Economic&PoliticalWEEKLY

ISSN (Online) - 2349-8846

What are the Effects of GST on Indian Agriculture? The Case of Turmeric

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Vol. 52, Issue No. 41, 14 Oct, 2017

A comparison of the costs of farm inputs for turmeric cultivation in India before and after the implementation of Goods and Services Tax is presented. The results indicate that fertiliser costs of turmeric cultivation have reduced by 0.94%, while fungicide costs have increased by 11.32%. If both fertiliser and fungicide costs are included, the costs of turmeric cultivation can be said to have increased by 3.7%.

Goods and Services Tax (GST) is a common tax mechanism that replaces approximately 20 types of central and state taxes across India. The GST structure currently has four slabs, 5%, 12%, 18%, and 28% (Firstpost 2016). With regard to agriculture, there are two key differences in how a good is taxed in GST from the previous tax system:

(i) before GST, the state level value added tax (VAT) was applied after including the central excise duty on the price of the good while in GST, the State GST (SGST), and Central GST (CGST) are applied simultaneously on the price of the good (Ministry of Information and Broadcasting 2017a; 2017b).

(ii) under GST, the sectors included in "agriculture" have changed. For example, in the pre-GST era, few agricultural and allied sectors such as dairy farming, poultry farming, and stock breeding were not subjected to tax as they were included in the broad agricultural

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sector. But, under GST, the above three sectors are no longer part of the broad agriculture sector and therefore subject taxation (Pressreader 2017; Indiafilings 2017; Cleartax 2017).

How does GST affect the farm sector? A farmer uses several key inputs, including fertiliser, manure, tractor, diesel, seed, pesticides, and fungicides, labour, farm equipment, and electricity for producing output. Fertilisers include nitrogen (N), phosphorus (P), and potash (K). Few of these inputs may not be affected by GST.

Farm Inputs:

Figure 1 shows a comparison of tax rates for major farm inputs before and after GST. Important findings include:

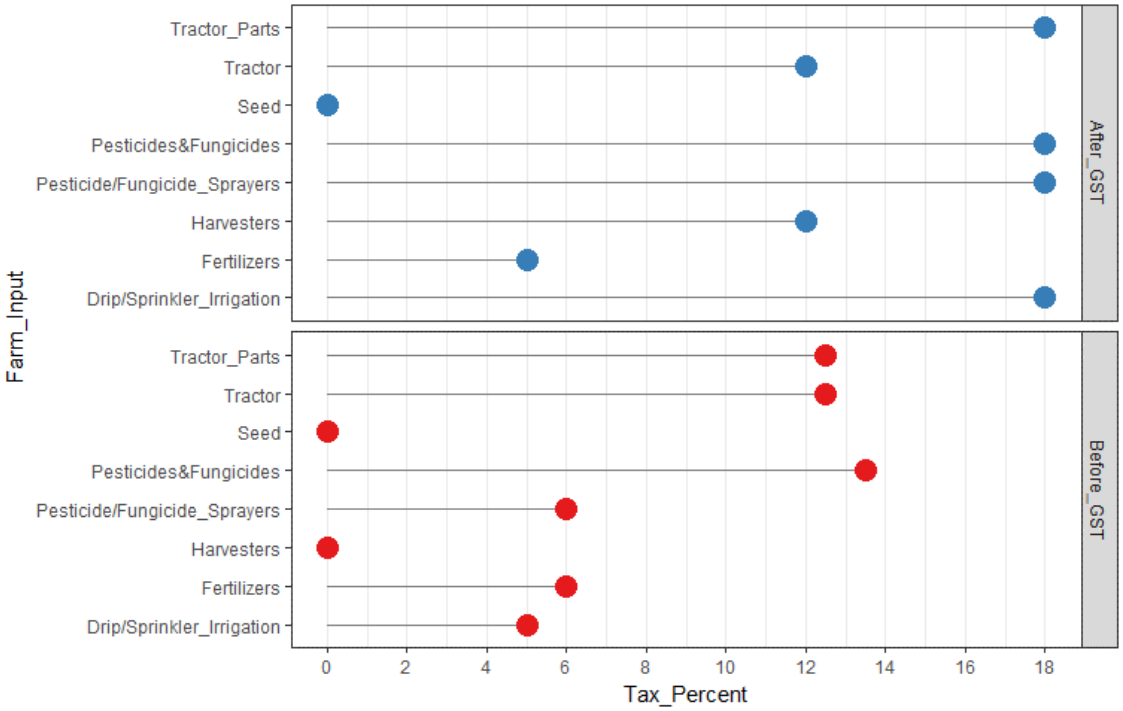
(i) overall tax rates are higher under GST,

(ii) tax rates of five inputs (see Figure 1) have increased while the tax rates for two inputs have nominally decreased. Finally, there is no tax rate for seeds, which was the case before GST as well. Few inputs such as tractor parts may not impact the farmer directly but may impact him/her indirectly. For example, if tractor manufacturers decide to pass on the increase in tax on tractor parts to the farmer, then the overall cost of the tractor will increase. Other input costs such as manure could depend on the tax rate of diesel. For example, if the diesel price increases under GST, it is more likely that the manure costs are increased as well.

(iii) Figure 1. A comparison of tax rates before and after GST.

Economic&PoliticalWEEKLY

ISSN (Online) - 2349-8846



Farm inputs in Figure 1 may be classified into two types: (i) short term, and (ii) long term. Short term inputs are typically used immediately once they are bought while long term inputs are used for more than one crop cycle. Short term inputs include fertiliser, pesticides and fungicides, and seed, etc, while long term inputs include tractor, harvesters, drip/sprinkler irrigation, pesticide & fungicide sprayers, etc.

