HORTICULTURE STATISTICS IN INDIA

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1. HORTICULTURE

India is bestowed with a varied agro-climate, which is highly favourable for growing a large number of horticultural crops such as fruits, vegetables, root tuber, ornamental, aromatic plants, medicinal herbs, spices and plantation crops like coconut, arecanut, cashew and cocoa.

2. FRUITS

India has a large range of varieties of fruit in its basket and account for 10 per cent of world’s total fruit production. Mango, banana, citrus, pineapple, papaya, guava, cheeku, jackfruit, litchi and grape, among the tropical and sub-tropical fruits; apple, pear, peach, plum, apricot, almond and walnut among the temperate fruits and aonla, ber, pomegranate, annona, fig, phalsa among the arid zone fruits are important. India leads the world in the production of mango, banana, cheeku and acid lime and in productivity of grapes per unit land area. India is the largest producer of mango, banana, cheeku and acid lime.

3. VEGETABLES

More than 40 kinds of vegetables belonging to different groups, namely, solanaceous, cucurbitaceous, leguminous, cruciferous (cole crops), root crops and leafy vegetables are grown in India in tropical, sub-tropical and temperate regions. Important vegetable crops grown in the country are tomato, onion, brinjal, cabbage, cauliflower, okra and peas.

India is next only to China in area and production of vegetables and occupies prime position in the production of cauliflower, second in onion and third in cabbage in the world.

4. FLOWERS

Though flower cultivation has been practiced in India since times immemorial, floriculture has blossomed into a viable business only in recent years. The increased growing of contemporary cut flowers like rose, gladiolus, tuberose, carnation, etc, has led to their use for bouquets and arrangements for gifts, as well as decoration of both home and work place. A growing market, as a result of improvement in the general level of well being in the country and increased affluence, particularly, among the middle class, has led to transformation of the activity of flower growing into a burgeoning industry. Availability of diverse agro-climatic conditions in this country facilitates production of all major flowers throughout the year in some part or the other, and improved transportation facilities, have increased the availability of flowers all over the country.

5. SPICES

Spices constitute an important group of horticultural crops and are defined as vegetable products or mixture thereof, free from extraneous matter, used for flavouring, seasoning and imparting aroma in foods. The term applies equally to the production in the whole form or in the ground form. India is known as the home of spices and produces a wide variety of spices
like black pepper, cardamom (small and large) ginger, garlic, turmeric, chilli and a large variety of tree and seed spices.

6. PLANTATION CROPS

Plantation crops constitute a large group of crops. The major plantation crops include coconut, arecanut, oil palm, cashew, tea, coffee and rubber; the minor plantation crops include cocoa. Their total coverage is comparatively less and they are mostly confined to small holdings. However, they play an important role in view of their export potential as well as domestic requirements and in employment generation and poverty alleviation programmes particularly in rural sector.

India is also the largest producer and consumer of cashew nuts. The cultivation of vanilla in India started in 1990s and was confined mostly to Karnataka and Kerala and to a lesser extent in Tamil Nadu, Northeast region, Lakshadweep and the Andaman and Nicobar Islands. India is the third largest producer of coconut and leads 90 coconut-producing countries of the world. It occupies a number one position in arecanut production. As a result, horticulture is not only an integral part of food and nutritional security, but also an essential ingredient of economic security.

7. MEDICINAL AND AROMATIC PLANTS

Medicinal and aromatic plants have been used in the country for a long time for their medicinal properties. About 2000 native plant species have curative properties and 1300 species are known for their aroma and flavour. The Indian Systems of medicines, popularly known as Ayurveda, Unani and Siddha drugs are of great demand in the country. There is already a spurt in demand for plant-based drugs and lately many such native species of medicinal value are being brought under systematic cultivation.

India has been considered a treasure house of valuable medicinal and aromatic plant species. The Ministry of Environment and Forests, Government of India have identified and documented over 9,500 plant species considering their importance in the pharmaceutical industry. Out of these, about 65 plants have large and consistent demand in world trade. India however, produces only limited quantities of these materials. In terms of market share in production value, India holds only the 6th place with a mere 7 per cent share. On the contrary, we are still importing about 10 types of essential oils to the tune of 8000 tonnes per annum.

Horticulture sector cover wide range of sub-sectors viz. fruits, vegetables, spices, floriculture, aromatic and medicinal plants, etc. and each sub-sector cover number of crops with large diversity and practices followed. The sector is also to cover statistical aspects of bamboo and beekeeping, etc.

