



Office of the  
Economic Botanist to Government  
State of Bombay

D.O.No.EB/ 95 of 1956.  
Poona 5, 10<sup>th</sup> January 1956.

Dear Dr. Pal,

Re: Draft notes on Weeds

I am sending alongwith draft notes on "Weeds" in duplicate sent by Principal L.S.S. Kumar from Viet Nam.

Principal Kumar desired that items marked with asterisk may be omitted if there is shortage of space in the bulletin.

With regards,

Yours sincerely,

*M.C. Desai*  
M.C. DESAI 10/1

Dr. B.P.Pal,  
Director,  
Indian Agricultural Research Institute,  
New Delhi.

*Dr. Sikha my pl.  
the necessary action is taken.  
10/1*

*Two copies of the note on  
"Weeds" are submitted  
herewith. Prof. Kumar's note  
is also returned.  
S. M. 8/10  
13/2*

538  
181-56

4-15  
17/1  
8/1



Description of some important weeds and measures of control

→ Description → measures of control of  
Some important weeds

*Asphodelus tenuifolius* : N.O. Liliaceae, V.N. Rajee

.X.I spraying with 2,4-D ~~ester~~ or 2,4,5-T ester at  $1\frac{1}{2}$  gallons rate  
per acre after the cereal is fully tillered with ~~weed~~ control the  
weed. The weed, even in advanced stage of flowering, is  
susceptible to 2,4,5-T ester at  $1\frac{1}{2}$  gallon rate per acre

COMMON INDIAN WEEDS

OF

CULTIVATED LANDS

1. ACANTHOSPERMUM HISPIDUM, DC., N.O. Compositae, C.N. Star Burr. An annual, found in medium to light soils. Common throughout Western India. Appears during the Kharif. Invades grass, crop, and garden lands. Bears spiny one seeded fruits which are easily disseminated by cattle and man. Occurs in most cultivated crops. Hand pulling in early stage is best means of removal.

2. AMARANTUS SPINOSUS, Linn., N.O. Amarantaceae, V.N. Katali <sup>Chaulai</sup> C.N. Thorny. An annual commonly occurring throughout central and Peninsular India. Appears in all seasons but more during rains. Found in orchards, garden lands, and cultivated crops and waste lands. Can tolerate drought. Seeds profusely which are easily dispersed. Its tender leaf and succulent stems are eaten by sheep, goat, and cattle. Hoeing and hand-weeding before the plant runs to seed can keep the weed in check.

3. ARGEMONE MEXICANA, Linn., N.O. Papaveraceae, V.N. Bharband, C.N. Mexican poppy or Prickly poppy. An annual herb of American origin which has spread throughout India. Bears ashy-green spiny leaves with ragged edge and bright yellow flowers. The prickly capsule bears numerous brown, mustard like seed which are scattered easily. It invades crop lands and is found in all crops. In north India this weed seriously contaminates wheat and mustard crop. In several parts of India the weed is encouraged to grow. In Uttar Pradesh and Bihar the seed of this weed is used for adulterating sarson or mustard. The seed contains the alkaloid "argemonin" which causes dropsy, a serious debilitating disease in man. The weed can easily be controlled by hoeing or hand weed in early stages and by preventing it to set seed. A mixture of 2,4-D and 2,4,5-T is effective in killing the weed. ~~It should not be used in a wheat-crop, the dosage~~

4. BRASSICA ARVENSIS, Linn., N.O. Cruciferae. An annual herb resembling sarson (B. campestris var., Sarson Prain). Found commonly throughout north India in loamy soils. Contaminates rabi crops such as wheat, mustard and gram. Grows abundantly on bunds around fields and foot-paths. Seeds profusely, easily disseminated. Can be checked by clean cultivation and hand-weeding.

5. CARTHAMUS OXYCANTHA, Bieb., N.O. Compositae, V.N. Kantiari, Poli, Poliyan, C.N. Wild Safflower. ~~Antell~~ annual herb found competing seriously with other crops especially wheat in the north. Occurs in moderately dry places, is hardy, grows with winter crops and causes much damage and loss to crop. Can be eradicated by application of sodium salt of 2,4-D when it affects cereal crops. For mixed crop, hoeing and hand weeding should be adopted.

