

QUALITY SEEDS IN INDIA : PROBLEMS, PROSPECTS & POSSIBILITIES*

BY
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I deem it a great privilege, and a great honour, to be invited to deliver the technical address at the 30th Annual Conference of the Society and am grateful to the Council for the same.

2. As I had only a nodding acquaintance with Statistics as part of my academic training, and that too must have become completely out-of-date by now, I cannot but presume that the Council expects from me a technical address, not on any aspect of the science of the Statistics, but on some technical problem of agricultural development I am concerned with.

3. As I have been concentrating on quality seeds, for quite some time, I have selected the topic "Quality Seeds In India : Problems, Prospects and Possibilities" as the subject for this address. Let me hope you will not find the discourse too boring!

4. A friend of mine is fond of saying "there are no problems; there are only opportunities". Being a bit of a born optimist, I am inclined to accept this statement at face value. I am, accordingly, writing this paper not merely to highlight the problems of seed production, processing, storage, movement and marketing in India but also to suggest some solutions to these problems, and to indicate some future possibilities.

5. India with its fascinating diversity of agro-climatic conditions, immense internal demand, cheap labour—both skilled and unskilled—a high level of technology in numerous fields, easy availability of technical staff and facilities, has a tremendous advantage in the matter of seed production over most other countries and she can aspire to become the world's biggest and the best seed producing country. This vast diversity of agro-climatic conditions means not only that almost any kind of seeds can be produced in the country but also that we can take two or three generations of the same crop in a single

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year. Thus, for example, if the multiplication ratio is 1 to 50 and the crop can be grown in different locations thrice during one year, a single seed can be multiplied into 2,500 seeds in a single year. Likewise, hybrid seeds, calling for hand pollination, such as, hybrid cotton or some flower and vegetable seeds can be produced only in a country like India. I need not multiply the number of examples to illustrate the point that India can be a seed producers' heaven.

6. It does not, however, mean that there will be no problems and this task can be done easily. Far from it, there will be numerous problems and difficulties but, given the necessary determination and resources, they can all be overcome and this dream can be realised.

7. It will be convenient to give a bird's eye view of the problems, prospects and possibilities of quality seeds in India under the following headings :

- (i) Quality Seeds : Key to Agricultural Progress.
- (ii) Lack of Seed Consciousness : Seed *versus* Grains.
- (iii) Vagaries of Fluctuations in Seed Demand.
- (iv) Problems of Quantity : Stable and Adequate Supply.
- (v) Problems of Quality.
- (vi) Problems of Availability at the right time and right place.
- (vii) Problems of Cost and Prices.
- (viii) Organisational Structure : Past, Present and Future.
- (ix) The Rationale for the National Seeds Programme.
- (x) The Salient Features of the National Seeds Programme.

1. QUALITY SEEDS : KEY TO AGRICULTURAL PROGRESS

8. Agricultural progress is the key to the growth and prosperity of the Indian economy. Quality seeds of high-yielding varieties are the key to agricultural progress. It is the production potential and other desirable characteristics of seeds that set the limit to agricultural progress and the other inputs, such as, fertilisers, pesticides, weedicides, labour and capital etc., only help realise the production potential of quality seeds. Howsoever plentiful and easily available other inputs may be, they cannot give a fillip to agricultural production if quality seeds are not there. Hence quality seeds can rightly be described as the most important single input of agriculture.

9. Many persons hold a view that the most significant development of the century consists in, not the discovery of nuclear energy and its numerous uses, but in the discovery of hybrid vigour, which

has converted plant-breeding into a manufacturing art. Thanks to this discovery, as also numerous other significant developments, for instance, the discovery of the dwarfing genes and the strides made in agricultural research, numerous high-yielding varieties of cross-pollinated as well as self-pollinated crops, have made their dramatic appearance on the scene during the last decade or so. The impact of these varieties has been so far-reaching and the increase in the yields of various crops, particularly wheat, so spectacular that the change has been described as a 'green revolution'. It will be in the fitness of things that the miracle seeds, with their undreamt of yield potentials, that gave birth to the green revolution, should be described as the 'seeds of green revolution'.

2. LACK OF SEED CONSCIOUSNESS : SEED VERSUS GRAINS

10. Though, in general terms, the role of quality seeds of high-yielding varieties is recognised, the lack of seed consciousness in India as well as in other developing countries is simply colossal. I may illustrate this point by reference to a recent experience during my visit to a country, which has become rich over-night due to the discovery of oil in the Sahara Desert and which is otherwise quite progressive.

11. Several hundred large-sized tube-wells have been sunk in the Sahara desert area of this country and they are a source of plentiful supply of water of good quality. This is a boon to the Sahara desert, which has fertile virgin land extending over hundreds of miles at a stretch. A delegation from India was invited to study the conditions on the spot and explore the feasibility of a project for agricultural production. When we visited the area, we saw the pearl millet crop grown around half a dozen tube-wells. Though cultivation was being carried out for the first time, on virgin soil, we noticed rat burrows, green and brown caterpillars and other insects, weeds and plant diseases. On enquiry, we found that ordinary food-grain had been used as seed in this area, which had not seen any living plant, insects, rats and other living organism for millions of years.

12. The moral is obvious. Good seed can be a boon and an instrument of prosperity : ordinary grains used as seeds can be just a curse. Ordinary grains can be, as happened in this case, a carrier of weeds, pests and diseases and pollute good land.

13. What is true of an African country and Sahara desert, is equally true of India and various States. Punjab and Haryana, which are considered to be the most progressive areas of the country and which produce a very large quantity of the certified wheat seed

mostly used in other States, are content with using farmer's own carried-over stock of food-grains, called seed, with the result that weeds like *Phalaris Minor* and Wild oats have spread throughout the State. Likewise, the spread of seed-borne diseases, such as, loose smut and Karnal bunt is also due to the lack of adequate seed consciousness.

14. Similarly, States like Bihar and West Bengal, at times, import ordinary food-grains for use as seed and the result is the same, namely, spread of weeds, pests and diseases.

15. The total annual production of certified seeds for cereals in the country is only 1,45,000 tonnes or less, which is sufficient to cover 2% of the area. This means that 98% area is planted with ordinary seed kept by the farmers out of their own produce or taken from other farmers. Obviously, the use of certified seeds is a microscopic fraction of the total potential.

16. Apart from the fact that the farmer is accustomed to keeping his produce as seed from times immemorial, the higher cost of seeds, lack of marketing net-work with its ramifications down to the villages, unreliable quality and, above all, lack of adequate extension effort to create seed consciousness are some of the reasons for the present sad state of affairs.