The horticulture crops vary significantly in their cropping pattern and practices followed in the States. Methods of collection of data and estimations has to be consistent as per the horticulture crop i.e. perennial, biennial, orchards, greenhouse etc.

It is not just the area, production or productivity but the whole gamut of related data like storage, market arrivals, prices, exports and so on is required to be collected and compiled to develop integrated data base on horticulture which has become extremely important for policy formulation and taking corrective actions in case of impending crisis.
Availability of proper data can, indeed help in issuing advance warning about impending crises to facilitate taking advance action. Authentic data is also required to conduct comprehensive analytical studies and to work out the policy for promotion of this sector and incentives etc.

Examining the current need, expectation is to estimate horticulture area and production by crop and by State in advance i.e beginning of the year and subsequently revise these estimates.

**PRESENT SYSTEM OF REPORTING**

Data on area and production of horticulture crops by different sub-sectors i.e. fruit, vegetables, flowers, aromatic, spices, plantation including further crop-wise break-up covering 21 fruits, 21 vegetables, loose and cut flowers, 4 plantation crops (arecanut, cocoa, cashew and coconut) and 16 in spices.

These annual estimates (State/crop-wise) are released to official agencies in December, May and August every year. For e.g. first estimates for 2010-11 is released in December, 2010 and finalised in December, 2011 and published in NHB publication in Feb. 2012.

Review Committee under the chairmanship of Principal Adviser, DAC examines, validates and approves horticulture data before its release to official agencies in May, August and December every year. The Committee comprises MD, NHB, JS (NHM), NHRDF, ESA and officers of Directorate of Economics & Statistics as Members. Adviser (Hort.) is the Member-Secretary for Review Committee.

Horticulture set up in the States is not uniform. Horticulture Departments in the States have been set up by bifurcation of State Agriculture Departments. In view of this, the statistical activities for horticulture rests partly with Agriculture and Horticulture Departments and also with State Directorate of Economics & Statistics. These three State Deptts. play vital role, which varies from State to State, in generating present horticulture statistics.

The existing method of preparation of horticulture statistics in each State has been examined and compiled in Annexure –I. It is observed that varying practices and estimations are being made.

**DIFFICULTIES IN THE PRESENT SYSTEM**

Reliable data on all important spices crops having commercial importance are required periodically. At present there are no uniform or standard methodology followed in the States for preparing area and production estimates. There is a need to standardise these methods considering special features and involving national level agencies like DASD, IISR, and Spices Board of India in generation of statistics. Recently, DASD has been declared as nodal agency for coordinating statistics for spices and arecanut. A workshop was also organised by DASD to examine various limitation in generation of spices statistics.

- **For floriculture, plantation, spices, medicinal and aromatic crops**, systematic progress has to be made for improving the existing system of reporting area and production statistics. Many of the States are not preparing such data and need to be addressed properly.
For coconut, Coconut Development Board is preparing some production estimate but State DES is the reporting agency for coconut statistics. These practices are to be examined and clear-cut role is to be mandated for proper flow of regular data.

The time lag in reporting statistics on cashew nut, cocoa, etc. is large and has to be reduced. Method of estimation is to be examined with DCCD.

OTHER PAST DEVELOPMENTS

Report of the Working Group on Horticulture, Plantation Crops and Organic Farming for the XI Five Year Plan has included a separate chapter highlighting the importance of creation of Horticulture Database by setting up extensive network of proper horticulture data establishments i.e. Horticulture Information Systems (HIS) in all the districts and State level with apex unit at the Centre in the Ministry of Agriculture to coordinate, organise, consolidate, analyze data obtained from the States and disseminate the same for user organisations. However these set ups were not created.

A Committee set up by CSO has looked into the issues concerning conducting of horticulture census and its dovetailing with agricultural census and has come up with the recommendations that Horticulture Census cannot be merged with Agriculture Census and there is a need to conduct Horticulture Census. A Questionnaire was sent to the State Departments seeking their views and suggestions. The State Governments consider that conduct of horticulture census as a separate entity for having the baseline information on horticulture crops is very much essential. The conventional system of Agriculture Statistics is not able to capture distinct and diverse characteristics of horticulture sector.

