

Chapter 6- Onion Storage Policy and Its Impact on Income Stabilization

6.1 CONCEPT OF STORAGE POLICY

The summer season crop which enters in the market in April and May has storage life of at least 6 months. High quality seed yields highest production and productivity of the year (50 to 60 percent of the total yearly arrivals enter the market in this season and the yield is also higher at 150 to 200 quintals per acre as compared to 100 quintals per acre in Kharif). But the average prices in these two months are at their lowest levels (at Rs. 240 to 500 per quintal) of the year. But producers have to go for distress sales as they don't have storage structures. These sales bring down farmer's revenue. Arrival seasonality indicates that for March and April (summer season), the arrival seasonality is higher than average and for non harvesting seasons there is shortage of 40 percent of produce. Price seasonality, on the other hand indicates that price seasonality is low for the summer season and prices start increasing above average from July (for non harvesting season) onwards. Thus storage in April and May and sale in July or onwards should be adopted by the farmers to increase and stabilize their revenue.

6.2 THE MAIN ASSUMPTION OF THE STORAGE POLICY

The study assumes that "With an increase in storage capacity by the farmers themselves, the summer season price levels will improve and stored produce will fetch remunerative prices for non harvesting period which will stabilize the income of the farmers."

6.3 THE CENTRAL METHODOLOGY:

The arrival seasonality provides the details of month wise arrival surpluses and deficits. The months from June onwards show shortage of arrivals till to October. The shortages are from 20 percent to up to 40 percent. The storage in April will reduce the arrival availability for April. Therefore the market prices of April are expected to increase which will mean better price realization for the leftover April quantity. For the purpose of forecasting prices the price prediction equation number 2 is applied. For national price index prediction, ONPI time trend prediction equation number 1 is utilized.

The stored quantity of April is expected to generate 30 % quantity losses (due to weight loss and rotting). The stored quantity is therefore deducted for 30 percent quantity losses which are made available for sale in July. Thus, it will add to the average quantity of July arrival, impacting the July prices. There may be upward or downward shift in prices, examined with the help of equation number 2. So July revenue (given by multiplication of average July arrival and average July prices) is compared with July revenue after the addition of extra quantity of the crop.

The cost of storage of summer produce includes: cost of production (Rs.440/ qtl), bank installment and interest on the built storage structure (Rs. 80 per annum per qtl), cost of labor (Rs. 40/ctl) for upload and download of the crop in storage structure). Storage losses are assumed at 30 percent of the total storage.

6.4 RESULTS OF ANALYSIS OF LASALGAON MARKET PRICE DATA FOR STORAGE POLICY, (1990-2011)

Table 6.1 shows the April month arrival situation. The April average arrival is 212138 quintals. It is assumed, that 20 percent of the arrival is stored, and the remaining is made available for sell. In response to low availability of the produce in the market, the market price is expected to increase from average Rs. 478/ctl. to Rs. 847/ctl. Average Price multiplied by the average arrivals is termed as April revenue and predicted price multiplied by the arrival available (deducted of storage) is revenue for reduced April quantity. The revenue of April increases by 42 (rounded off) percent (table 6.2).

Table 6.1 : April Month Arrival Scenario

April Average Arrival (ctl)	212138
20% of Ave. Arrival Stored	42427.6
Arrival available for sell	169710.4
Expected Price in April. (Rs/ctl)	847.45

Source: Author's estimates based on NHRDF online data.

Table 6.2: April Revenue Increase (in RS.)	
April revenue(Average arrival*average price)	101401964
April revenue after storage(reduced qty.*expected price)	143821151.8
Revenue increase due to storage	42419187.79
Percent increase in April revenue	41.83

Source: Author's estimates based on NHRDF online data, 2011

Table 6.3 shows the reduction in stored quantity due to wastages. The stocks, if are sold in July with a reduction of 30% of the total stored produce then July month arrival availability increases as shown in table 6.4.

Table 6.3 : Storage Wastage	
Arrival stored (qtl.)	42427.6
Wastage of 30% of stocks	12728.28
Arrival after wastage (qtl.)	29699.32

Table 6.4: July Month Arrival Scenario	
July Average Arrival (qtl)	212961.00
Addition of Stored quantity (qtl)after wastage	29699.32
Total July Supply (qtl)	242660.32

Table 6.5	
July Revenue Increase (in Rs.)	
July revenue 1(average arrival*average price)	103286085
July predicted price(Rs./Qtl.)	806.22
Expected revenue(increased arrival*predicted price)	195637114

Note: Source of table 6.3, 6.4, and 6.5: Author's estimates based on NHRDF online data.

The July month average arrival is 212961 qtl. and average price at Rs. 485/qtl. give July revenue 1 at 103286085 in table 6.5. July prices for the additional quantity of stocks are predicted with equation number 2. It is observed that July price level has increased from Rs 485/qtl. to Rs. 806/qtl. even with the addition of stored quantity for sale. Comparison of April revenue after stocks and July revenue with stocks release, indicate that there has been a net increase of 36 percent in revenue with this storage policy (table 6.6).

April Revenue	July Revenue	Net Increase	Percent Increase
143821151.8	195637114	51815962.58	36.03

Cost of storage includes the cost of procurement (assumed nil, as farmers themselves store their own produce), cost of production; cost per quintal of the storage structure, the labor charges for uploads and downloads of the crop (table 6.7)

Cost of procurement	Nil
Cost of prod.	Rs.440 / qtl.
Installment and interest of bank loan of storage structure	Rs. 80 per annum per qtl.
Cost of Labor upload	Rs 20/qtl
Cost of labor download	Rs 20/qtl

Source: Author's discussions with farmers, Nahik market, 2011. Storage structure finance cost as discussed in chapter 1.