17. The first and the foremost job, therefore, is to create sufficient seed consciousness not only among the farmers but also among the extension workers, administrators and others concerned with agriculture. All media of communication have to be utilised, in this connection, for educating our masses as well as the classes.

3. VAGARIES OF SEED DEMAND

18. One reason for the lack of adequate growth of a modern, viable seed industry of requisite size, in this country, is the uncertainty about demand. The demand for seeds varies from season to season, year to year, crop to crop and variety to variety. Weather continues to play a very important part in determining the cropping pattern and the time of sowing and the consequent fluctuations in the demand for seeds of a kind or a variety. Take, for example, this year's weather conditions. Late flood in Bihar increased the demand for wheat, while reducing it for Rabi maize. Early rains in the Punjab and Haryana increased the demand for Bajra, particularly HB-3, which is less susceptible to downy-mildew if planted early. Drought conditions in Orissa suddenly increased the demand for a short duration Paddy variety like Pusa 2-21. Likewise, good rains in the

month of October in Maharashtra not only improved the prospects of standing hybrid Jowar, thereby creating a favourable market for hybrid Jowar Seed next year, but also increased the demand for wheat seed. The performance of the existing varieties and the emergence of new varieties, likewise affect the demand very substantially. If a variety become susceptible to a new disease, its demand goes down and it may become obsolete with substantial carry-over stock. Likewise, the emergence of a new variety will create a good demand for that particular variety while making other varieties obsolete.

19. As food-grains constitute an alternative source for planting material (I would not like to call them seeds) in a favourable year with good agricultural production, and low prices, the demand for seeds will go down, because the relative difference between the food-grain prices and seeds will be much higher. There is a 'feast and famine' cycle in the demand for various seeds as a result of which many of the seed producers come to grief in a matter of years. Estimation of the demand for seeds accurately is, by far, the most difficult task. If the estimate does not match with the actual demand and production is undertaken accordingly, there is either a scarcity or a glut of seeds, both the situations being quite undesirable. It is, therefore, necessary to devise a method which will lead to as accurate an estimate as possible. It cannot be, and need not be, perfect. We hope for perfection only in the heavens.

20. The seed demand consists of the following components :—

- (i) Replacement of a variety on account of emergence of a new superior variety.
- (ii) Purchase by farmers in those areas where agro-climatic conditions are such that they cannot produce and store their own seed on account of high temperature and high humidity, such as, some eastern States and Kerala or on account of higher grain prices or other similar factors.
- (iii) Purchase by farmers who are unable to keep their own seed for financial reasons.
- (iv) Purchase by farmers using hybrid seeds, which should be replaced every year.
- (v) Purchase by farmers on account of superior quality of the seeds of self-pollinated crops even though they have their own grain stock.

21. The demand for a new superior variety is quite sudden, and intense but temporary. It will disappear as suddenly, as it emerges, in a system where farmers keep their own seed or buy it from their neighbours or friends.

22. The demand for hybrid seeds would be quite lasting, as fresh seed has to be used every year, provided there is sufficient seed consciousness so that the farmers are not tempted to use F-1 seed, *i.e.* the produce of their hybrid seed.

23. The demand in the areas where agro-climatic conditions are against the production or storage of seeds will also be quite stable. It will change only with the emergence of a new technology that can overcome the handicap of unfavourable agro-climatic conditions.

24. The demand from the farmers who are unable to keep their own seeds for financial reasons will last only so long as this problem is there.

25. The most important customers for seeds of self-pollinated crops are those farmers that buy the seeds on account of their superior quality, such as, greater viability and vigour, freedom from weed seeds, cut-grain, inert material and, last but not the least, seed-borne diseases. This demand, which can be quite large, can be tapped only if adequate seed consciousness is created.

26. The demand will continue to be uncertain so long as our farmers do not become seed conscious and exercise the choice that rightly belongs to them. It is the 70 million farmers, spread over half a million villages, that cultivate the land. It is these farmers, and these farmers alone, that can make the most realistic and dependable estimate of the likely demand for the next year. All our estimates may, at the Centre or at the State Headquarters or even by the extension staff in the field, are nothing but 'guesstimates' made by persons only indirectly concerned with farming and these estimates can often be far off the mark. Even the farmer's estimate cannot be fully dependable because the cropping pattern very often changes according to the weather conditions, particularly in the rain-fed areas, and the prices of various crops. The farmer can, however, make the best estimate as the person responsible for making the decision for planting a particular crop or a particular variety of the same crop and who has to pay for the seed.

27. In the long run, the best arrangement would, therefore, be that the farmers should become seed conscious, make this estimate and book their indents with the local retail dealers and give them a certain amount as advance, say, 10% as earnest money. The dealer, in turn, should pass on this advance and the indent to the wholesaler and add some quantity to supplement this demand on behalf of those farmers who would not bother to book the indent and pay the requisite advance on this quantity also. The wholesaler, in turn, should pass on the indent and the advance to be producer.

28. It would be decades before even a sizeable number of our 70 million farmers, scattered over half a million villages, suffering from all kind of isolations, will adopt this system. All the same, we should consciously move in this direction by creating adequate seed consciousness, making our seeds most attractive in every way and pursuing the system vigorously. If our seeds become so popular that, even without any restraint on production, only such farmers, get some of the seeds as book their indents in advance, the system is likely to become popular.

29. The second best alternative would be to use the dealer net-work for making these estimates, as also booking advance indents on similar lines as they are nearest to the grounds and have the highest stake in making an accurate estimate, lest the seeds should remain unsold or shortages occur. The system is already in vogue requiring the dealers of the N. S. C. and T. D. C., be they in the co-operative or private sector, to give an estimate of the likely requirements before the sowing time for seeds. The dealers can revise this estimate up to 40% either way up to the time the seed crop is harvested. Thereafter, the quantity likely to be available is intimated by the producing agencies and the dealers are required to pay the advance soon after harvesting of the crop. If the distributors of seeds and the extension agencies join hands, and prepare these estimates after assessing the demand, in the field, on the basis of the estimates made by farmers supplemented by their own, it will be a great help in matching the seed demand with the seed supply.

30. For the time being, we have to depend on the estimates or 'guestimates' made by the agencies engaged in the distribution of seeds, such as, private dealers, co-operatives, and the Extension Services of the Government. None of them is in a position to make any estimate without a big margin of risk. All of them would, therefore, like to play safe and err on the conservative side, if they are to be backed by earnest money. The inevitable result is that we are meeting only a microscopic fraction of the total potential demand of seed.