Annexure - I

PRESENT SYSTEM FOR PREPARATION OF HORTICULTURE STATISTICS – BY STATES

1. Andaman & Nicobar Islands

No separate reporting agency is functioning for estimation of Area Statistics. The work of collection of area statistics is carried out by Department of Agriculture through its staff by consulting the village head man. The yield estimates is obtained through random crop cutting experiments.

2. Andhra Pradesh

In A.P. there are about 28493 villages and 1128 mandals in the State. Nearly in 1000 mandals horticultural crops are grown. But the ground level officers (Horticulture Officers) are about 200 only and H.O. is to take care of 6-7 mandals inspite of extension work, regular Horticulture and State Horticulture Mission schemes.

Department till 2001-02, obtained data from Director of Economics & Statistics. DES is conducting Crop Cutting Experiments only for 12 crops like Tomato, Bhendi, Chillies, Brinjal, Mango, Sweet Orange, Banana, Coconut, Lemon, Turmeric, Cashew and Onion. DES was requested to include other major crops like Oil Palm, Cocoa, Pepper, Species, wise flowers, Medicinal & Aromatic Plants like Amla, Lemon grass, citronella, Palmarosa etc.
From 2002-03 onwards department is collecting data evolving a standard format for 62 horticulture crops.

Problems found by the Department:

1. The field level officers are limited in number and have to collect area, production and productivity of horticultural crops from 24,000 villages where horticultural crops are grown.

2. The Adengal available in Mandal Revenue Office is not updated every year, only crops where Insurance is provided will be shown.

3. The area damaged due to natural calamities like heavy rains, cyclones, drought are not accounted for.

4. The crop cutting experiments are carried out only for 12 crops by DES. The productivity of other horticultural crops is not available.

3. Assam

Horticultural crops in Assam are by and large, scattered in nature- each household maintaining few crops. Except few crops, large plantations of a single crops are rare sight. As such village level Extension Workers (VLEW) and Agriculture Development Officer collect the field level data on the basis of household and village level availability of number of plants of a particular crops. In the next phase, on the basis of number of crops per unit area with standard spacing is calculated to arrive at the area that can be covered with number of plants already assessed village wise. Reports received from each district in this ways are compiled to project the state level data.

Similarly as regards productivity, it is calculated on average weight basis which is multiplied by area to arrive at the figure of total production.

Major horticultural crops, particularly, fruits and nut crops usually varies very little from year to year other than situations of damage by severe flood. There is a need for a horticultural census as there is a necessity of updating figures particularly plantation crops. These figures for vegetable spice or flower crops fluctuate more frequently but the traditional belt of those crops usually remain intact. The extension effort usually contributes in area expansion in non-traditional belts and also in raising productivity. So, it will be better if crop estimation survey can be taken up at least for major vegetable and spice crops. Crop estimation for medicinal and aromatic crops will need specialised training for field functionaries of Agriculture, Horticulture and Forest Departments to arrive at near authentic figures of area, production and productivity.

4. Chandigarh

Chandigarh has a limited area under agriculture. The agricultural land is being gradually acquired for the expansion of Chandigarh city and the cultivated area has shrunk from 5541 hectares in 1966 to about 1208 hectares as per revenue report. Majority of farmers are involved in dairy farming and are engaged in fodder cultivation to cater to the needs of milch cattle. The Deptt. of Agriculture in Union Territory, Chandigarh provides technical know-
how to farming community for development of agriculture and is not maintaining the data of horticulture/agriculture crops.

5. Haryana

Horticulture Deptt. came into existence after its bifurcation from the Agriculture Deptt. during 1990-91. A central sector scheme namely ‘Crop estimation survey’ fruit, vegetable and minor crops was started in the department during 1995-96 and since then the scheme is operation. Horticulture Deptt., assumed greater importance in the recent years due to better land use, increased employment opportunities, economic returns per unit area besides providing nutritional security.

Horticulture Statistics are collected by the field functionaries, at village level by field man and submit its report along with list of beneficiaries to Horticulture Development Officer (HDO) at block level. After scrutinizing the data, HDO submits its report to District Horticulture Officer (DHO) at District level. Thereafter, DHO’s sent their reports online by first day of each month and the hard copy they bring in the first week of each month. It is discussed in the monthly staff meetings and at headquarter the reports are compiled and analyzed by statistical staff and submitted to Director of Horticulture for approval.

Production estimates of all the crops are eye estimated by taking into consideration the health of crop. The crop cutting experiments are conducted to estimate the production of four major crops viz. mango, citrus, potato and onion.

