



Agribusiness Opportunity for Pigeon pea growing Farmers

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Abstract

Pulses occupy a unique position in Indian agriculture. It plays a vital role in fixing atmospheric nitrogen in to Nitrate and make the soil fertile. Akola district of Maharashtra is one of the important pulse trading centers in India. Agro climatic condition of Akola district of India is suitable for pigeon pea crop hence it is an important pulse crop in the area. Secondary data on area production and productivity were collected from various government publication and websites for the period of 2001-2011. An effort has been made to prove the leverage of suitable agro climatic condition for the pulse crops and agribusiness opportunity available in that area. Growth and instability of pigeon pea crop shows significant and positive growth rate over the period of time. Even if having diverse cropping pattern in the area. Instead of depending upon only farming; farmers can go for subsidiary agribusiness. "Mini dal mill" can be a good agribusiness in that area. As it required less investment and can gets good return. Government subsidy is also available for the same. Farmers, self help group (SHG), small entrepreneur, unemployed youth can leverage this opportunity and can start their own agribusiness.

Keywords: Agribusiness, growth trend, pigeon pea, Dal Mill.

Introduction

Pulses occupy a unique position in Indian agriculture. Among the pulse crops, *tur* or red gram or pigeon pea (*Cajanus cajan* (L.) Mil. sp.) is an important pulse crop in Indian subcontinent¹. It is an annual crop, cultivated for its sweet tasting legumes, which is consumed as popular staple diet in many countries².

Growing pigeon pea is profitable enough as these plants yield in less fertile soil and requires only normal rainfall³. It is a summer legume with excellent drought tolerance and suitable for dry land farming. It has numerous nodules on roots containing Rhizobium bacteria, which fixes atmospheric nitrogen⁴. It is the second most important pulse crop only after chickpea, among different pulse crops in the country. It is a protein rich staple food and consumed in the form of split pulse as *Dal*. It contains about 22 percent protein, which is almost three times that of cereals. Pigeon pea supplies a major share of protein requirement of vegetarian population of the country. It has some medicinal use too⁵.

This pulse bears a high popularity level and it is proven by the fact that it is cultivated in more than 25 tropical and sub-tropical countries of the world. In Asia, India, Nepal, China and Myanmar are the major producers of this crop and interestingly Myanmar's major motive behind producing pigeon pea is to export it to India⁶.

pigeon pea is grown in all the states of India, major pigeon pea growing states are Maharashtra, Uttar Pradesh, Karnataka, Madhya Pradesh, Gujarat, Rajasthan, Haryana, Punjab, Tamil Nadu, Orissa and Bihar.

Pigeon pea is one of the important pulse crops in Akola district

of Maharashtra. It is one of the important pulses trading centers' in India. Even if having divers climatic condition pigeon pea crop gives good yield⁷.

Akola district of Maharashtra comes under the indecisive rainfall zone. Many time farmers have to face the situation like draught in the district. It's not only affect the farming but also affect the socioeconomic condition of farmer⁸. Instead of depend upon only farming farmers need to do some agribusiness by leveraging the opportunity of significant pigeon pea production in that area.

Material and Methods

Figure-1 represents the Akola district. Present study predominantly based on secondary research. Akola district was selected for the study purposively as it is one of the important pulse trading centers in India.

Map of Akola District: The time serious data on area production and productivity of pigeon pea was collected from various government publications and websites for the year 2001-02 to 2011-12.

Objective: To study the growth trend of pigeon pea crop over the period of time. To suggest the scalable agribusiness opportunity in the area.

Statistical tools: Estimation of growth rates: The growth rates in area, production and productivity of pigeon pea crop were studied estimating compound growth rates. The growth rate was estimated using exponential trend model⁹.

$$Y = a \cdot b^t$$



Figure-1

Where: Y = Area / production / productivity, a = Intercept, b = Regression coefficient, t = Time variable, From the estimated function, the compound growth rate was worked out by,

$$CGR (r) = [Antilog (\log b) - 1] \times 100$$

Where: r = Compound growth rate

Degree of instability in area, production and productivity of Pigeon pea: The degree of instability in area production and productivity of pigeon pea was measured using coefficient of variation and coefficient of instability¹⁰

$$\text{Coefficient of variation (C.V.)} = \frac{6}{\bar{X}} \times 100$$

Where: Standard deviation = $\sqrt{\frac{\sum (x - \bar{x})^2}{n}}$, \bar{x} = Arithmetic mean

Coppocks Instability Index: Coefficient of instability was worked out using Coppocks Instability Index.

$$V \log = \frac{(\sum \log \frac{X_{t+1}}{X_t} - m)}{N}$$

The instability index = $\sqrt{[Antilog (v \log) - 1]} \times 100$

Where: X_t = Area / production productivity of crop in year t, N

= Number of years minus one, M = Arithmetic mean of the differences between the log of X_t and X_{t-1} , X_{t-2} etc. V log = Log arithmetic variance of the series

Results and Discussion

It could be seen from the table-1 that the area, production and productivity of pigeon pea in Akola district shows significant growth rate in the study period. Highest growth rate was reported under production as 3.98 per cent, while area increase was 2.51 per cent and productivity increased by 1.49 per cent.