31. In case, however, no earnest money is to be paid by the State Governments, co-operatives, or other distributing agencies, we tend to go to the other extreme. The demand gets highly inflated and, if the producing agencies are guided by these demand estimates, they face a glut and heavy unsold stock, as happened with the foundation seeds in 1970-71.

32. The best compromise, under the circumstances, will be to distribute this risk among the agencies responsible for making the

estimates and, for achieving the target for the coverage by highyielding varieties and the seed producing agencies. The former, that is, the State Governments should book orders for custom production with an advance of 10%. They need not be saddled with the responsibility for storage, movement and distribution of seeds, which should be done by the marketing net-work. If the entire quantity booked by the State Government is sold, the advance of 10% should be returned to them. On the other hand, if a portion of the indented seeds remains unsold, this advance should be utilised for meeting the cost of interest and storage charges on the carried-over stock for the rest of the period and the necessary balance between the demand and the supply should be established by curtailing the production next year.

4. Problems of Quality : Stable and Adequate Supply

33. This uncertainty of demand, combined with the time-lag in production, to which a reference will be made in the following paragraphs, leads to a 'feast and famine' cycle, namely, good demand combined with short supply with a sellers' market following by an expansion of production, without a corresponding expansion of the demand, and the consequent glut and serious losses to the seed producers.

34. Five important factors to be kept in view while planning for stable and adequate supply of seeds are :—

- (i) Seeds cannot be produced over-night and there is always a time-lag ranging between nine to fifteen months between the decision to produce certain seeds and the actual availability of such seeds.
- (ii) The rate of multiplication is, as a rule, very substantial as one seed can produce anywhere between 50 to 200 seeds in the case of foodgrains and vegetables.
- (iii) In dealing with seeds, we deal with living material with the result that constant care is necessary at all stages of production, processing, transport, movement, storage etc. The life-span of each category of seed is limited and, therefore, it cannot be stored beyond its life-span in a particular set of storage conditions without affecting viability and thereby making it useless as seed.
- (iv) There are substantial losses if the seed remains unsold and has to be utilized as foodgrain, or for other purposes. In the case of self-pollinated crops, such as, paddy and wheat, it may be possible to recover about half the cost by using

the seed as foodgrain, if it has been fully processed, and about three-fourths if it is unprocessed. In the case of hybrids, however, the price of foodgrain would be only a small fraction of the price of the seed in view of high cost of production. It is, therefore, necessary to match supply with the demand and not to carry unsold stocks in the case of all seeds particularly hybrids.

- (v) Seed production is a highly specialised activity calling for adequate technical support at all stages with an assembly-line approach.

35. Unlike most other industrial products, seeds cannot be produced at short notice. Seeds have to be planted anywhere between six and twelve months before they are required for planting. It is, therefore, necessary that the seed growers should know 9 to 15 months before this date, the varieties and quantity they should plant, assuming that about 3 months' time would be needed for making the necessary preparations.

36. This time-table will, however, be feasible only if adequate quantities of foundation seeds had been produced in the preceding season, which again would depend on similar action in regard to breeder seed in the season before. Hence it is evident that the planning for certified seeds of a new kind or variety, has to be undertaken at least 3 seasons before the season in which the seed is to be utilised. This may be 3 years in the case of some crops like wheat. This creates a series of problems, such as, undue advantage to the agencies and organisations that are in possession of a new variety, for which there is a temporary craze in the market, followed by the liquidation of a number of organisations that multiply these seeds with high expectations. Sometimes, the very same organisation that made quick money in the earlier stages goes into liquidation as a result of excess supply and the consequent crash in prices.

37. Hence the need for vigorous, integrated and advance planning is obvious. If adequate, stable and timely supply of seeds is to be assured, meticulous advance planning is a must.

38. At the same time, there is a need for a comprehensive approach not only ensuring all the inputs required for efficient production of seeds but also the necessary infra-structure to remove all deficiencies that stand in the way of production of quality seeds. Quality seeds are the most important agricultural input and their production is quite expensive. Nothing should, therefore, be left to chance. All deficiencies must be removed: be they in the form of lack of irrigation, drainage, land shaping, agricultural machinery,

electrification, processing plants, stores, quality control laboratories or other components of the infra-structure or current inputs, credit or technical guidance. The conclusion is therefore irregisterable that a comprehensive and intensive programme of integrated area development is an essential condition for efficient production of seeds in any area selected for the purpose.

39. Another important aspect of seed production is timeliness of all operations. If even a single operation is missed, the quality or quantity, if not both, of seed may suffer. A vigorous calendar of operations for all stages has to be drawn up in advance and vigorously implemented. In fact, this is true of all good agriculture but particularly so of seed production.

40. Last but not the least, stability in the supply of seeds can be ensured only if there is built-in flexibility, combined with safeguards against vagaries of weather. This can be done by dividing the production programme into four categories, listed below, and paying careful attention to each category :

- (i) The custom production against definite demand backed by at least 10% advance from the farmers, dealers, or Governments.
- (ii) The growers' programme representing the firm estimate made by the producing organisation with or without any firm commitment.
- (iii) A buffer stock as a safeguard against the vagaries of weather, unforeseen pests or diseases, natural calamities, like flood and droughts, necessitating resowing and sudden rise in demand.
- (iv) A producers' programme without the assurance of guaranteed off-take to be used if the actual demand turns out to be higher than the original estimate.

41. This approach will not eliminate the problem, but will considerably alleviate it. Having regard to the fact that we are meeting only a microscopic fraction of the demand that can be generated for quality seeds and the favourable conditions for their production, not only for home consumption but also for exports, clearly indicate that the production potential of quality seeds in this country is simply enormous. Table I gives the present level of the quality seeds produced in 1974-75 and distributed in 1975-76 in different States. The total comes to only 1,50,000 tonnes. The National Seeds Programme

proposes to raise this figure to 3,00,000 tonnes by 1980-81 (production year). The first exercise on the demand and supply matrix shows the picture as at Table II.

