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Area of Cultivation and Production of Spices in India

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Abstract

Present study has examined the growth and instability in area and production of spices in India from 1990-91 to 2018-19. The costs of production of spices in India are very high compared to those of other countries. The spices production in India have increased tremendously, which is evident from an increasing in area of cultivation. There is high competition as spices economy has shifted to consumer driven enterprises, rather than producer driven economy. India emerged as a reliable supply of spices to the world market. The projection data explains that total production of spices in India has an increasing trend. There is scope for improvement for increasing the India's share in the global market.

Key words : Area of Cultivation, Production of Spice

Introduction

India is the major producer, consumer and exporter of spices in the world. India grows over 75 different varieties of spices because of varied agro-climatic conditions and soil types. They are not only indispensable for the dietary pattern but are also known for their medicinal and curative effects since time immemorial. The flavour and fragrance of Indian spices had a magic spell in human civilization and culture since very ancient days. Spices bring to mind images of tempting culinary art, fascinating travels and bitter struggle for supremacy. Expressions like “Variety is the spices of life” and “sugar and spices and all that are nice” show how spellbound were men of letter about the fascination of spice.

Area of Cultivation of Spices in India

In India, different states are known as different spices. They are produced in all the states and union territories. Andhra Pradesh and Telangana are known foreigner, turmeric, chilli, and Mustard, Gujarat for Cumin, Dill seeds, fenugreek, fennel, Chilli and garlic. Himachal Pradesh fir ginger, Haryana is known for garlic, Karnataka for pepper, ginger, cardamom (small), ginger, chilli, turmeric and garlic, Orissa for ginger chilli, turmeric, and garlic, Kerala is known for pepper, ginger, chilli, turmeric, nutmeg and mace, Clove. The majority of Indian spices production is undertaken in very small holdings, often on hilly tracts of land. It is that 2.5 to 3.0 million small holders cultivate one or more spices. Among the spices produced in the country, black pepper and small cardamom originated in the Western Ghats of South India and this area is noted for large scale cultivation of these two crops. Spices such as ginger, turmeric and tamarind are also grown here to a large extent.

Thus, South India has made a name for its monopoly in the production of these spices. Other spices like chilli, cinnamon, tejpatt, pepper long, etc. are cultivated in north eastern parts of India in sizable quantities (Hari Babu, 2017).

Production of Spices in India

The costs of production of spices in India are very high compared to those of other countries. For example, the cost of cultivation of cardamom for one acre of land in India is Rs.42,175/- while it is only Rs.11000/- in Guatemala. The high costs in India are due to low productivity and high rates of wages. Cultivation of spices is labour intensive in character and the areas where spices are cultivated in India wage rates are high. There are constant attempts by countries like Vietnam, Brazil, etc. to reduce costs. These countries frequently use virgin land for cultivation resulting in high productivity. Likewise, in Guatemala cardamom cultivators' resort to 'shift' cultivation i.e., when the farmers find that land productivity has come down, they abandon it and do cultivation on fresh land. But since India is a largely populated country, shift cultivation cannot be practised.

Objectives

The main objective of this paper is to study the total area of cultivation and production of spices cultivation in India.

Data Sources and Methodology

In order to fulfil the above objectives, this study is based on secondary data relating to the area of cultivation, production of different spices in India and domestic and export market of Indian spices. The data was collected from the published sources of Annual reports (various issues 1990-91 to 2018-19), Statistical Year Book (various issues 1990-91 to 2018-19) and Spices Export Reviews (various issues 1990-91 to 2018-19) of Spices Board, Cochin. The study covers the period between 1990-91 to 2018-19 (29 years). In order to study the objective and to make the inference based on the statistical tools of analysis like percentages, mean, standard deviation, co-efficient of variation, annual

growth rate, compound growth rate and the trend analysis was used in this study. For Trend Projection of Area of Cultivation and Production of Spices in India was computed using formula $Y_t = a + bt + ut$

Where,

Y_t = Area/ Production/ Productivity/ Export

a = Intercept

b = $(1+g)$ regression coefficient

ut = Disturbance term for the year 't'

Total Area of Spices Cultivation in India

Spices have been an integral part of Indian diet, and the demand for spices has been growing every year. India has natural comparative advantage with respect to production of spices and its utilization. India has diversified agro-climatic conditions, production environments, availability of varieties of spices for different climatic conditions, labour force, cultivators, huge domestic market and long tradition of using spices and their products in food, medicinal purpose and also cosmetics. These are the reasons that in almost all states and union territories of India, at least one spice is grown in abundance. India is not only the largest producer but also largest consumer of spices in the world.