	(in Rs.)
Cost of production	18668144
Cost of storage	3360265.92
Cost of labor	1697104
Total storage cost	23725514
Revenue for only stored quantity after wastage	23944126
Total profit	218612

Source: Author's own estimates.

As it can be observed from table 6.8 that storage policy is not incurring losses and is earning profits. Although the profit level may appear small but it is important to note that storage policy has helped in increasing the revenue levels of both months, i.e. stock sourced month and stock release month. Due to storages, the summer season revenue increases by 41 percent and the storage season revenue increases by 89 percent. The storage season revenue is higher by 36 percent than the summer season revenue. Thus the storage policy for revenue stabilization is profitable.

Further the cost of storage may remain high for the first five years, as it is assumed that a bank loan is taken for the building of cement storage structure. But after the completion of repayment period, major portion of revenues will be saved which will increase the profit levels. Since scientific storage structures are built, they will last for a longer period than the traditional bamboo structure without heavy depreciation. It will enhance the storage capacity of the state.

The table 6.9 provides forecast of national onion price index as per equation number1.

Month/year	Month No.	Predicted ONPI
Apr-11	205	197.26
May-11	206	197.96
Jun-11	207	198.66
Jul-11	208	199.36

Source: Author's estimates based on equation no.1

6.5 THE RISKS IN STORAGES

The probability of July prices or other non harvesting months like August till to October, being higher than April prices is 90 to 95 percent. It indicates that almost 90 to 95 percent of times the prices of non harvesting season have remained higher than summer season. This means that there is only 10 percent risk in this storage policy.

6.6 THE PROBLEMS IN STORAGE

This study has identified the problems faced by the farmers in storing the produce.¹

- The storage cost i.e. cost of building a scientific storage structure is the main issue. Small and marginal farmers don't have the capacity to invest. The MSAMB subsidy for building the storage structure is very meager.
- The immediate need for money in April is recognized as another hindrance to storages. Farmers need cash for next season's farming activities and to free the invested capital, distress sales are undertaken.
- There is no certainty of the price levels of June to November. Farmers on their own are not able to identify the expected trend in prices or the price levels that may establish for non harvesting months. Uncertainty about the price levels of non harvesting season (especially of the last two months of October and November) will exist, as with favorable and suitable weather December Kharif crop will be abundant. The expectations of a bumper Kharif crop may dampen the prices of the stored crop in October, November and December. As a result the prices of stored crop in November and in December remain higher than the fresh arrivals, for the obvious reason of storage costs. In such situation the demand for the stored crop remains lower than the fresh arrivals.
- The wastage proportion of the stored produce is high as well as weight loss of the stored produce is also high. The percentage of wastage during storage largely depends on the percentage of moisture in the air. If the rainfall is heavy in the months of June, July and August the wastage percentage goes up to 50 to 60 percent (which is often the case). The high moisture content of the air also diminishes the storage life of the left over crop.

If the main Kharif crop fails, then the stored produce receives high price in December and January. But storing the produce till December is considered as high risk due to wastages. The main Kharif arrival starts entering in the markets from 2nd week of November. As a result majority of stocks are cleared till to October end. These all factors are making onion storage unviable and uneconomic for farmers.

6.7 SUGGESTIONS TO OVERCOME THE LIMITATIONS:

Systematic efforts to deal with the risks and to win over above mentioned limitations will no doubt benefit farmers. With storage, there is rise in April prices and July prices as

well. Prices are sufficient enough to cover the storage cost and cost of production even after wastage to a considerable extent. The income from the summer crop improves as well as the income from the stored crop is also higher in July.

- In order to tap the gains from storages, farmers need to collectively come up with professional ways right from quality improvements of the produce, competitive pricing for marketing and revenue calculations. Farmers need to change their approach towards onion cultivation and marketing. Instead of considering it as an instant cash crop, systematic and strategic efforts in improving its price levels should get prior attention. Such changes have been brought by producer's of products like grapes, mangoes, jaggery (gur), jowar, Basamati rice to name a few. In all these products qualitative improvements as well as collective efforts have benefitted farmers. In case of onions, even though it is a perishable product but still focus on quality and summer season supply planning will definitely bring revenue as well price stability.

6.8 POLICY IMPLICATIONS

- ❖ Farmers Associations or Producer's company: The farmers may form associations at village levels with limited number of members. Farmers can collectively act for quality improvements and better price realization. Associations can raise credit from banks. Credit can be utilized for the purpose of construction of storage structures, purchase of necessary tools and implements for quality enhancements and for exports. The association can take up the storage activities of all the members by either building the storage structures of their own or by hiring. The association can decide the best period for sale of the member's produce, keep a fixed portion of the profits for its administrative expenses and distribute remaining profits to the farmers. This will help farmers in receiving the storage gains as well as solve the problem of finance. The association is more capable of bearing all the costs rather than a single producer with limited produce and limited financial capacity. With the price forecasting method established in this study it is possible to give price signals well in advance for non harvesting seasons.

Accordingly, farmers can decide the storage policy. A producer's company on the other hand is a legal entity owned by the farmers and a lot of financial and technical support measures are available for such companies. These companies can focus on particular objective such as export promotion or processing etc.

- ❖ Processing: Onion processing, in the form of onion powder, flakes, rings etc. appears a best possible instrument of income stabilization. Similarly, there is a scope for exporting dehydrated onions as many processing units under export-oriented unit schemes have been installed in India. These are not presently running to their installed capacity mainly for want of raw material. Farmer's associations can strive for supply of raw material to these units. Thus, there is a scope for development of varieties suitable for dehydration. Onion Agrifound White developed by NHRDF holds promise in this regard.²

NOTES

1. Author's discussions with farmers, Pune market, 2010.
2. See nhrdf.com