6. CELOSIA ARGENTEA, Linn., N.O. Amarantaceae, V.N. Sufaid murga or Sarwari, C.N. Cock's comb or Quail grass. An annual which occurs commonly in dry or rainfed crops on medium to light soils. Infestation can be so serious as to smother a crop. Seeds profusely and the seed contaminates grain of wheat and other cereal crops. Cattle, goat and sheep readily eat the plant even when in seed which are disseminated through their voiding. Seed remains dormant in the soil until the next rains. Can be exterminated by uprooting or hoeing in early stage before onset of flowering.

Amaranth

ing

Asphodelus  
Delete

XI

7. CHENOPODIUM ALBUM, Linn., N.O. Chenopodiaceae, V.N. Bethu Sag, C.N. Lamb's Quarters. A slender annual herb widely distributed from the tropics to the temperate Himalaya. Appears throughout the year on all soils except marshy areas. Affects many dry crops. In the north it seriously affects wheat and other cereal crops. Seeds profusely. Some varieties of this weed are cultivated in hills in Himachal Pradesh during the rains. It can be controlled by clean cultivation or by use of sodium salt or ester of 2,4-D and 2,4,5-T. at the rate of 1/2 to 1 lb per acre.

8. CONVOLVULUS ARVENSIS, Linn., N.O. Convolvulaceae, V.N. Hiran padi, C.N. Field bindweed. A perennial creeping herb capable of growing in a variety of soils and under adverse ecological conditions. Appears throughout the year. Species of convolvulus are found to occur as far apart as Travancore in the south to Himachal Pradesh in the north. A very persistent weed not easy to suppress unless the underground stem is killed. Propagates both by seed and underground stem. Can be eradicated by application of 2,4-D and 2,4,5-T. Not more than 3/4 to 1 lb of 2,4-D acid (as a salt) should be used.

9. CYNODON DACTYLON, Pers., N.O. Gramineae, V.N. Doob, hariali, C.N. Bermuda grass or Bahama grass. A perennial grass weed with much branched aerial and underground stem. Spreads by rooting at nodes of aerial stems and by underground rhizome. Occurs in medium to heavy soils and thrives in better soils. The underground stem grows to a fair depth, upto two feet sometimes. Propagates both by seed and vegetative parts. By its dense aerial growth and ramifying underground stem it smothers the crop in which it occurs. Deep summer ploughing and turning over of clods to desiccate the underground parts, keeps the grass in check.

x. II seeding the area to a dense shading crop such as Sudan grass, cowpeas etc followed by grain and then by a heavy seeding of some clovers is a sound method of control. Two successive shading crops are usually sufficient to obtain a high degree of kill

excellent forage to cattle and horses. Clean cultivation can keep it off arable lands.

10. CYPERUS ROTUNDIFOLIUS

III It has been found in ~~America~~ that disking or ploughing whenever sprouts appear over the area - approximately every three weeks - during his season ~~is checked~~ <sup>results in</sup> control. The plough and disc are considered superior to bladed cultivators in that they remove efficiently severe all rhizome connections and hence minimize the effects of apical dominance.

IV ... of soil during ...

IV In America It has been reported that small patches infested with this weed can be controlled by fumigation with methyl bromide at a rate of 1 lb per 100 sq. ft. This method is not practical on a large scale. In the Hawaiian islands repeated heavy applications of oil are said to kill nut grass.

V) At the Indian Agricultural Research Institute it was found that application of T. CA at ~~200 lbs~~ 20 lbs per acre resulted in a considerable thinning of the stand in an uncropped and naturally infested area.

flowers are used for decoration. The succulent stem is fed to

7. CHENOPODIUM ALBUM, Linn., N.O. Chenopodiaceae, V.N. Bethu Sag, C.N. Lamb's Quarters. A slender annual herb widely distributed from the tropics to the temperate Himalaya. Appears throughout the year on all soils except marshy areas. Affects many dry crops. In the north it seriously affects wheat and other cereal crops. Seeds profusely. Some varieties of this weed ~~are~~ cultivated in hills in Himachal Pradesh during the rains. It can be controlled by clean cultivation or by use of sodium salt or ester of 2,4-D and ~~2,4,5-T~~. *at the rate of 1/2 to 1 lb per acre.*

