

Crop Production Analysis in India

The Agriculture business domain, as a vital part of the overall supply chain, is expected to highly evolve in the upcoming years via the developments, which are taking place on the side of the Future Internet. This paper presents a novel Business-to-Business collaboration platform from the agri-food sector perspective, which aims to facilitate the collaboration of numerous stakeholders belonging to associated business domains, in an effective and flexible manner. The objective of this project is to predict crop production and find important insights highlighting key indicators and metrics that influence crop production.

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In [1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

import warnings
warnings.filterwarnings('ignore')
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In [2]: # reading the data
crop=pd.read_csv("Crop Production data.csv")
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In [3]: pd.set_option('display.max_rows',1000)
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In [4]: crop.head(200)
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set_option("display.max_rows",1000)								
crop.head(200)								
	State Name	District Name	Crop Year	Season	Crop	Area	Production	
0	Andaman and Nicobar Islands	NICOBARS	2000	Kharif	Arecanut	1254.00	2000.00	
1	Andaman and Nicobar Islands	NICOBARS	2000	Kharif	Other Kharif pulses	2.00	1.00	
2	Andaman and Nicobar Islands	NICOBARS	2000	Kharif	Rice	102.00	321.00	
3	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Banana	176.00	641.00	
4	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Cashewnut	720.00	165.00	
5	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Cocunut	18168.00	6510000.00	
6	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Dry ginger	36.00	100.00	
7	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Sugarcane	1.00	2.00	
8	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Sweet potato	5.00	15.00	
9	Andaman and Nicobar Islands	NICOBARS	2000	Whole Year	Tapioca	40.00	169.00	
10	Andaman and Nicobar Islands	NICOBARS	2001	Kharif	Arecanut	1254.00	2061.00	
11	Andaman and Nicobar Islands	NICOBARS	2001	Kharif	Other Kharif pulses	2.00	1.00	
12	Andaman and Nicobar Islands	NICOBARS	2001	Kharif	Rice	83.00	300.00	
13	Andaman and Nicobar Islands	NICOBARS	2001	Whole Year	Cashewnut	719.00	192.00	
14	Andaman and Nicobar Islands	NICOBARS	2001	Whole Year	Cocunut	18190.00	64430000.00	
15	Andaman and Nicobar Islands	NICOBARS	2001	Whole Year	Dry ginger	46.00	100.00	
16	Andaman and Nicobar Islands	NICOBARS	2001	Whole Year	Sugarcane	1.00	1.00	
17	Andaman and Nicobar Islands	NICOBARS	2001	Whole Year	Sweet potato	11.00	33.00	
18	Andaman and Nicobar Islands	NICOBARS	2002	Kharif	Rice	199.20	510.84	
19	Andaman and Nicobar Islands	NICOBARS	2002	Whole Year	Arecanut	1258.00	2083.00	
20	Andaman and Nicobar Islands	NICOBARS	2002	Whole Year	Banana	213.00	1278.00	
21	Andaman and Nicobar Islands	NICOBARS	2002	Whole Year	Black pepper	63.00	13.50	
22	Andaman and Nicobar Islands	NICOBARS	2002	Whole Year	Cashewnut	719.00	208.00	
23	Andaman and Nicobar Islands	NICOBARS	2002	Whole Year	Cocunut	18240.00	67490000.00	
24	Andaman and Nicobar Islands	NICOBARS	2002	Whole Year	Dry chilies	413.00	28.80	
25	Andaman and Nicobar Islands	NICOBARS	2002	Whole Year	Dry ginger	47.30	133.00	
26	Andaman and Nicobar Islands	NICOBARS	2002	Whole Year	Sugarcane	5.00	40.00	
27	Andaman and Nicobar Islands	NICOBARS	2003	Kharif	Rice	52.00	90.17	
28	Andaman and Nicobar Islands	NICOBARS	2003	Whole Year	Arecanut	1261.00	1525.00	
29	Andaman and Nicobar Islands	NICOBARS	2003	Whole Year	Banana	266.00	1763.00	
30	Andaman and Nicobar Islands	NICOBARS	2003	Whole Year	Black pepper	75.50	15.86	
31	Andaman and Nicobar Islands	NICOBARS	2003	Whole Year	Cashewnut	717.00	208.50	
32	Andaman and Nicobar Islands	NICOBARS	2003	Whole Year	Cocunut	18284.74	69580000.00	
33	Andaman and Nicobar Islands	NICOBARS	2003	Whole Year	Dry chilies	60.00	102.00	
34	Andaman and Nicobar Islands	NICOBARS	2003	Whole Year	Dry ginger	102.00	326.40	
35	Andaman and Nicobar Islands	NICOBARS	2003	Whole Year	other oleseeds	4.20	0.30	
36	Andaman and Nicobar Islands	NICOBARS	2004	Kharif	Rice	52.84	72.57	
37	Andaman and Nicobar Islands	NICOBARS	2004	Whole Year	Arecanut	1264.70	805.85	
38	Andaman and Nicobar Islands	NICOBARS	2004	Whole Year	Banana	66.42	404.12	
39	Andaman and Nicobar Islands	NICOBARS	2004	Whole Year	Black pepper	85.00	15.86	
40	Andaman and Nicobar Islands	NICOBARS	2004	Whole Year	Cashewnut	693.50	197.90	
41	Andaman and Nicobar Islands	NICOBARS	2004	Whole Year	Cocunut	18394.70	52380000.00	
42	Andaman and Nicobar Islands	NICOBARS	2004	Whole Year	Dry chilies	60.00	145.20	
43	Andaman and Nicobar Islands	NICOBARS	2004	Whole Year	Dry ginger	118.00	366.00	
44	Andaman and Nicobar Islands	NICOBARS	2004	Whole Year	other oleseeds	1.00	0.11	
45	Andaman and Nicobar Islands	NICOBARS	2005	Kharif	Rice	2.09	12.06	
46	Andaman and Nicobar Islands	NICOBARS	2005	Whole Year	Arecanut	795.67	NaN	
47	Andaman and Nicobar Islands	NICOBARS	2005	Whole Year	Banana	22.00	582.00	
48	Andaman and Nicobar Islands	NICOBARS	2005	Whole Year	Black pepper	41.00	0.10	
49	Andaman and Nicobar Islands	NICOBARS	2005	Whole Year	Cashewnut	450.00	55.60	
50	Andaman and Nicobar Islands	NICOBARS	2005	Whole Year	Cocunut	13876.57	52030000.00	
51	Andaman and Nicobar Islands	NICOBARS	2005	Whole Year	Dry chilies	17.00	NaN	
52	Andaman and Nicobar Islands	NICOBARS	2005	Whole Year	Turmeric	10.00	70.00	
53	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Arecanut	896.00	477.60	
54	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Banana	198.00	976.00	
55	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Black pepper	22.16	0.68	