The method adopted for collection of data for horticulture crops is done by conducting cultivated inquiry survey along with eye estimates by the field staff working at block Head Quarter. The data collection of horticultural crops have always been a cumbersome job. It is necessary to adopt uniform system.

6. Goa

Yield estimates of paddy, ragi, pulses, groundnut and sugarcane are arrived at by conducting Crop Cutting experiments in the State of Goa.

However, in case of Horticultural crops average production in the taluka as reported by concerned Zonal Agricultural Officers at taluka level is used to arrive at production estimates.

In the absence of area estimates from primary Reporting Agency i.e. Talathi at village level service for last few decades, broad estimates of area communicated based on visual estimates by Zonal Agricultural Officers at the block level, are used as basis for determining the area estimates. In case of fruits and vegetable crops, rough estimates are worked out by the Directorate of Agriculture for determining yield of fruits and vegetables as per the combination of data from different sources including wholesale markets, growers associations, fruit and vegetable processing plants/processing co-operatives societies, market committee, etc.

There is no machinery to collect the price data of horticultural commodities with this Directorate. However, farm harvest prices of principal Horticultural Commodities like arecanut, banana, cashewnuts, coconut, mango and pineapple are being collected every fortnightly and furnished regularly on annual basis to the respective agencies.
7. **Gujarat**

**Area coverage:**

The crops wise data on area coverage of Horticulture are collected at,

(i) Village level: Through village level workers/Gramsewaks. Horticulture Officers on survey basis as well as the revenue registration of the area in Grampanchayats.

(ii) Taluka Level: Compilation of village data by reviewing the prevailing situation of the year assessed and finalisation.

(iii) District Level: Compilation of final data of each Talukas among with due assessment.

(iv) State Level: Compilation of final data of each district by Director (Horticulture) and Director (Agriculture) only for some important crops like potato, onion, etc.

(v) Forecasting of data at the State level.

**Productivity**

Productivity of the each cultivated crops is assessed and estimated by:

(a) Conducting crop cutting experiments at field level.

(b) Considerable size of area coverage of each crop in Taluka/District for crop cutting experiments is to be selected.

(c) Analysis of results at Taluka/District level and finally average estimates per hectare for each concerned crop.

(d) Final forecast on area, yield and total production for each crop are declared at State level.

(e) The crops, which are not covered under crop estimation scheme (crop cutting experiments) the productivity is to be assessed on random survey base though VLW in prescribed format at village level.

Final compilation of the data are carried out in different groups like fruit crops, vegetable crops, flower crops and spices crops. The whole procedure is used to get estimated area and production of horticultural crops.

Department of Horticulture is estimating the area and production of vegetables separately from the SASA because (1) multipicking nature of the produce (2) overlapping sessions (3) Do not have methodology to estimate varied type of vegetable crops.

Directorate of Agriculture is SASA in the state and only estimate estimation for onion and potato based on crop cutting estimate survey.
8. Himachal Pradesh

Every year total area of fruit plants is worked out by adding additional area brought under fruit plants during the year to the total area under fruit plants up to the previous year. The additional area brought under fruit plants is calculated on the basis of the fruit plants planted during that particular year.

Every year about 20-25 lac of fruit plants are planted in the State. These fruit plants are distributed to the fruit growers by the departmental field officers. The information relating to the total fruit plants distributed during the particular year are collected from the field officers. After that information relating to the maturity to the fruit plants during that year is collected by the field officers which depends upon the climatic conditions prevailed after the fruit plants are planted. After taking into account the mortality rate during that particular year the additional area is worked out by dividing the remaining fruit plants with the number of plants per hectare for a particular fruit plant. This additional area so worked out is added to the total area upto the previous year. In order to have a reliable data on area statistics there is immediate need to conduct a complete horticulture census in the State and in the future horticulture census should be conducted regularly after every five years as is being done in the case of agriculture crops.

METHODOLOGY BEING ADOPTED FOR COLLECTION OF PRODUCTION OF HORTICULTURE CROPS:-

At present the total fruit production is about 7 lakh MT. out of which the production of apple is 5.90 lakh M.T. Apple is the main fruit crop grown in the State and accounts for above 80% of the total fruit production. Most of the apple produced in the State is sent to different markets in the country outside the state for sale. The information relating to the apple fruit sent outside the state is collected and on the basis of this information the total production of apple is worked out after adding the fruit consumed and processed within the State. For other fruit crops, the estimated production is collected from the field offices of department every year. Crop cutting experiments under Crop Estimation Survey are being conducted only on apple, mango, orange and plum and that too covers very small area and does not reflect the actual position of the production of these fruits in the State. In addition to this due to the topography and climatic conditions of the state the production of different fruits vary from one pocket to other pockets growing the same fruit.

