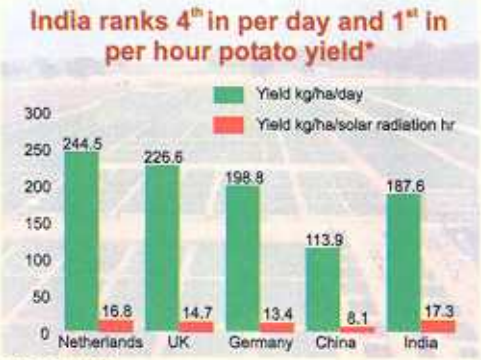
Potato in India - Fact file

(2003)



* FAO Stat 1998.

by

P.M. Govindakrishnan
and S.M. Paul Khurana

Central Potato Research Institute
Shimla-171001, Himachal Pradesh

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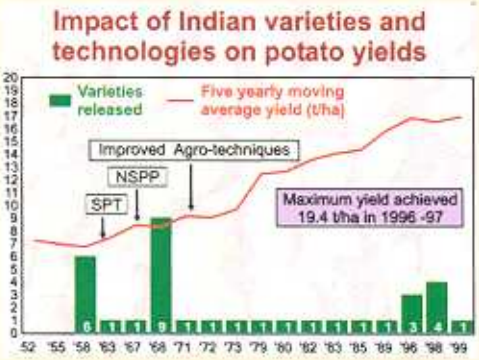
Potato, an imported temperate crop, has been adapted well for cultivation under subtropical conditions. From its origin in the Andes, it made its way to India via Europe in the 17th century. Soon it became an important crop in India where its growth



has been unprecedented. The facts concerning Why, What, Where, When and How of potato production and utilization in India are described below:

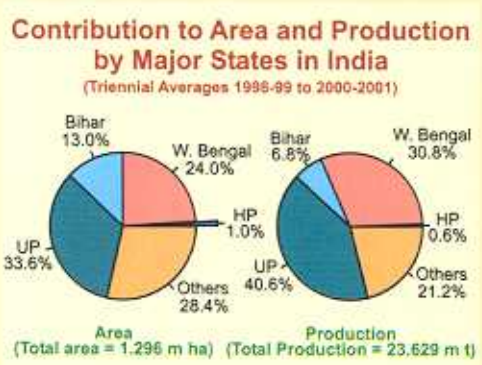
PRODUCTION

Why: Rice – Wheat is the major cropping system in the Indo-Gangetic plains of India. This cropping system has been the main stay of sustaining the population explosion of the country. Since the productivity of this system is declining, it is becoming difficult to sustain. Potato can reduce the dependence on this system as it can provide the required carbohydrate and other nutrients in sufficient quantities and at the same time can easily fit between the two crops, complimenting their input use. In the hills where maize is the main summer crop, potato provides an alternative cash crop, which can also be used as a staple food.

What: India today produces almost 25 m tons annually from about 1.3 million ha. More than 80% of this produce is for ware purposes i.e. for table use by home cooking. Almost 90% of rest of the produce is used as seed potatoes mainly to meet the domestic market. The popular varieties are Kufri

Chandramukhi and Kufri Ashoka in the early category (75-90 days), Kufri Bahar, Kufri Jyoti and Kufri Pukhraj in the medium duration category (91-110 days) and Kufri Lalima, Kufri Sindhuri, and Kufri Sutlej in the late category (111-130 days). The country is self sufficient in meeting potato seed requirement, however, the export of seed potato from India is less than 1%. Similarly processing of potato by the organised sector in India is negligible (only 0.3%).

Where: Potato cultivation is widespread in India. Yet it is predominant only in the entire Gangetic plains. Different potato growing regions have been classified into the north western two crop zone where two short duration crops in autumn and spring seasons are possible; long duration single crop zone in the central Gangetic plains where a crop of 110-120 days is possible because of mild winters; the short duration single crop zone in the eastern plains where the duration is short due to the late onset of winter and early warming up (rise of temperature) and two crop plateau zone where two crops, viz *kharif* and *rabi*, are



grown. Apart from the plains and plateaux, the other areas are in the hills namely the northern hills where a single crop is possible in the summer season, the eastern hills have two crops, viz in summer and autumn seasons, while the southern hills practise a cycle of three crops.

When: Either potato planting or harvesting takes place through out the year at one or

the other place in the country. In the north-western two crop zone the autumn season is the main season right from early October to December/January. The spring crop has limited area and is raised during January to April. In the long duration single crop zone, the crop season is between mid October to January-March while in the short duration single crop zone, the season starts from end of October/early November and extends upto January/February. In the plateau areas, the *kharif* crop starts from June/July and goes upto September/October while the *rabi* crop is raised between mid November to February/March. In the northern hills the season starts in May/June and extends upto September/October in the very high hills, from late March/April to September/October in the high hills and Feb/March to July/August in the mid hills. In the eastern hills the summer crop season extends from February/March to July/August while the autumn crop is taken between September/October to December/January. In the southern hills where three crops are raised, they are between August/September to December/January; January/February to May/June, and March/April to August/September.

The maximum potato area in India is in the northern and eastern plains (more than 85% of the total area covering UP, Punjab, Haryana, Bihar, West Bengal and Assam) having autumn crop (October/November to January/February) for the main season. Productivity in this region is also the highest. Often there is a problem of artificial glut for a short period at the time of harvest due to surplus availability of potatoes.

In almost all the areas in the northern plains an early crop is raised by planting potatoes 20-30 days earlier than the main autumn crop. This is done to fetch premium price of early potato. However, the area under the early crop is limited due to its low productivity.