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9. CYNODON DACTYLON, Pers., N.O. Gramineae, V.N. Doob, hariali, C.N. Bermuda grass or Bahama grass. A perennial grass weed with much branched aerial and underground stem. Spreads by rooting at nodes of aerial stems and by underground rhizome. Occurs in medium to heavy soils and thrives in better soils. The underground stem grows to a fair depth, upto two feet sometimes. Propagates both by seed and vegetative parts. *By its dense aerial growth and ramifying underground stem it smothers the crop in which it occurs. Deep summer ploughing and turning over of clods to desiccate the underground parts, keeps the grass in check. Eradication has to be continuous to be effective. Deep summer ploughing with tractor is the only economic method of control. Can be eradicated by uses of heavy doses of TCA (Trichloroacetic acid) but the method is expensive. in uncropped land by the use of heavy dose of TCA (100 lbs per acre) but this method is costly.*

Although a troublesome weed of cultivation it provides excellent forage to cattle and horses. Clean cultivation can keep it off arable lands.

10. CYPERUS ROTUNDUS, Linn., N.O. Cyperaceae, V.N. Lavala, deela motha, C.N. Nut grass. A perennial herb distributed throughout India. Occurs in all crops both dry and irrigated. Infestation is severe in irrigated crops and in moist soils. Has spreading underground stem. A single plant may cover an area of 20 sq.ft. or more. The underground stem forms nuts or tubers at intervals of a few inches from which new aerial shoots are developed which bear flower and fruits. Tuber contains stored food which helps to tide over severe adverse conditions and remains dormant for considerable period. Stands desiccation and sprouts as soon as moist condition prevails. A prolific seeder which spread easily by wind and water. Propagates both by seed and nut. Nuts are found to develop upto depths of 18 to 24 inches which come ~~up~~ by turning of soil during ploughing. A most difficult weed to completely eradicate. Severity of infestation can, however, be checked by constant hand weeding, hoeing and deep ploughing with exposure of clods to sun in summer. *Appears throughout the year even when only minimum of moisture is present in the soil. Application of 2,4-D <sup>(1-2 lb/acre)</sup> is effective but repeated application is necessary to keep it under check.*

11 Jigra arvensis  
12 Echinochloa

13. EICHHORNIA CRASSIPES, Solms., N.O. Pontederiaceae, C.N. Water hyacinth. Perennial floating, rooted aquatic weed found generally in ponds, ditches, canals and slow flowing rivers. Distributed throughout India and is a serious menace to rice cultivation in West Bengal. Chokes up canals and water ways and seriously impedes irrigation and drainage. Water collects in the hollow of its leaves which serve as breeding ground for malaria mosquito. Multiplies most rapidly both by seed and vegetative parts. Seed or nut is used as food and the ornamental flowers are used for decoration. The succulent stem is fed to

cattle and serves as green manure. The weed is susceptible to 2,4-D. Mechanical cleaning is only partly successful in keeping it in check from infesting cultivated areas.

~~14~~ <sup>*E. hirta + E. pilulifera*</sup> EUPHORBIA PROSTRATA, Ait., N.O. Euphorbiaceae, C.N. Milk weed. A most common annual of prostrate habit occurring in crop and garden lands. Has a wide distribution in Peninsular India. Produces numerous tiny seeds which germinate when sufficient moisture becomes available. Several species of Euphorbia occur as weeds. The most common are E. geniculata, E. pilulifera, E. thymifolia, E. hirta, E. linifolia, etc. Because of ease of multiplication the weed is difficult to suppress. The seed remains viable for very long periods. Clean cultivation and continuous weeding keeps it in check. Control by chemicals is effective but repeated applications are necessary.

15. IPOMEA MURICATA, Jacq., N.O. Convolvulaceae. A trailing herb. Comes up with the rains and is found in fodder crops, hedges and along bunds of cultivated fields. Can be suppressed by spraying with 2,4-D.

16 *Justicia aurimarginata*

17. LANTANA CAMARA, Linn., N.O. Verbenaceae, V.N. Tantani. A perennial shrub with rough haired leaves and rough stem with numerous lenticels. Common throughout India. Can grow under variable climatic and edaphic conditions and is found upto 3000' altitude. In some parts of the country, it causes serious interference to cultivation by its invasion necessitating abandoning the land for cultivation. Forms dense undergrowth specially of teak forests. The tap root penetrates deep into the soil and the stem forms underground suckers. Produces abundant seeds. The sweet berries containing the seed are eaten by birds and dispersed through their droppings. Propagates both by seed and suckers. Burning and mechanical clearance has no effect unless the underground vegetative part gets destroyed. Application of 2,4-D to tender stem of fresh growth of pruned plants kills the plant.