TABLE I
Statewise/Cropwise Production of Certified Seeds by
NSC, TDC and Others for the Year 1974-75

(Figures in tonnes)

S.No.	State	Wheat	Paddy	Bajra	Jawar	Maize	Total
1.	Andhra Pradesh	—	14799	2468	1696	9424	28387
2.	Punjab	9433	1559	—	—	89	11081
3.	Haryana	7211	1996	—	—	82	9289
4.	Maharashtra	—	—	767	5777	344	6888
5.	Karnataka	—	—	3995	1586	2317	7898
6.	Uttar Pradesh	37654	13458	—	—	2014	53126
7.	Rajasthan	9360	30	1512	302	18	11222
8.	Tamil Nadu	—	1000	1000	1000	—	3000
9.	Bihar	108	200	—	—	1506	1814
10.	Madhya Pradesh	3393	—	14	242	116	3765
11.	Kerala	—	—	—	—	—	—
12.	Assam	—	—	—	—	—	—
13.	West Bengal	300	500	—	—	—	800
14.	Gujarat	500	—	5400	10	300	6210
15.	Orissa	200	300	—	—	—	500
16.	Other States	300	—	—	—	200	500
Total		68459	33842	15156	10613	16410	144480

42. If we take into account the scope for the production of seeds for commercial crops like cotton, jute, oil seeds, vegetables and fodders, the figures will be really impressive.

43. I may sound a note of caution once more. It will be a herculean task both to produce as well as to consume these large quantities of seeds even though they constitute only a fraction of the total production.

5. Problems of Quality

44. The most crucial factor in this context is quality. The fact that seeds are a living material make it necessary that the utmost care should be exercised at all stages of production, processing, transport and storage and distribution of seeds so that nothing goes wrong and the quality does not suffer under any circumstances. There has to be a rigorous assembly-line approach and management by objectives so that no step is missed.

45. The system of assembly-line approach combined with management by objectives has particular relevance to the large-sized farms run through professional staff employed by Government Corporations and private enterprise because it implies a system of fixation of norms of yield, production, income, quality etc., on the basis of the potential of each resource or unit of operation, preparation of a fortnightly calendar of operations, listing the sequence and dimensions of the various operations forming part of the assembly-line, fortnightly assessment of the staff on the basis of the performance of each resource or unit *vis-a-vis* the calendar of operations and establishing a link between the contribution or effort made by an individual, or a team of individuals, working in a unit and the material incentives or rewards and appreciation. The fortnightly grading should be used as the most important component of the composite index of the seasonal and annual assessment of each employee or the team of employees, the other components being yield, production, income, quality etc. In order to make the assembly-line approach effective, material incentive should be provided to all workers with excellent or very good rating in the form of incentive payment or proficiency bonus, cash award, accelerated increments, merit grade promotion and the like.

46. Quality of seed is affected by a host of factors, at all stages, namely, production of the raw seed in the field, harvesting, drying, grading, treatment and other aspects of processing, transport as well as storage. The seed may not be of the right variety or it may suffer from some seed-borne disease or may carry some weed seeds, or may suffer from too much moisture or mechanical damage and the consequent loss of viability.

TABLE
Certified Seed Production
 (Based on All India Seed Demand
 (Figures in tonnes)

Sl. No.	State	Wheat			Paddy		
		Production projection	Demand projection	Exports (+)/Imports (-) to/from other states	Production projection	Demand projection	Exports (+)/Imports (-) to/from other states
1.	Andhra Pradesh	—	—	—	18000	5000	(+)13000
2.	Punjab	25500	15000	(+)10500	2500	700	(+) 1800
3.	Haryana	29000	10000	(+)19000	3000	400	(+) 2600
4.	Maharashtra	—	10000	(-)10000	—	1500	(-) 1500
5.	Karnataka	—	—	—	2000	1500	(+) 500
6.	(a) Uttar Pradesh	25000	25000	(+)30000	8000	3700	(+)14300
	(b) T.D.C.	30000			10000		
7.	Rajasthan	25000	12000	(+)13000	1000	—	(+) 1000
8.	Tamil Nadu	—	—	—	7000	7000	—
9.	Bihar	7000	25000	(-)18000	3000	4000	(-) 1000
10.	Madhya Pradesh	5000	5000	—	4000	4000	—
11.	Kerala	—	—	—	—	20000	(-)20000
12.	Assam	—	4000	(-) 4000	—	1100	(-) 1100
13.	West Bengal	—	30000	(-)30000	—	7000	(-) 7000
14.	Gujarat	—	3500	(-) 3500	—	—	—
15.	Orissa	—	6000	(-) 6000	6500	6500	—
16.	Others	3*4500	4†5500	(-) 1000	3*1000	4†3600	(-) 2600
Total		151000	151000	—	66000	66000	—

Demand Metrics for 1980-81

Forecast as worked out by JWP)

Figures in tonnes

Bajra			Jowar			Maize		
Production projection	Demand projection	Exports (+)/Imports (-) to/from other states	Production projection	Demand projection	Exports (+)/Imports (-) to/from other states	Production projection	Demand projection	Exports (+)/Imports (-) to/from other states
4000	1000	(+) 3000	2000	2000	—	8000	1000	(+) 7000
—	—	—	—	—	—	—	500	(-) 500
—	1700	(-) 1700	—	—	—	—	—	—
2000	5000	(-) 3000	10000	17500	(-) 7500	—	—	—
3000	500	(+) 2500	10000	4000	(+) 6000	1200	1200	—
—	400	(-) 400	—	—	—	—	800	(+) 1200
—	—	—	—	—	—	2000	—	—
2500	3000	(-) 500	132	—	(+) 132	—	800	(-) 800
2000	2500	(-) 500	1000	1000	—	1000	250	(+) 750
—	—	—	—	—	—	4000	8000	(-) 4000
—	200	(-) 200	700	700	—	—	600	(-) 600
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	7000	(-) 7000	—	500	(-) 500	—	—	—
—	—	—	—	—	—	—	—	—
3*10500	4†2700	(+) 7800	3*5168	4†3300	(+) 1868	3*3300	4†6350	(-) 3050
24000	24000	—	29000	29000	—	19500	19500	—

- Notes :
1. Total demand estimates have been taken from All-India Seed Demand Forecast prepared by JWP—page 136.
 2. Production projections for Phase I has been taken from Appraisal Report (Annex. III, Table-I).
 - 3*. To be produced by other institutions such as, private producers etc.
 - 4†. Representing the demand of small states like Tripura, Meghalaya, Goa etc.
 5. Production projection for Phase II states correspond by and large to their project projections but suitable modification made for meeting the demand.