The total area of cultivation of Spices in India and its annual growth rate is presented in Table 1.

The total area of Spices cultivation in India has increased from 19,25,030 hectares in 1990-91 to a maximum of 39,70,769 hectares in 2018-19 which shows that the total area of spices cultivation in India has increased more than two times within 29 years of analysis. It also explains that total area of spices cultivation has increased in terms of hectares with a fluctuating trend. The annual growth rate of total area of spices cultivation has been registering with a positive as well as negative sign during the period of study. The mean magnitude of total area of spices cultivation has registered 27,72,134 hectares during the 29 years of analysis. After 2007-08 only the total area of spices cultivation has recorded more than the mean magnitude of total area of spices cultivation and before that it has registered less than the mean magnitude of total area of spices cultivation. The coefficient of variation explains that the variation between years of analysis has registered 20 percent

in the total area of spices cultivation. The compound annual growth rate has registered less than three percent of total area of spices cultivation in India which explains that area of cultivation of spices in India has not achieved any significant growth during the period of study.

Table 1 Total Area of Spices Cultivation in India: 1990-1991 to 2018-2019

Year	Total Area of Spices Cultivation (in hectares)	Annual Growth Rate
1990-91	1925030	-
1991-92	1977630	2.7
1992-93	2703990	36.7
1993-94	2796100	3.4
1994-95	2660200	-4.9
1995-96	1993700	-25.1
1996-97	2150770	7.9
1997-98	2476140	15.1
1998-99	2479000	0.1
1999-00	2291020	-7.6
2000-01	2320480	1.3
2001-02	2653430	14.3
2002-03	2379910	-10.3
2002-04	2564860	7.8
2004-05	2403200	-6.3
2005-06	2399730	-0.1
2006-07	2511890	4.7
2007-08	2875848	14.5
2008-09	2948558	2.5
2009-10	2899887	-1.7
2010-11	3043583	5.0
2011-12	3541804	16.4
2012-13	3172468	-10.4
2013-14	3145610	-0.8
2014-15	3192640	1.5
2015-16	3457000	8.3
2016-17	3529200	2.1
2017-18	3927430	11.3
2018-19	3970769	1.1

Mean	2772133.69	-
SD	552123.23	-
CV	19.92	-
CAGR	2.53	-

Source:

1. Annual Reports (1990-91 to 2018-19) published by Spices Board, Cochin.
2. Spices Statistics (Various Issues – 1990-2019) published by Spices Board, Cochin.
3. Spices Export Review (Various Issues – 1990-91 to 2018-19) published by Spices Board, Cochin.

Total Production of Spices in India

The total quantity of spices production in India in terms of tonnes and its annual growth rate during 1990-91 to 2018-19 is given in Table 2.

Table 2 Total Production of Spices in India: 1990-1991 to 2018-2019

Year	Total Production of Spices (in tonnes)	Annual Growth Rate
1990-91	1981390	-
1991-92	1884220	-4.9
1992-93	2460010	30.6
1993-94	2571900	4.5
1994-95	2677170	4.1
1995-96	2070180	-22.7
1996-97	2639350	27.5
1997-98	2879370	9.1
1998-99	2842080	-1.3
1999-00	2908810	2.3
2000-01	2880830	-1.0
2001-02	3142430	9.1
2002-03	3131130	-0.4
2002-04	3813210	21.8
2004-05	3793540	-0.5
2005-06	3941600	3.9
2006-07	4404680	11.7
2007-08	5195762	18.0
2008-09	5387092	3.7

