developed in the downpour took care of region, R2' is 0.601', it shows that 60% variety in relapse and is made sense of by repressors' remembered for the creation capability.

The review showed that land readiness, seed rate, weeds annihilation and ranch experience decidedly affected the yield of chickpea developed in both watered and downpour took care of land. In the two cases, seed rate highestly affected the yield of chickpea among any remaining data sources remembered for the creation examination. Similar outcomes were likewise drawn by the Salami and Ahmadi (2010). The effect of homestead size was huge for the inundated chickpea while unimportant for the downpour took care of chickpea. The effect of precipitation at tillering and blooming stage was additionally unimportant in the two cases. As per Pandey (1998) and An effective arrangement of horticultural advertising plays basic part in expanding creation and working on the net returns of the ranchers. The review shows that 85.6%' chickpea cultivators in review region' offered their result to the town beopari'. None of the model respondents organized all of their produce to the commission subject matter expert. Around half colossal and 14.8% medium farmers sold their chickpea result to both town beopari' and commission trained professionals and all of the little farmers offered their produce to the town beopari' in the survey locale. The primary limitation in the promoting was the unfortunate foundation nearby. Others incorporated the conspiracy of town 'beopari, acts of neglect in gauging, unjustifiable derivations and the low cost to be charge by the neighborhood vendors. A portion of the little ranchers likewise dealt with the issue of deferred installments from the town 'beopari' from which they get credits/contributions for the development of the yields.

Conclusion:

The primary target of the current review is to decide the productivity of chickpea cultivators both in the flooded and downpour took care of regions. The development of the chickpea had enormous variances particularly in the dry land in view of the climate vulnerability. The

variables, for example, ranch size, training, age, cultivating experience, season of planting and further developed seed assortments emphatically affected the yield of chickpea. The huge ranchers contribute more and get high return and gets back from chickpea development. The expense of creation was higher in the event of the watered chickpea because of the evening out and water system costs which had no utilization in the development of chickpea in the downpour took care of region. The huge ranchers have greater expense of creation and get significant yields as contrast with the medium and little ranchers. Ranchers are developing their conventional assortments that are helpless to illnesses. Hence, there is need to work on the social practices, by embracing suggested advancements by the cultivators. The ranchers don't involve manures and pesticides in the chickpea creation due to the low prerequisite of the harvest for the natural matters and don't face a lot of challenge of high portions of contributions as the yield of the chickpea relies on the weather patterns. The elements influencing the yield of the chickpea are land arrangement, seed rate, weeds annihilation, planting time, precipitation at various stages and the quantity of water systems in the event of flooded land. Development of chickpea is a productive endeavor disregarding numerous financial and specialized issues in the review region. By taking care of these issues, the creation and the profits of the ranchers can be increment.

The elective harvest to chickpea ought to be created to further develop the dirt status in the downpour took care of regions. The improved and dry spell safe assortments of chickpea ought to be fostered that fit explicit specialties in the trimming design. The appropriate land readiness and utilization of further developed chickpea assortments with ideal degrees of different sources of info can increment chickpea seed yield under dry-land conditions too (Khan et al. 2003). Handling plants ought to be laid out in the chickpea delivering district to stay away from cost variance. Government organizations backing ought to be given guaranteeing the stockpile of confirmed seed and credit. Government ought to give impetuses, for example, value backing and protection to chickpea crop.

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