47. The following measures are necessary to ensure the right quality of the raw seed :—

- (i) Requisite quality of the breeder and foundation seed so that the need for roguing may be reduced to the minimum. If the parent material is not good the progeny can naturally be no better.
- (ii) Effective action by the farmers by way of roguing in accordance with the certification standards.
- (iii) Technical guidance to seed producers down on the spot not only by the regular seed production staff, but also, at times, by high level professional staff from the agricultural universities and research institutes.
- (iv) Regular and timely inspections and rigorous adherence to the standards by the certifying agencies, which should not only be completely independent but technically competent.
- (v) Quality control measures by the certifying agency as well as the agencies responsible for production and marketing of seeds. This should include laboratory tests at 3 stages, namely, (i) when the seed is still in the custody of the grower before its receipt at the processing plant, (ii) after the receipt of the seed at the processing plant but before processing, and (iii) after processing but before fixing the certification tag.

48. It is necessary to provide storage accommodation of the requisite standard and to ensure proper stacking with pallets at regular intervals between the requisite number of bags and proper arrangements for aeration, dehumidification and air-conditioning according to the location, nature of the seeds and duration of storage. In addition, fumigation will be necessary at regular intervals in the stores. The railway wagons carrying seeds should also be fumigated, likewise. As soon as the seed is received at destination and put in a store, it should again be fumigated.

49. It may not be out of place to correct a wide-spread misconception about the type of storage accommodation required for seeds. At times, even highly educated people occupying key positions in Government ask the question why should the Central and State Warehousing Godowns for food-grains should not be used for seeds. They fail to distinguish between the requirements of seeds and grains. Viability, which is the essence of seed storage, is not necessary for grains. Therefore, special type of stores with

necessary arrangements for keeping down the temperature and humidity within the prescribed limits are necessary. According to an estimate made by the Central Warehousing Corporation, the cost of storage accommodation required for seeds will be roughly 50% more than that for foodgrains.

50. Grow out tests are a must to find out whether the seeds have the requisite varietal purity as well as freedom from weeds and seed-borne diseases. In the last season, 11% samples of certified wheat seeds were rejected as a result of grow-out tests introduced on a comprehensive basis for the first time. Next year, I am sure, the percentage will be very much lower. This only proves the need for insistence on 100% grow-out tests as a preventive measure.

51. Samples should also be taken at all stages of storage to detect the damage, if any, before it is too late.

52. In order to inspire confidence among the seed growers, all seeds must carry a money back guarantee. The seed users should get back the money if the seed is found non-viable or sub-standard in any other manner. There should be a double money back guarantee if the seed in a sealed bag is proved to be sub-standard before its use by the farmers.

53. Another measure that would be quite useful in ensuring the requisite quality is to supply small samples of seeds to seed dealers separately so that the dealers can stop the distribution of sub-standard seed by testing the quality of the seed before distribution. A separate small bag from each lot should be provided to each dealer and he should test the seed before distribution and return it if it is found to be sub-standard.

54. The farmers should be advised to test the viability of the seed a few days before actual sowing and should return sealed bag if the seed is found to be sub-standard and claim double the amount paid by them so as to compensate him not only for the sub-standard seed received by them but also for the trouble and expense undergone by him in returning the seed.

5. Problems of Availability at the Right Time and Right Place

55. The demand for seed is seasonal and the farmers using them are scattered over half a million villages with all kinds of isolation. The season for planting is, at times, soon after the rainy season leaving very little time for the movement of seed. The most important markets for seed are located in those areas where storage is difficult and costly. Last but not the least, the farmer is extremely busy during the sowing season and, therefore, if good seed is not

readily available, he sows whatever seed he can procure at the spur of the moment. At times, he acts like the king in Rabindranath Tagore's story, 'Once there was a king', who returned from the forest after a long time, was perturbed by the fact that his daughter had attained marriageable age in his absence and decided to marry her to the first young man whom he saw the following morning outside his fort !

56. Following steps are, therefore, necessary to ensure that seeds are available at the right time and the right place :—

- (a) Bringing the seeds within a bullock-cart distance by opening a large number of sale points in the country. The first stage of the National Seeds Programme envisages the opening of 20,000 sale points at the rate of four sale points per Community Development Block, each serving about 25 villages.
- (b) There should be an integrated system of distribution, making seeds, fertilizers, pesticides and other inputs available at the same place so that the farmer does not have to run about during the busy season.
- (c) There should be arrangement for rake movement in bulk from the producing areas to the consuming areas to reduce the time-lag and ensure timely availability.
- (d) Bulk-stores should be set up at important points in favourable climatic areas for storage during the monsoon period so that the seeds can be rushed within a very short period of less than a day from these stores to the consuming areas.
- (e) Transit stores to store the stock during the distribution season for one or two weeks and ensure that there is no breach of the supply-line, should be set up at important points in the consuming areas. Seventy-five such points are being set up as part of the National Seeds Programme.

57. The fillip that easy accessability, combined with other factors, can give to the consumption of seeds, was illustrated in Bihar in the last season where 1,500 sale points were set up and the total quantity of wheat seed distributed by the National Seeds Corporation was over 1,30,000 quintals, besides another 30,000 quintals from other sources. This quantity represents roughly 1/3rd of the total certified wheat seed distributed in the country.

VII. Problem of Cost and Prices

58. Next to good quality, a reasonable price is the most important factor in popularising the use of quality seeds. Apart from the fact that our farmers are by and large, small holders and poor and, therefore, every penny matters to them, the degree of seed consciousness is quite low and ordinary foodgrains serve as a substitute for quality seeds. As a matter of tradition, the farmers have been keeping their own produce as seed, instead of selling it as grain, or they have been meeting their demand for seeds through farmer to farmer transactions, where the prices are only marginally higher and the quality hardly different from that of grain. Before the emergence of modern seed technology, the so-called improved seeds sold by Government and co-operatives were only fractionally higher in price than ordinary grain and so was, by and large, their quality. It is only with the emergence of the hybrids and high-yielding varieties and modern seed technology that quality and prices, both of which are substantially higher than those of grain, have assumed vital significance.