Before GST, the tax rate for fertilisers equaled 6% (1% excise, 5% VAT) (Cleartax 2017) while it is 5% now. A tractor was taxed at 12.5% before GST, while under GST it is subjected to 12% (Choudhary 2017).

However, for tractor parts, the tax rate has increased from 12.5% to 18% with GST (Choudhary 2017). Fungicides & pesticides were taxed at 12%–15% (on average 13%) earlier, but now the figure stands at 18% (Choudhary 2017).

Hence, the price of fungicides are pesticides are expected to increase under GST. Tax rates have increased for agricultural equipment, including fungicide and pesticide sprayers, drip/sprinkler irrigation equipment, and harvesters (Choudhary 2017).

Turmeric: A Case Study of Fertiliser and Fungicides Costs

I have used turmeric as an example to assess the impact on its cost of cultivation, specifically focusing on the cost of fungicide and fertiliser.

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Turmeric is a spice crop commonly cultivated in south-east Asia. India is a major producer and exporter of turmeric in the world. It is cultivated in Andhra Pradesh, Telangana, Tamil Nadu, Odisha, Assam, Maharashtra, Kerala, Karnataka, and West Bengal (Turmeric World 2017). Andhra Pradesh, Telangana, Tamil Nadu, Odisha, and Assam account for about 85% of the total production in India (Turmeric World 2017).

On an average, the cultivation cost of turmeric is approximately Rs 1,68,021 per hectare (Sahu 2015). Of these, the total operational cost is Rs1,35, 252, while the remaining are fixed costs (Sahu 2015). Operational costs mostly include the cost of manure, farm labour, and irrigation costs, etc.

I compare Nitrogen (N), Phosphorus (P), and Potassium (K) fertiliser costs, and fungicide cost per hectare of turmeric before and after GST.

Sahu (2017) has not disaggregated the costs related to manure and fertilisers. Therefore, I estimate the costs of fertilisers based on the recommendation chart presented in Table 1.

Table 1 shows the recommendation of manure and fertilisers per hectare for turmeric. In general, land is prepared and tilled after applying the manure. While seeding the turmeric rhizomes, P and K are applied to the soil. Nitrogen is applied in two splits: (ii) one month after seeding, and (ii) two months after seeding the rhizomes.

Table 2 shows the conversion of recommended N, P, and K levels for turmeric cultivation per hectare. The conversion of recommended fertiliser levels into the number of bags (50 kg bags) of various fertiliser types depends on the type of fertiliser used for application. As mentioned in Table 2, urea contains 46% N, DAP contains 18% N, 46% P2O5 or 20% P, and KCL contains 50% K.

The conversion of recommended levels of N, P, and K using the above mentioned fertiliser types into the number of fertiliser bags (50 kg fertiliser bags are commonly used) can be explained as follows. For example, DAP contains 18% N, and 20% P, which means that a 100 kg bag of DAP contains 18 kg of N, and 20 kg of P.

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ISSN (Online) - 2349-8846

To meet the requirement of 50 kg P/ha, the amount of DAP in terms of 50 kg bags is five bags. That is, five 50 kg bags of DAP equals 250 kg DAP, and for each 100 kg DAP, there exists 20 kg DAP. As mentioned earlier, the DAP also contains nitrogen and phosphorus. Therefore, when 250 kg DAP is applied, 45 kg N is also applied. After subtracting 45 kg N from the total recommended level of 120 kg/ha, the result is 75 kg N. To obtain the 75 kg N, urea is taken as an example for application. A 100 kg urea contains 46 kg N. That is, to apply the remaining 75 kg N, one needs to apply approximately three 50 kg urea bags, which is equivalent to 70 kg N. Finally, to meet the potash requirement, two 50 kg bags of KCL is required. As a whole, based on the recommendation, three 50 kg bags of urea, five 50 kg bags of DAP, and two 50 kg bags of KCL are required.

Fungicides are usually used for disease management at the time of seeding the rhizomes, and during the vegetative phase of turmeric. After interviewing five farmers in the Ankapur village of Nizamabad district in Telangana, I found that fungicides approximately cost Rs 2,000 per acre, which equals to Rs 5,000 per hectare of turmeric cultivation. Hence, for this article, I used Rs 5,000/ha (inclusive tax) as the total cost of fungicide application in turmeric cultivation.

Table 3 presents the cost of different fertiliser types, and fungicide application per hectare of turmeric cultivation. I assume that the prices listed () are after including the tax rates before GST. Therefore, using pre-GST tax rates, I calculated the base price. Thereafter, the GST tax rates are used to compute and compare the change in prices before and after GST.

The results from Table 3 suggest that the fertilizer costs are reduced by Rs 77/ha, which is equivalent to a 0.94% reduction under GST when compared to the pre-GST tax rates. On the other hand, the fungicide costs have increased by the absolute amount of Rs 566/ha, which is equivalent to a 11.32% increase in the cost of turmeric cultivation per hectare. If one compares both fertiliser and fungicide costs before and after GST, the overall costs increase by 3.7% per hectare of turmeric cultivation.

Conclusion

This article highlights how GST is significantly different than the previous tax system for agriculture. The overall tax rate for most inputs have increased under GST. The turmeric crop is used as a case study to study the impact of GST on fertiliser and fungicide costs. The results indicate that fertiliser costs saw a nominal reduction (0.94%), while the fungicide costs have increased by 11.32%.

Economic&PoliticalWEEKLY

ISSN (Online) - 2349-8846

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