9. Jammu

The cultivation of onion and potato crops is charged with Agriculture Department for which basic data is not available with Horticulture Deptt.

10. Jharkhand

In different season area of crops like potato, brinjal, tomato, gobhi, bhindi, pumpkin and parval etc. are collected through seasonal jinswar. The crop cutting experiments are conducted on potato, brinjal and tomato only and hence only their production is estimated. These crops belong to vegetable sector. Likewise the area of crops of mango, jackfruit, litchi, banana, guava, carrot, kakri, watermelon, etc. are collected through seasonal jinswar. Out of these crops, crop cutting experiments are conducted on mango & jackfruit only and hence only their production is estimated. As far as spices are concerned, we collect figures of area of green chilli, coriander, turmeric, ginger, garlic and onion through seasonal jinswar. Crop
cutting experiments are conducted only on onion crop and hence only its production is estimated.

Some vegetable crops like gobhi, tomato and pumpkin (Kaddu) are shown throughout the year in this area but their area is collected in a particular season only and hence a large area of these vegetables remain unsurveyed. They do not collect any figure relating to horticulture. A complete census of farm activity specially horticulture statistics is likely to be taken on the advice of 13th Finance Commission with cooperation of Agriculture Deptt. If this work/survey is done successfully, they will have all types of figures relating to horticulture and floriculture figures.

11. Karnataka

The data relating to 106 varieties of Horticulture crops like taluka wise area, production, yield is being collected regularly and the information on 17 fruits, 33 vegetables, 18 spices, 7 Plantation, 17 flowers, 7 medicinal and 7 aromatic crops are being published annually. The information on season wise area of various horticulture crops are being collected from Revenue Department at village level from the village accountants. Some Horticultural crops are grown for a very short period only, the area grown may be very small, mixed crops, border crops, urban area farms etc. Therefore, Horticulture Department further estimates area under Horticulture crops on the basis of seeds/seedlings distributed to the farmers and other field visits by the staff. Such data collected will be compared with the information available for the selected crops with District Statistical Office and reconciliation is being done at the Taluka level and District Level committee.

As for the production of Horticultural crops, on the basis of the information available in the package of practice published by the Agriculture University and by contacting the farmers regularly by department staff, yield level will be collected. Season wise and Hobli wise information through Raitha Samparka Kendras is being collected and compiled at Taluka Level Office headed by the Senior Assistant Director of Horticulture. The same will be compiled at district and forwarded to the State. After scrutiny and clarifications consolidated compiled data on taluka wise, district wise Horticulture crops is being published annually by the Directorate of Horticulture in publication called ‘Horticulture Statistics of Karnataka at a Glance.

12. Lakshadweep

Department of Agriculture, Lakshadweep has nominated the Coconut Development Officer, Dte of Agriculture, Kavaratti as the Nodal officer for preparation, coordination, submission and dissemination of horticulture statistics.

13. Maharashtra

The accurate data maintenance is a weaker side due to various reasons which are briefed as follows:

- In Maharashtra, Horticulture Deptt. is not a separate entity and it works as a part of the State’s Department of Agriculture. Hence the staff in the Deptt. of Agriculture looks after all schemes in the field; there is no separate dedicated staff for the horticultural works.
12: Horticulture Statistics in India

- At present the statistical data regarding horticulture is being collected through eye estimates with the help of departmental staff which is not based on scientific procedure.

- Hence it is necessary to establish horticulture information system with some proven methodology with a user friendly software which will result in near to accurate data production.

**Madhya Pradesh**

The procedure and methodology being adopted by the Department will be as follows:

1. M.P. Agro Industries Development Corporation which has been designated as Nodal Agency for the horticulture department will collect the required horticulture statistics from the concerned districts.

2. The horticulture information will be based on the actual achievement

3. Information from other departments like forest, school education, rural department and various corporations will be collected and updated from time to time.