2009-10	5286552	-1.9
2010-11	5933126	12.2
2011-12	6324920	6.6
2012-13	5801114	-8.3
2013-14	5833870	0.6
2014-15	6169900	5.8
2015-16	6901780	11.9
2016-17	7075500	2.5
2017-18	9599900	35.7
2018-19	9268081	-3.5
Mean	4441361.97	-
SD	2103321.62	-
CV	47.36	-
CAGR	5.46	-

Source: as in Table 1

The total quantity of spices produced in India has increased from 19,81,390 tonnes in 1990-91 to a maximum of 95,99,900 tonnes in 2017-18, which reveals that the total output of spices has registered nearly five times within 29 years of analysis and the subsequent year it has reduced 92,68,081 tonnes in 2018-19. The annual growth rate has registered a maximum of 36 percent during 2017-18 and the remaining years the annual growth rate the output of spices has been fluctuating and registered both positive and negative growth rate. The mean

magnitude of spices production in India during 29 years of the study which has been recorded 44,41,361 tonnes. The coefficient of variation explains the spices production in India between years during the study period has been registering a wide variation (47.36 percent). The data explains that total output growth of India spices has registered a fluctuating trend during the study period. The compound annual growth rate of total production of spices during the 28 years of analysis which shows that only less than six percent of growth in total production of spices in India due to inadequate production of planting improved and high yielding varieties of spices, inadequate plant production, and high production cost.

Trend Projection of Area of Cultivation of Spices in India: 1990-91 to 2024- 25. The trend projection of the area of cultivation of Indian spices from 1990-91 to 2024- 25 is presented in Table 3. The trend analysis of area of cultivation of spices in India is calculated from 1990-91 to 2024-25 which shows that the area of cultivation of spices in India has been projecting an increasing trend. The spices in India have increased tremendously, which is evident from an increasing in area of cultivation. There is high competition as spices economy has shifted to consumer driven enterprises, rather than producer driven economy.

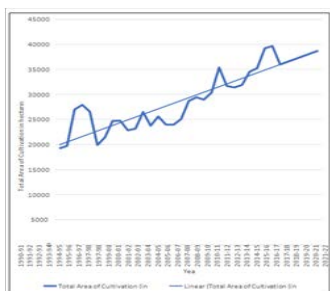
Table 3 Trend Projection of Area of Cultivation of Spices in India: 1990-91 to 2024-25

Year	Total Area of Cultivation (in hectares)	x	xy	x ²	y=a+bx
1990-91	1925030	-14	-26950420	196	1998374
1991-92	1977630	-13	-25709190	169	2053642
1992-93	2703990	-12	-32447880	144	2108911
1993-94	2796100	-11	-30757100	121	2164179
1994-95	2660200	-10	-26602000	100	2219448
1995-96	1993700	-9	-17943300	81	2274717
1996-97	2150770	-8	-17206160	64	2329985
1997-98	2476140	-7	-17332980	49	2385254
1997-98	2479000	-6	-14874000	36	2440522
1999-00	2291020	-5	-11455100	25	2495791

2000-01	2320480	-4	-9281920	16	2551059
2001-02	2653430	-3	-7960290	9	2606328
2002-03	2379910	-2	-4759820	4	2661597
2003-04	2564860	-1	-2564860	1	2716865
2004-05	2403200	0	0	0	2772134
2005-06	2399730	1	2399730	1	2827402
2006-07	2511890	2	5023780	4	2882671
2007-08	2875848	3	8627544	9	2937939
2008-09	2948558	4	11794232	16	2993208
2009-10	2899887	5	14499435	25	3048477
2010-11	3043583	6	18261498	36	3103745
2011-12	3541804	7	24792628	49	3159014
2012-13	3172468	8	25379744	64	3214282
2013-14	3145610	9	28310490	81	3269551
2014-15	3192640	10	31926400	100	3324819
2015-16	3457000	11	38027000	121	3380088
2016-17	3529200	12	42350400	144	3435357
2017-18	3927430	13	51056590	169	3490625
2018-19	3970769	14	55590766	196	3545894
2019-20	3601162	15	54017430	225	3601162
2020-21	3656431	16	58502896	256	3656431
2021-22	3711699	17	63098883	289	3711699
2022-23	3766968	18	67805424	324	3766968
2023-24	3822237	19	72622503	361	3822237
2024-25	3877505	20	77550100	400	3877505
Total	102827879		505792453	3885	
a	3545788.931				
b	130191.1076				