Table-1
Compound growth rate (CGR) of area, production and productivity of pigeon pea

Sr. No.	Particular	CGR
1.	Area	2.51***
2.	Production	3.98***
3.	Productivity	1.49*

Note: ***, ** and * indicate 1, 5 and 10 per cent levels, respectively.

Table-2 depicted the coefficient of variation in area, production and productivity of pigeon pea in Akola district. It could be seen that significantly less variation was observed in area i.e. 10.40 percent. It means that area of pigeon pea over the period has been almost constant, whereas very high coefficient of variation was observed in production (24.20 per cent) and productivity (23.21 percent).

Table-2
Coefficient of variation in area, production and productivity of pigeon pea in Akola district

Sr. No.	Particular	Coefficient of variation (%)
1.	Area (00 ha)	10.40
2.	Production (00 tones)	24.20
3.	Productivity (kg/ha)	23.21

Coefficient of Instability: The coefficient of variation measures the absolute variation while coefficient of instability which is also called as instability index measures the variation around the trend. It is a close approximation of the average year to year percentage variation adjusted for trend. Thus the variations around the trend are more pronounced than the absolute variation.

Table-3
Coppocks Instability Index of area, production productivity and Price of pigeon pea in Akola district

Sr. No.	Particular	Instability Index (%)
1.	Area	10.45
2.	Production	13.90
3.	Productivity	14.00

It could be seen from the table-3 that the instability index of pigeon pea area was relatively less (10.45 per cent) compared to that of production (13.90 per cent) and productivity (14.00 per cent). Means less instability been observed in Area Compared to Production and Productivity.

Agribusiness opportunity for the farmers: Rain fed farmers in India had to face extreme climatic conditions in the district. Some time the rain god may not kind to farmers. That time farmers had to face financial losses in farming as it was their prime occupation. But if farmers can enter in subsidiary agribusiness with farming, it would be reduce the financial risk, means even if he could not get enough money from farming due to natural calamities, the subsidiary agribusiness can help them to sustain in that adverse situation.

There are various agribusinesses opportunities available for the farmers like poultry, fishery, goat farming, sericulture, aqua culture, food processing, packaging, etc. Taking in to consideration the agro climatic condition of the district having abundant pulse production and availability of Dal Mill training facility by Dr. Panjabrao Deshmukh Agricultural University Akola, Maharashtra, India. Mini dal mill is one of the good agribusinesses in that area. As it required less investment and farmers' can gets good return. It must be a scalable agribusiness opportunity of the area.

Mini Dal Mill Model: Dr. Panjabrao Deshmukh Agricultural University, Akola, Maharashtra had developed a model "Mini Dal Mill". They are conducting training on working of Mini dal mill. Farmers, self help group (SHG), small entrepreneur, unemployed youth can leverage this opportunity and can start their own agribusiness venture.

Government subsidy is also available for the same. Governments' main aim of the scheme is to enhance the productivity, efficiency of pulse crop and technology dissemination pertaining to pulse processing by providing pulse dryer; dust controller etc. 50 % government subsidy is also available on purchase of the equipments.

Conclusion

In India, Agro climatic conditions of Akola district are suitable for the pulse crops. Akola is one of the important pulse trading centers in India. Even if having divers cropping pattern in the district growth and instability of pigeon pea crop shows significant and positive growth rate with respect to area, production and productivity over the period of time.

Instead depends upon only farming farmers can go for subsidiary agribusiness, "Mini dal mill" is one of the good agribusiness opportunity in that area. As it required less investment and can gets good return.

Dr. PDKV, Akola, Maharashtra, India has developed a model "Mini Dal Mill" and also conduct training on working of Mini dal mill. Government subsidy is also available for the same. Farmers, self help group (SHG), small entrepreneur, unemployed youth can leverage this opportunity and can start their own agribusiness. It will defiantly be helpful to enhance a socio economic status of farmers.

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