4. Commissioner Land Record is being requested to update the horticulture crops data in various revenue records.

5. The horticulture department will update and publish horticulture statistics annually.

**14. Meghalaya**

There are three tier mechanism for the purpose of collection of accurate and reliable data pertaining to area/production of horticulture crops and these are:

(i) Block

(ii) District and

(iii) State

**Block:**

The designated officers like the Horticulture Extension Officer assisted by the officers of lower rung collect the relevant data. These horticultural officers function in close coordination with the nodal officers of the Directorate of Economics and Statistics who are well versed and trained in the data collection technique in respect of area/production etc and thereafter these data are finalised and transmitted to their respective districts.

**District:**

At the district level, the District level Crops Report Committee is chaired by the Deputy Commissioner of a District with the District Statistical Officer as Member Secretary and the District Agriculture Officer and District Horticulture Officer as the member and there are also other concerned officers. These constituent members scrutinize, modify etc on the data
related to Area/Production before being sent to the apex body, the State level Crops Report Committee.

State level

The State Level Crops Report Committee is to fine-tune the above data. It is chaired by the Agriculture Production Commissioner who may delegate this function to the Commissioner & Secretary, Agriculture, etc. Further, in this Committee the Director of Horticulture are the members amongst the many key functionaries of other concerned departments. The primary function of this State Level Crops Report Committee are to focus on:-

a) Scrutinizing the Agricultural Statistics like Area/Production etc. maintained at different levels with a view to releasing a uniform set of figures for general information.

b) Prepare a Crop Forecast calendar for the State, and

c) Suggest mechanism for improvement of agro-horticultural statistics from time to time.

15. Mizoram

Under the Department of Horticulture, Govt. of Mizoram, there are 8 Horticulture Divisions, 3 Sub-Divisions and 36 Horticulture Circles. Horticulture data are collected by village level workers known as Horticulture Demonstrators who personally visit the farmers field under their jurisdiction. This report is submitted to their respective Divisions through Horticulture Circles Officers. Reports received by the Divisional Horticulture Officers compile their respective Division and sends the reports to the Directorate. Receipt of reports from all Divisional Horticulture Officers are further compiled in the Directorate to have the whole data of Mizoram State.

Problems/Limitations in the methodology:-

1. The Village Level Workers often face problem in visiting all corners due to road communication problem and fund constraint to meet travel expenses.

2. Most farmers do not keep proper record which creates difficulty in data collection and estimation.

3. Many farmers field lie scattered, hence renders yield estimation difficult.

4. Due to remoteness of many Horticulture Plantation Areas/Farmers fields, completion of data collection and estimation in time is difficult.

Suggestions:

1. More fund allocation be made to Horticulture Department to meet expenses. More details can be provided to cover survey and collection of data.

2. If incentive to the farmers so as to maintain proper data records for all the crops.
3. Farmers Training/Awareness may be conducted at village level to create awareness to the farmers about how to keep proper farm record etc.

16. Orissa

Horticulture Department separated from office of Directorate of Agriculture & Food Production was created in 1977 working under Director (Hort.) prepare area, production and productivity of Horticulture crops like vegetable (except potato), spices and fruit crops.

DES, Orissa is implementing agency for CES (F&V).

17. Punjab

- Area under different fruit and vegetable crops is left unrecorded by the revenue department.

- Potato is the principal vegetable crop of the State. It occupies about 46% area of the total area under all vegetables. The area under this crop is not properly enumerated by the Patwaries.

- Two main girdawari are conducted in the Punjab State. The first one namely Kharif girdawari which is done from September 15 to October 16. The sowing period of this potato crop is from 2nd September to end of October. The Patwaries enumerate the area of those crops which are mature/ready for harvest at the time of Girdawari. The potato crop does not mature at the time of girdawari. That is why the area under the crop is left unrecorded by the patwaries. This is also the case with the other Kharif vegetable crops. These are short duration crops.

- The nest main girdawari is done in the month of March. The Rabi vegetable crops are sown in the month of February. In the month of March the crops are not ripe for area enumeration. Due to this rabi vegetable crops are again left for the area enumeration.

- Regarding the area under different fruit crops the position is more cumbersome. The Patwari is not in a position to distinguish the fruit crops. All fruit crops are recorded as garden. Apart from the plantation in field fruit trees are also grown at tube wells sites, public places, road sides, banks of rivers/canals, bunds and are also grown in the fore and backyard of the houses. These trees have a significant area. The area under consolidation as well as isolation plantation is not enumerated by the patwaries.