18. LATHYRUS APHACA, Linn., N.O. Leguminosae, Sub.order Papilionaceae, V.N. Rewari. A weak stemmed trailing annual herb found in northern India upto an altitude of 7000 ft. Affects wheat, gram and other rabi crops. The plant coils around wheat and other crop plants it infests and prevents their development. Propagates by seed. Ester or sodium salt of 2,4-D is effective against the weed.

19. LEUCAS ASPERA, Spreng., N.O. Labiateae, V.N. Chota-hal-kusa. A very common annual weed found over greater part of the country. Occurs in different types of soils and is found in many cultivated crops. It generally appears with the rains or whenever adequate moisture is available. Propagates itself by seed which is produced in large numbers. Easy to eradicate if pulled out by hand or by hoeing before flowering. Susceptible to 2,4-D.

20. MIMOSA PUDICA, Linn., N.O. Leguminosae, Sub.order Mimoseae, V.N. Lajjavati, C.N. Touch-me-not plant, the sensitive plant. A troublesome thorny perennial weed generally found in crops and dry lands. It occurs in greater abundance in the moderately to heavy rainfall areas. The leaves and petioles are sensitive to touch causing them to fold up and droop. Large patch can react to remote shock or disturbance. A difficult weed to eradicate. Seeds profusely. Fruits develop a burr which help dispersal of seed by animals. Eradication by deep ploughing and before dispersal of seed is practicable.

21. OROBANCHE CERNUA, Loefl., N.O. Orobanchaceae, V.N. Bambaku, C.N. Broom rape. A fleshy annual parasite attacking several solanaceous and cruciferous crops. Occurs in Western India, Andhra, Uttar Pradesh, Bihar and Bengal. There are two species of Orobanche viz. O. cernua and O. indica occurring in this country. Causes severe damage to tobacco, brinjal, mustard, rape and other garden crops. It is a holo parasite which develops below ground by attaching itself to root of host plant.

*E. hirta + E. pilulifera are synonymous & only the former may be retained.*

Seeds profusely and the seed remains viable and dormant in soil for many years, and germinates when stimulus from root of host plant it parasitises becomes available. It drains the nourishment from host plant for its own development and detriment of the host. Causes serious damage to economic crops. Tobacco affected by Orobanche looses in quality. The fleshy plant is fed to cattle and seeds are dispersed by their voidings. Eradication by application of chemicals without affecting the host plant, the close proximity of which it grows is very difficult. Removal of immature plant just as it emerges above soil and before seed development can suppress its spread. Mature plant should be collected and burnt immediately or buried deep in a pit. Feeding of young plants to cattle should not be done.

22/18. ORYZA SP., Linn., N.O. Gramineae, S.O. Oryzaceae, V.N. Jangly dhan, C.N. Wild rice. Several species of wild rice occur in different parts of India. They contaminate cultivated rice from which they are indistinguishable in early stages of growth. They possess an undesirable characteristic of grain shedding. Since wild species cross with cultivated type the grain shedding character becomes transmissible. Considerable loss in yield results by admixture of wild rice with cultivated type. Eradication is difficult. Hand weeding as soon as wild character becomes evident is the only method of eradication.

23. OXALIS CORNICULATA, Linn., N.O. Oxalidaceae, V.N. Khati buti. A very common troublesome perennial weed which invades lawns, garden and crop lands. Occurs to greater extent in irrigated and moist lands. Widely distributed throughout the country. Several species of Oxalis occur as weed. Among these O. corniculata, O. acetosella, O. martiana, etc. are common. Seeds profusely and is extremely difficult to eradicate. The fruit explodes with violence and scatters the seeds. The aerial branches produce stolons. An individual plant can cover a square feet. Propagates both by seed and vegetative parts. Periodical hand weeding is necessary to keep it in check in lawns. Hoeing and ploughing can check its spread to some extent. O. martiana is a large leaved species which multiplies only by its bulbs which are produced in large number. It produces sterile flowers. This species is a serious weed in potato, maize and other rabi crops cultivated in heavy soils in the extreme north. It occurs upto 8000 ft. altitude. A severe infestation by this weed can smother the crop. Eradication is very difficult. Repeated application of soil may help in weed under control.