56	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Cashewnut	450.00	85.13	
57	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Cocunut	14358.00	59370000.00	
58	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Dry chilies	3.00	9.00	
59	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Dry ginger	6.00	21.00	
60	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Sugarcane	0.20	0.50	
61	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Sweet potato	18.00	86.00	
62	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Tapioca	52.03	450.00	
63	Andaman and Nicobar Islands	NICOBARS	2006	Whole Year	Turmeric	2.50	1.03	
64	Andaman and Nicobar Islands	NICOBARS	2010	Autumn	Rice	3.50	10.00	
65	Andaman and Nicobar Islands	NICOBARS	2010	Autumn	Sugarcane	13.40	41.75	
66	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Arecanut	944.00	1610.00	
67	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Black pepper	23.00	8.50	
68	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Cashewnut	1000.50	269.50	
69	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Dry chilies	12.00	25.00	
70	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Dry ginger	7.00	9.64	
71	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Maize	3.84	18.22	
72	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Moong(Green Gram)	1.50	1.10	
73	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Sweet potato	22.00	208.00	
74	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Turmeric	2.00	0.50	
75	Andaman and Nicobar Islands	NICOBARS	2010	Rabi	Urud	1.50	1.16	
76	Andaman and Nicobar Islands	NICOBARS	2010	Whole Year	Banana	593.00	3425.00	
77	Andaman and Nicobar Islands	NICOBARS	2010	Whole Year	Cocunut	14560.00	71300000.00	
78	Andaman and Nicobar Islands	NICOBARS	2010	Whole Year	Tapioca	69.00	575.00	
79	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Kharif	Arecanut	3100.00	5200.00	
80	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Kharif	Other Kharif pulses	668.00	448.00	
81	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Kharif	Rice	10779.00	31863.00	
82	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Whole Year	Banana	1531.00	12073.00	
83	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Whole Year	Cashewnut	80.00	54.00	
84	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Whole Year	Cocunut	6992.00	23900000.00	
85	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Whole Year	Dry ginger	352.00	1120.00	
86	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Whole Year	other oleseeds	133.00	55.00	
87	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Whole Year	Sugarcane	141.00	3736.00	
88	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Whole Year	Sweet potato	78.00	843.00	
89	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2000	Whole Year	Tapioca	160.00	2108.00	
90	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2001	Kharif	Arecanut	3100.00	5239.00	
91	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2001	Kharif	Other Kharif pulses	418.00	199.00	
92	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2001	Kharif	Rice	9718.00	27033.00	
93	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2001	Whole Year	Cashewnut	81.00	33.00	
94	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2001	Whole Year	Cocunut	7015.00	25250000.00	
95	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2001	Whole Year	Dry ginger	344.00	1124.00	
96	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2001	Whole Year	Sugarcane	81.00	2379.00	
97	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2001	Whole Year	Sweet potato	100.00	5.00	
98	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Kharif	Rice	6854.30	18995.62	
99	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Arecanut	1160.00	3011.70	
100	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Banana	957.57	8592.00	
101	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Black pepper	175.00	19.14	
102	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Cashewnut	40.50	44.00	
103	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Cocunut	3575.00	15400000.00	
104	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Dry chilies	235.72	824.30	
105	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Dry ginger	98.66	929.00	
106	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	other oleseeds	35.62	21.40	
107	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Sugarcane	71.30	1500.00	
108	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Sweet potato	30.00	240.00	
109	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Tapioca	255.00	1420.00	
110	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2006	Whole Year	Turmeric	68.00	408.00	
111	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Autumn	Rice	6791.00	20118.00	
112	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Autumn	Sugarcane	73.33	89.20	
113	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Arecanut	1296.00	2290.00	
114	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	AharTur	294.50	90.80	
115	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Black pepper	168.00	13.50	
116	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Cashewnut	84.50	39.00	
117	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Dry chilies	254.00	402.00	
118	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Dry ginger	110.00	1011.84	
119	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Groundnut	4.75	6.80	
120	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Maize	86.70	96.40	
121	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Moong(Green Gram)	1.00	0.50	
122	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Sunflower	2.90	1.90	
123	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi	Sweet potato	109.00	480.00	
124	Andaman and Nicobar Islands	NORTH AND MIDDLE ANDAMAN	2010	Rabi				