59. The prices of certified quality seeds have got to be substantially higher than the grain prices, because seeds are quite different from grain in regard to yield potential and other desirable characteristics, viability, freedom from weeds, diseases, inert matter, etc., and their cost of production is also higher. There are a number of cost components, listed below, which have to be covered if seed industry is to survive and grow :—

- (i) Additional cost of production and incentive to the seed grower : The price has to be high enough to give the grower at least the same return per unit of area or money as he would get from growing a grain crop plus an adequate margin to cover the additional cost and risks for growing a seed crop rather than a grain crop. In the case of hybrids, the additional costs may be 70 or 80 percent more on account of special techniques and lower yields. Even in the case of self-pollinated crops, the additional costs and loss on account of roguing, lower seed rate, grading losses, etc., amount to a sizeable figure. The exact amount would vary according to the prevailing prices of various inputs and wages, etc.
- (ii) A seed grower faces not only the normal risk of farming, which also goes up on account of higher investment, but also the risk of the seed being rejected. It has been

estimated that under the existing conditions, the following premia over the prevailing support price for grain are necessary to compensate the seed growers for the additional costs and the risks and to provide the necessary incentives :—

Wheat	40%
Paddy	33%
Maize	75%
Millet	200%
Sorghum	125%
Cotton	25%

These percentages are only approximate as some of the cost components do not vary. For this reason, the percentage would be higher, if the grain prices are low, and it will be lower, if the grain prices are high.

- (iii) Cost of certification.
 - (iv) Cost of processing to remove under-sized and cut-grain, foreign matter, including weeds, and to treat it with fungicides and other chemicals to safeguard against seed-borne diseases.
 - (v) Cost of packaging.
 - (vi) Cost of storage under conditions that prevent loss of viability.
 - (vii) Cost of technical guidance and supervision in the form of a service charge of the producer organisations, such as, the State Seeds Corporations.
 - (viii) Cost of marketing, including the margins of the wholesaler or the service charges of the marketing agencies, such as the NSC, or the SSC's and the retailers in the private or co-operative sectors.
 - (ix) Transport and handling costs.
 - (x) Interest or charges on the borrowed capital and return on the owned capital.
 - (xi) Incidental losses in the form of obsolescence or loss of viability or carry-over charges on unsold stocks.
- (a) *Compact Area Approach*

60. The first and foremost measure to ensure good quality and lower cost of production, leading to a lower price, consists in the compact area approach. This approach envisages concentration of the seed production, processing and storage in the most favourable

areas from the point of view of agro-climatic conditions, high yields, and low price, and the provision of the technical services of the highest order with large-sized modern processing plants. This approach may be contrasted with a diffused programme consisting of a large number of small pockets with small-sized processing plants and inadequate technical services.

61. A compact area approach has many advantages some of which are listed below :—

- (i) *Technical Guidance and Support* : Seed processing and certification are highly technical jobs requiring the services of several specialists, such as, plant breeders, agronomists, plant pathologists, entomologists, agricultural engineers and agricultural economists etc. The time of these specialists can best be utilised if production is undertaken in a compact area so that they do not waste too much time on the road and are readily available as and when required to solve various problems or to provide necessary guidance on the spot without which the production of high quality seeds is almost impossible.
- (ii) *Collective Plant Protection Measures* : Collective plant protection measures to control major pests and diseases affecting seed crops can best be undertaken expeditiously, efficiently, economically, and effectively in a compact area.
- (iii) *Isolation and Roguing* : Seed production requires adequate isolation and timely and rigorous roguing for the maintenance of high genetic purity so essential for quality seed production. This can be done much more easily, effectively, efficiently and economically in a compact area as it would be to the mutual advantage of the seed growers not to plant other varieties and the seed growers can concentrate on one variety/hybrid in a particular area. The roguing crews can be more easily trained every season in a compact area to rogue out the field efficiently and thoroughly.
- (iv) *Inspection, Guidance and Supervision* : The total number of staff required for inspection, guidance and supervision in compact area can be about half of that required for a scattered area. One Seed Production Assistant in a compact area can easily cover 200 ha of hybrid seeds and 400 ha of self-pollinated seed crops, as against only half to one-third of this area if the programme is scattered, the remaining time being lost on the road. This economy is still more important in the case of the senior, and costlier,

members of the staff who are also busy on other high priority items. Sush visits by high level specialists are essential not only for maintenance of high quality but also for collection of information on various aspects from time to time and guidance to the field staff and farmers at crucial stages.

- (v) *Training* : The production of high quality seeds calls for frequent training both to the seed growers as well as to the inspecting staff, which can best be arranged in small groups in a compact area from time to time. This kind of training is particularly important in the event of a sudden outbreak of diseases or pests when timely preventive measures have to be taken at short notice.
- (vi) *Control of Quality at the Threshing Floor and Seed Sampling* : There are more chances of mixing at the threshing floor than in the field and it is, therefore, essential to provide the necessary guidance and have supervised threshing, at a few selected places. Necessary sampling and testing of raw seed lots from the farmers' threshing yard is possible only in a compact area.
- (vi) *Security and Administrative Supervision* : Arrangement for security as well as administrative supervision, including the handling of cash and accounts, can be made much more economically and effectively in a compact area.
- (viii) *Seed Processing* : As a result of the economy of scale, there will be substantial saving both in the capital as well as the operational cost in the case of a large-sized plant as compared with a small-sized one. Quite a few components of the plant, such as, weigh-bridges, dumpkit, tilting chain block conveyor, elevator, holding bins and laboratory equipment etc., remain constant even if the capacity of the seed plant is raised from say, 5,000 tonnes to 20,000 tonnes per year. Likewise the requirements of staff and accommodation do not go up proportionately. It has been estimated on the basis of the working of the plants with different capacities at Pantnagar, that there is a saving of 20% in capital cost and 12% in operational cost between a 20,000 tonnes and 10,000 tonnes annual capacity plants. Likewise, there is a saving of 25% in capital cost and 14% in operational cost between a 10,000 tonnes and 5,000 tonnes capacity plant.
- (ix) *Storage of Seeds* : Good warehouse can be constructed and supervised by competent staff if large quantities of

seed are kept at a few selected places. This is feasible only with the adoption of a compact area approach.

- (x) *Movement of Seeds* : Bulk movement, with consequent economy, speed and efficiency, is possible only if seed is produced in a compact area.
- (xi) *Arrangement for Infrastructure* : Genetic purity alone is not enough for quality. The seeds should be well developed and the seed production area should not suffer from drought, lack of drainage and other similar handicaps. The provision of the necessary infrastructure in the form of irrigation, drainage, land-shaping, electrification etc., and the supply of the necessary equipment and machinery for various operations as well as current inputs, such as fertilisers, pesticide, herbicides and other chemicals, is most efficiently and economically done in a compact area.
- (xii) *Custom Services* : Such farmers as cannot own the necessary equipment can be helped by the provision of custom services in respect of tractors, threshers, seed-drills, land-levellers etc. This would be possible and more easily manageable in a compact area.
- (xiii) *Credit Facilities* : Credit facilities for various inputs and programmes can best be organised in a compact area by the banks and other institutions.