Source: as in Table 1

Chart 1 Trend Projection of Total Area of Cultivation of Spices in India



Trend Projection of Production of Spices in India: 1990-91 to 2024-25

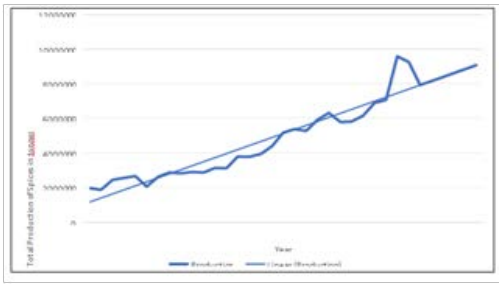
The trend projection of spices in India during 1990-91 to 2024-25 is analysed in Table 4. India emerged as a reliable supply of spices to the world market. The projection data explains that total production of spices in India has an increasing trend. There is scope for improvement for increasing the India's share in the global market.

Table 4 Trend Projection of Production of Spices in India: 1990-91 to 2024-25

Year	Production (in tonnes)	x	xy	x ²	y=a+bx
1990-91	1981390	-14	-27739460	196	1180390
1991-92	1884220	-13	-24494860	169	1413316
1992-93	2460010	-12	-29520120	144	1646243
1993-94	2571900	-11	-28290900	121	1879169
1994-95	2677170	-10	-26771700	100	2112096
1995-96	2070180	-9	-18631620	81	2345023
1996-97	2639350	-8	-21114800	64	2577949
1997-98	2879370	-7	-20155590	49	2810876
1998-99	2842080	-6	-17052480	36	3043802
1999-00	2908810	-5	-14544050	25	3276729
2000-01	2880830	-4	-11523320	16	3509656
2001-02	3142430	-3	-9427290	9	3742582
2002-03	3131130	-2	-6262260	4	3975509
2003-04	3813210	-1	-3813210	1	4208435
2004-05	3793540	0	0	0	4441362
2005-06	3941600	1	3941600	1	4674289
2006-07	4404680	2	8809360	4	4907215
2007-08	5195762	3	15587286	9	5140142
2008-09	5387092	4	21548368	16	5373068
2009-10	5286552	5	26432760	25	5605995
2010-11	5933126	6	35598756	36	5838922
2011-12	6324920	7	44274440	49	6071848
2012-13	5801114	8	46408912	64	6304775
2013-14	5833870	9	52504830	81	6537701
2014-15	6169900	10	61699000	100	6770628
2015-16	6901780	11	75919580	121	7003555
2016-17	7075500	12	84906000	144	7236481
2017-18	9599900	13	124798700	169	7469408
2018-19	9268081	14	129753134	196	7702334
2019-20	7935261	15	119028915	225	7935261
2020-21	8168188	16	130691008	256	8168188
2021-22	8401114	17	142818938	289	8401114
2022-23	8634041	18	155412738	324	8634041
2023-24	8866967	19	168472373	361	8866967
2024-25	9099894	20	181997880	400	9099894
Total	179904962		1371262918	3885	
a	6203619.379				
b	352963.4281				

Source: as in Table 1

Chart 2 Trend Projection for Total Production of Spices in India



Conclusion

India has a world-wide reputation as the only country which produces all kinds of spices and it is through these spices exports to more than 100 countries and earns the much-needed foreign exchange over a longer period. The demand for Indian spices and its products is increasing both the domestic and foreign market. India is fast emerging as a global leader which has vast natural resources and human resources combined with the advanced technology, Indian spices market is making its presence across the world. The total area of spices cultivation in India has increased more than two times within 29 years of analysis. The annual growth rate of total area of spices cultivation has been registering with a positive as well as negative sign during the period of study. The area of cultivation of spices in India has been projecting an increasing trend. The spices production in India have increased tremendously, which is evident from an increasing in area of cultivation. There is high competition as spices economy has shifted to consumer driven enterprises, rather than producer driven economy. India emerged as a reliable supply of spices to the world market. The projection data explains that total production of spices in India has an increasing trend. There is scope for improvement for increasing the India's share in the global market.

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