- The area under different fruit and vegetable crops is recorded by the Horticulture Development Officers posted in the fields. These officials go field to field and collect area which is recorded in the registers. These registers/area is regularly checked by the higher officers posted at the state head quarter. Keeping in view the departmental area the estimates of production of 12 fruit and 15 vegetable crops are worked out regularly in every year and the same is supplied to the quarter concerned including NHB & Government of India. The figures of production are also on the basis of eye estimation methodology. The State Deptt is already facing acute shortage of staff due to which it is difficult to conduct crop cutting experiments/surveys on horticulture crops.
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- The 100% central staff sector scheme for Crop Estimation Surveys on fruits, vegetables and minor crops is being implemented to conduct above experiments. Under this scheme the staff is also insufficient. At present two fruits namely Kinnow and Mango and one vegetable crop i.e. potato are covered. Crop cutting experiments/surveys are conducted on the basis of methodology designed by IASRI New Delhi. Estimates of production of the above said crops are worked out and sent to the Govt. regularly. Apart from this also pressing hard to cover other important horticulture crops under CES-F&V scheme.

- Harvest of fruits is done in two or three pickings. Conducting CES on fruits require huge manpower.

- Estimates of production of potato crops are generated on methodology viz. GCES.

18. Sikkim

Area Statistics: The Area Statistics are collected on the basis of the sample surveys for which a scheme called Establishment of Agency for Reporting of Agricultural Statistics (EARAS) has been introduced in the State. The scheme envisages estimation of area through sample surveys of sufficiently large sample of 20% villages/investigators zones.

Yield Estimates:

The yield estimates of major crops are obtained through analysis of scientifically designed Crop Cutting Experiments (CCE) conducted under scientifically designed General Crop Estimation Surveys (GCES). Over 95% of the production of major crop is estimated on the basis of yield rates obtained from the CCEs. The CCEs consist of identification and marking of experimental plots of a specified size and shape in a selected field on the principal of random sampling and recording of the harvested produce for determining the percentage recovery.

19. Uttar Pradesh

Estimates of area under different horticulture crops are generated through ‘partal’ conducted in Kharif, Rabi and Zaid seasons ever year (agriculture) by Board of Revenue, U.P. So far, 10 fruits, 18 vegetables and 7 Spices, in total 35 horticulture crops are included in Kharif, Rabi and Zaid Zinswar for area enumeration.

Area estimates of these crops are taken from the ‘Zinswar of Board of Revenue, UP and compiling & maintaining it in this Department for our use. Regarding production estimation, crop picking experiments on Mango and Guava are being conducted by this Department under centrally sponsored scheme of Crop estimation surveys on fruits, vegetable and other minor crops, average yield estimates are being calculated on the basis of methodology suggested by IASRI, New Delhi.

As regards, the crop of Potato and Onion, the Crop cutting experiments are being conducted by the Department of Agriculture Statistics & Crop Insurance, U.P. Also, the area and production estimates of crops- Sweet potato, Banana, Papaya, Turmeric, Chillies (dry), Corriander, Ginger, Garlic, Fenugreek and Fennel through samples and eye-estimates are generated and reported by the Directorate of Agriculture Statistics and Crop Insurance, UP. We are obtaining these estimates from them and using these data and also reporting to
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different levels. Production estimates are being generated on the basis of **standard yield** (depending upon the major varieties cultivated in the districts and its average yield).

20. West Bengal

At present, the estimates of area, productivity and production of horticultural crops are prepared notionally at the district level by the District Horticulture officer in consultation with the block and field level officials of the Department of Agriculture, Govt. of West Bengal. These estimates are compiled at the State Level by the Directorate of Horticulture, Govt. of West Bengal and sent to the Govt. of India, NHB and Bureau of Applied Economics and Statistics, Govt. of West Bengal. At present, Horticulture Division has only one post of Adviser (Horticulture) for strengthening statistical system of this sector. A complete subordinate structure is yet to be established. The main activity is to create horticulture data base, for which the State Horticulture Departments are requested to send data on area and production of horticulture crops. Such data are provided by the State Horticulture Departments which varies substantially in terms of presentation and content, based on the development of horticulture statistics in the State. Data are reported by States to NHB which is forwarded to this division. Data received from the States is examined and validated before release for official use, after approval of Review Committee under the Chairmanship of Principal Adviser of this Department.