62. The operations of the Banks in compact areas can be supported by refinance institutions, such as, the Agricultural Refinance and Development Corporation, which, in turn, can receive support from the Government and the International Banking Institutions, such as, the IBRD. The rates of interest can also, in consequence, be appreciably lower.

(b) *Service Agency System*

63. The second most important measure calculated to bring down the cost and price, is the introduction of the service agency system. Under the system, the agencies responsible for arranging production, processing and wholesale marketing act as agents on behalf of the primary producer and recover a pre-determined service charge, instead of purchasing and selling the stock on their own account and thereby being responsible for the profits or the losses, as the case may be.

64. The seed industry, like some other industries, exceptionally vital for the country, such as, production of text books, or the manufacture of life saving drugs, has to be distinguished from other industries where the profit motive dominates. The seed industry

should, no doubt, be commercially viable like other industries and necessary incentive should be provided for the seed growers and the seed distributors like any other economic activity. All the same, as seeds constitute the most important single input for agricultural production, the costs have to be kept as low as possible and all reasonable facilities, even special concessions, should be provided on condition that the benefit is passed on to the seed user. For this reason, middle-men have to be replaced by a service agency working on a reasonable service charge. In other words, it is necessary that the producing and marketing organisations like State Seeds Corporation and the N.S.C. should work on the Service Agency System instead of acting as traders or middle men. The basic idea is that the prices should be kept as low as possible and the sale proceeds minus all cost components, including the service charge, should be passed on to the seed growers.

(c) *Share-holder Growers*

65. The third most important measure is that the seed growers instead of being ordinary contract growers should become partners in the programme and should be enlisted as 'share-holder growers'. The primary producers under the system become share-holders of the organisation responsible for the production, processing and inter-state marketing of seeds and, thus, acquire an abiding interest in the quality and cost of seeds as well as the reputation and financial viability of the State Seeds Corporations, or other similar organisations.

66. The seed growers are paid part of the price, equal in value to the price of raw seed as foodgrain, as advance, as soon as the stock has been delivered to the Corporation after the first laboratory test. This advance is followed by another advance after the seed has been processed and the second and third laboratory tests, before and after processing, have been carried out and seed has been certified. This advance represents the difference between foodgrain prices, already advanced to the seed-growers at the time of delivery of the raw seed, and the minimum guaranteed price, which is lower than the expected price, assured to him. The final payment is made only after the season is over, the accounts finalised and the amount payable has been determined in precise terms after deducting all other components of the cost structure.

67. Under the service agency system, the risk in the case of self-pollinated crops on account of unsold stocks etc., can be distributed, wholly or partly, among large number of growers instead of

being concentrated in one organisation. In consequence, the producers' programme can be of a much larger size and the total seed programme can be much more flexible and dynamic. If the risk remains with the trading organisation, the price payable to the seed grower is naturally kept at a lower level. In the case of self-pollinated crops, the grower can very well bear this risk as he can use the crop as foodgrain and has to bear only the additional cost of cultivation which, in the case of small and medium farmers, primarily consists of his own family labour and which is likely to go down further with the improvement of quality of the foundation seed.

68. Under the trading system, there is a perennial clash of interests between the growers and the traders. The grower would like to have as high a price as possible while the trader would like to pay as low a price as feasible. This tug-of-war on account of the clash of interests is perennial and a source of numerous evils. At the end of the season, one of the two parties is a loser. If the price of foodgrains goes up at the selling time and the grower finds that he got a lower price by selling the produce as seed rather than as a food-grain, he curses the trader. On the other hand, if the prices fall and the seed has to be sold at a loss, the trader either sinks and goes out of business or, in any case, depresses his price for the coming year. This uncertainty on account of vagaries of the market makes both the parties extremely cautious and selfish.

69. Under the service agency system, combined with shareholding growers, this clash of interests is eliminated because both the parties are parts of the same organisation and the relationship is permanent and the service charge pre-determined. In consequence, the element of risk and the losses on account of unsold stock or fluctuations in market prices are eliminated and it becomes easier to fix a lower price.

(d) Increased Productivity

70. The increase productivity leading to higher yields and higher return made possible through a comprehensive and integrated approach aiming at the removal of all deficiencies in the selected area, is calculated to bring down the cost and price of seeds.

(e) Government Support

71. Seed Industry should be treated as a Service Industry and full Government support should be provided to it so as to bring down the costs and prices of the seeds. The following measures are suggested in this connection :—

- (i) All certified seeds should be exempted from Sales Tax, Octroi Duty, Market fee etc. as has already been done in

9 States with very good results. The remaining States should act likewise.

- (ii) The rate of interest for both seed producers as well as seed distributors should be lowered. It is quite anomalous that the rate of interest payable in respect of seeds is higher than that for foodgrains.
- (iii) The railway freight on seeds should be reduced.
- (iv) Many States, such as, Punjab and Haryana, are providing subsidy out of the bonus for procurement while others like Bihar and Assam are doing so from their budget.
- (v) Lowering of custom duty on costly chemicals like intanax required for seed treatment will also reduce the cost and price of seed.

VIII. Organisational Structure: Past, Present and Future

72. Back in 1963, when the National Seeds Corporation was set up, it was intended to function primarily as a foundation seed organisation for hybrids and to foster the establishment of appropriate agencies and programmes to carry out the various phases of seed improvement through promotional, educational, technical, organisational and co-ordinating roles. Over the years, however, purely for historical reasons, particularly the absence of alternate agencies in the public and private sectors, NSC carried out diversified activities of seed production, certification, processing, marketing, etc., for filling up gaps in the interim period. With the advent of dwarf wheat varieties in 1965-66, N.S.C., on behalf of the Government of India, imported 250 tonnes followed by 18,000 tonnes in 1966-67 of seed of such varieties from Mexico for distribution in India. Thereafter N.S.C. undertook the direct production of certified seeds, although right from the beginning, it was clearly envisaged that the N.S.C. would function through other organisations in an integrated manner. Hitherto, N.S.C. had been playing only an interim role in certified seed production. In future, it will not be directly responsible for certified seed production of cereal crops in keeping with the country's seed policy framed on the basis of recommendations of Seed Review Team (1968), National Commission on Agriculture (1972) and more recently the Joint Working Party (1975). Decentralisation of seed production is the hall-mark of the recent seed policy. This would appear to be the right strategy in view of the diversity of agro-climatic conditions, multiplicity of varieties and the magnitude of seed requirements and the need for concentration in compact areas with the participation of seed growers and all others concerned.