How: In the plains the indigenous cultivars are grown intensively mainly in the autumn

season. The land preparation is invariably mechanized. The seed tubers produced in the previous season and cold stored for about 8 months are allowed to pre-sprout for 10-15 days under diffused light. Medium sized (30-40g) well sprouted (about 0.5 cm long) seed tubers are planted at a fairly high density (60 x 20 cm spacing). Planting is done fairly deep (about 10-15 cm) to minimize the effect of high temperature. NPK needs of the crop vary with the soil type, its nutrients status, variety, cropping pattern and sources of nutrients. In general, the recommended fertilizer dose per hectare in the northern plains is 180-240 kg N, 60-90 kg P_2O_5 and 100-120 kg K_2O.

The crop is grown under assured irrigation. Surface (furrow) irrigation system is widely adopted and irrigation scheduling is based on the time interval approach, which is initially 8-10 days for about 4-6 weeks after planting. Thereafter, as the ambient temperatures fall, it is increased to 12-15 days. A fixed depth of water (about 40-50 mm) is applied at each irrigation. The main abiotic stresses in the Indo-Gangetic plains are high temperature in the initial growth period and very low temperature coupled with poor sunshine at the later stages. The biotic factors most wide spread are diseases like late blight and other leaf spots. In the hills, the crop is generally grown under rainfed condition. Land preparation is done through animal drawn implements.

The hill soils are acidic and the N, P and K doses vary depending upon the length of the season, variety, soil texture and other factors. In the hills, the major abiotic stresses are moisture stress due to erratic rainfall and poor sunshine due to cloudy weather. Late blight is the major biotic stress followed by bacterial wilt mostly in the mid hills.

UTILIZATION

Why: Potato is a highly nutritious food. It contains most of the essential vitamins, minerals and proteins apart from starch but no fat. Thus its use as a supplementary source of nutrients and calories has to be encouraged. Potato production is

concentrated mainly in the autumn season in the Indo-Gangetic plains and is harvested during January to mid March. Since the summer season sets in soon, proper arrangements have to be made for the utilization of the huge quantity of the produce immediately as the produce is semi perishable. This involves arrangements for storage in cold stores or alternative methods of storage, transport to consumer markets and processing.

What: Potato is utilized in a variety of ways. The major use is as a vegetable-a constituent in the diet of the people. Almost 4 million tons is used as seed for almost 1.3 million ha under the crop in India. The country is self sufficient for potato seed and has not to import any as is done by our neighbours or most of the developing countries in Asia and Africa. Besides, India is now exporting potatoes (mainly table) and also seed tubers to some of the nearby countries, especially Sri Lanka, Mauritius, Nepal, Bangladesh, Middle East/Gulf countries etc. Only a very small fraction is processed for chipping/French fries, flakes etc.

Where: As a constituent of vegetables in the diet of the people, potato is the most

popular one through out the country. Its per capita consumption is, however, low (about 17 kg/person/year) because of the high cost of the produce due to its seasonal availability and the high cost of storage. This is because except for Indo-Gangetic plains, the production in other areas is quite less and most of the requirement of central and southern parts of the country is met out of the produce from the Indo-Gangetic plains and hence involves transportation over long distances. Further, to spread the availability through out the year, the produce has to be stored in cold stores which is also costly.

Production of the seed potato is mainly confined to the autumn season in the northern Gangetic plains from where it is moved to almost all parts of the country. Earlier the hills were the main producers of seed even for the plains till the development of Seed Plot Technique in the early sixtees. Now they just produce enough seed to meet the seed requirement for cultivation in the hilly regions.

The major centres for the production of potatoes for processing are in the Central India (Malwa plateau), lower foot hills of Himachal Pradesh (like Una, Kangra, Sirmour *etc.*), and Hasan *etc.* in Karnataka.

When: The utilization of potato as a major vegetable is well spread out throughout the year due to the large number of cold stores. There are only minor variations in consumption during different months, of course depending upon the cost and quality of the cold stored produce vis a vis the fresh produce.

Utilization of the seed potato produced in the autumn season in the Indo-Gangetic plains or in the hills, is governed by the time of planting in the importing states as discussed earlier. Therefore, it involves cold storage/country storage for a considerable period of time.

For processing, fresh produce is available over a short span of few months after the harvest. The main problem of processors is to ensure quality tubers to be available

round the year for processing, which so far was not the case. Now it has become possible to grow potatoes in the northwestern plains suitable for processing especially chipping and French fries, with the advent of Indian processing varieties.

How: As a vegetable, it is used in preparing a very large number of recipes. More than 100 recipes are prepared in India either using potato alone or by combining it with other vegetables, pulses, cereals etc.

As seed, medium sized seed tubers are used normally after cold storage in the northern plains. In the northern and eastern hills it is used after country storage protecting against cold temperatures.

As processed food, it is utilized in a variety of ways mainly as different dehydrated products like chips, dice, *waris*, flakes, granules, flour, starch, potato-custard powder, soup or gravy thickener and potato biscuits. It is also used to prepare frozen foods like potato patties, puffs wedges and pan cakes, hash browns, and dehydrated mashed potatoes for instant use (to avoid boiling, peeling and mashing them) for various recipes especially *samosas, paranthas etc* requiring potato for filling.

For further information contact:
The Director
CPRI, Shimla-171001, H.P.
Tel.: 0177-2625073, Fax : 0177-2624460
E-mail: director@cpri.hp.nic.in
dircpri@sancharnet.in
Website: http://cpri.hp.nic.in