IX. The Rationale for the National Seeds Programme

73. A bird's eye view of the problems, prospects and possibilities of production, processing and marketing of quality seeds in India, points to the need for a comprehensive, integrated and well co-ordinated national programme for seed production, based on the compact area approach, exploiting economies of sale through bulk production, processing, storage and movement, service agency system, share-holding seed-growers, active involvement of Agricultural Universities, Government of India, State Governments, Banks, National Seeds Corporation and other agencies concerned, a comprehensive programme of integrated agricultural development, rigorous quality control and availability of seeds within bullockcart distance etc.

X. The Salient Features of the National Seeds Programme

74. 20 salient features of the National Seeds Programme forwarded by the Joint Working Party, and supported by the Government of India are given below :

- (i) *Purpose* : The National Seeds Programme would support all facets of seed production from breeder and foundation seed production through certified seed production, processing, storage and marketing in public, co-operative and private sectors.
- (ii) *Goal* : To increase the production and marketing of seeds from 6 lakh quintals in 1973-74 to 30 lakh quintals by 1980-81, to achieve complete self-sufficiency in quality seeds by meeting the full effective demand and building up a sizeable export potential and reserve against vagaries of weather.
- (iii) *Location* : Compact areas of 60,000 to 80,000 hectares at 21 or more locations in the most favourable areas with high yields, low prices and optimal weather conditions.
- (iv) *Phasing* : State Seeds Projects have been launched at 10 locations in Haryana, Punjab, Andhra Pradesh and Maharashtra as part of the NSP. Similar projects are being formulated for Karnataka, Tamil Nadu, Rajasthan, U.P., Bihar, Madhya Pradesh, Orissa and other States.
- (v) *Organisation* : Seed-growers (Farmers, SFCI, Agricultural Universities) will participate as share-holders in the State Seeds Corporation to the extent of 35%; another 35% being provided by the State Government, Agricultural

Universities and other State Institutions and the balance of 30% by the Government of India through the National Seeds Corporation. This will ensure abiding and keen interest by all concerned in the seed production programme.

- (vi) *Technical Services* : Technical services from high-level staff employed by the National Seeds Corporation and State Seeds Corporations, Agricultural Universities and Certifying Agencies will be concentrated in the compact areas selected for seed production.
- (vii) *A Collaborative Venture* : All concerned with their specialised knowledge, skills and resources, such as, Agricultural Universities, ICAR, Banks, ARDC, NSC, SFICI, SSC, the Government of India and the State Governments and private and co-operative enterprises will join hands in this comprehensive and co-ordinate programme and play their respective roles.
- (viii) *Service Agency System* : The NSC as well as SSC's will operate under a Service Agency System limiting the charges by the State Seeds Corporation for production and the NSC for inter-State marketing to 5% each, subject to modification in the light of future experience. The system is calculated to provide a higher incentive to the seed-growers and lower prices to the seed users and greatest flexibility and dynamism. The entire sale proceeds minus expenses, such as, processing, storage, transport, interest, service charges by the SSC and the NSC, retailers' margin etc., will be passed on to the seed-growers. Thus they should expect a higher price than a contract grower.
- (ix) *GOI's Role* : The Government of India would provide over-all support and co-ordination through the National Seeds Development Council, the Central Seed Certification Board and the Project Management and Monitoring Committee.
- (x) *The State Government's Role* . The State Government would strengthen the arrangement for quality control, certification and Seed Law enforcement. Completely independent Seed Certification Agencies have been, or would be, set up in each State.
- (xi) *NSC's Role* : NSC will undertake assessment of the seed demand and the entire inter-state marketing, co-ordination of the production of foundation seed, provision of technical guidance and training, quality control services, export

of seeds, import of specialised sophisticated equipment, operation of reserve stock scheme.

- (xii) *Role of SSCs* : The State Seeds Corporations would provide the necessary facilities for seed production, processing, storage and marketing within the State.
- (xiii) *Role of Agricultural Universities* : They would have prime responsibility for producing breeder seed and foundation seed, providing technical services to certifying agencies, conducting research and training.
- (xiv) *Role of Banks* : Banks shall provide financial support for farm development and all aspects of seed production, processing and marketing. ARDC will re-finance the banks.
- (xv) *Machinery and Equipment* : To ensure scientific seed production techniques for quality control, machinery and equipment for cultivation, planting, harvesting, threshing etc. would be made available to the seed-growers and processing equipment to SSC's and private industry at reasonable rates through bulk purchases. It will also include imported equipment wherever suitable indigenous equipment is not available.
- (xvi) *Economy of Scale* : Economy of scale would be effected through compact area approach, provision of large-sized modern seed processing plants, bulk stores and rake movements.
- (xvii) *Storage* : Modern scientific seed stores would be provided at large-sized seed processing plants of 5,000 to 20,000 tonnes per annum at each location, bulk distribution depots and transit stores in selling centres.
- (xviii) *Seeds within bullock-cart distance* : 20,000 sale points will be set-up in order to bring quality seeds within easy reach of every village.
- (xix) *Finance* : Financial support will be provided by the Government of India, IBRD (World Bank), ARDC, ICAR, State Governments and Banks.
- (xx) *Highest Standards of Quality* : The latest and the best varieties will be multiplied with rigorous quality control at all stages through constant technical guidance on the spot, enforcement of standards by the Seed Certification Agencies, Seed Law Enforcement Agencies and regular testing of seeds through seed testing laboratories, seed health units and 'grow-out' tests. All seeds in sealed bags will carry a double money back guarantee.

75. Limitations of time and space do not allow me to dilate on the various aspects of the National Seeds Programmes which has been very well received in most quarters. It has also been the subject of some interested and misinformed criticism. The compact area approach eliminates the possibility of patronage and misuse of power. There is also no distinction left between the big or small farmers as anybody having land within the area selected for seed production, is eligible for participation. Some big farmers whose area is not included in the compact area are naturally sore about it. They readily join hands with the unscrupulous elements in the other sections of the society. Beyond making a passing reference, I need not deal with them at greater length. All that I may say at this point is that the National Seeds Programme is truly national and is of far-reaching significance. If it becomes a reality, India will have one of the biggest and the best seed organisations in the world. The tiny but vocal group of critics is only trying to give the dog a bad name to kill it and they know what they are. Our countrymen will soon see through their game.