24. PHYSALIS MINIMA, Linn., N.O. Solanaceae, V.N. Tulati-pati. A succulent annual herb that occurs commonly in most cultivated fields in the Deccan. Prefers moist soils. Comes up with rains in profusion. The seeds are produced in berries which remain dormant in soil until adequate moisture becomes available. The weed can be easily uprooted by hand pulling when soil is moist. Weeding should be done before flowering to check spread.

25. PISTIA STRATIOTES, Linn., N.O. Araceae, V.N. Jalkumbhi, C.N. Water lettuce. A stemless, stoloniferous, floating aquatic weed, sometimes anchoring by root when stranded in the mud or in shallow water. Propagates mostly vegetatively and multiplies very rapidly. Occurs in rice fields, ditches, ponds and slow flowing rivers. Causes interference to development of rice crop when infested by this weed. Can be eradicated by mechanical clearance. It is supposed to harbour mosquitoes.

26. PORTULACA OLERACEA, Linn., N.O. Portulacaceae, V.N. Khursa, C.N. Indian purslane. A succulent annual weed of cultivation. Occurs very commonly in central, western and southern India. Found both in dry and moist soils. Seeds profusely, an individual plant producing 50,000 to 70,000 seeds. Tenacious and reestablishes itself when uprooted and left in the soil. Seeds are said to retain viability and power to germinate even after remaining buried in soil for 30 years. Constant shallow hoeing before the plant flowers can check its spread. Plants in seed should be destroyed by uprooting and burning. 2,4-D is effective in killing the weed.



X. VI

At the Indian Agricultural Research Institute experiments

involving the use of C.M.U (40-80 lbs per acre) indicated the possibility of controlling the weed in an uncropped and heavily infested area. It should be remembered that this heavy dose makes the method prohibitively costly and further it makes the land unfit for cultivation for some years.

X. VII

The possibility exists that the tillage method control if supplemented by chemical application may prove economical in the long run.

24 ~~26~~ SACCHARUM SPONTANEUM, Linn., N.O. Gramineae, V.N. Kans, A perennial sugarcane-like grass. 4 to 6 ft. tall. Root and underground rhizome remain dormant in dry season and sprout with the commencement of the rains. This weed has invaded considerable areas of arable land in the north and has rendered them unfit for cultivation. Propagates both by seed and vegetatively. The underground rhizome form a dense mat rendering it difficult to uproot by common wooden plough. Deep tractor ploughing to cut up and uproot the rhizome and its removal is the only way possible to check the spread of the weed.

25 ~~Sisymbrium~~ ~~\*25~~ SOLANUM NIGRUM, Linn., N.O. Solanaceae, V.N. Makoi, C.N. Garden-nightshade. An erect annual herb which comes up with the rains. ~~Infests~~ all cultivated, garden and orchard crops. Has a wide distribution and occurs in all types of soils. It can be checked by hand weeding or application of 2,4-D.

26 SOLANUM XANTHOCARFUM, Schrad and Wenll., N.O. Solanaceae, V.N. Kateli. A very prickly spreading shrub which can persist as a perennial. New plants appear at the beginning of the rainy season. Occurs in many types of soils and is found upto 5000 ft. elevation. A very troublesome weed which because of its spines makes harvesting of crops in which it occurs very difficult. Seeds fairly profusely and the berries eaten by birds help in dispersal of seed. It can be easily uprooted in young stage and is susceptible to 2,4,5-T.

29 ~~\*27~~ SONCHUS OLERACEUS, Linn., N.O. Compositeae, V.N. Doodhli, C.N. Common sow thistle, Milk thistle. An annual with slender long stem. Grows all the year round in dry as well as moist soils. S. arvensis occurs in Western India. Seeds moderately and seed is easily dispersed by wind. Propagates by seed. Hand weeding, hoeing or application of 2,4-D can suppress the weed.

27 30 SORGHUM HALEPENSE, Wall., N.O. Gramineae, V.N. Baru. A perennial graminaceous weed resembling jowar. The flowering spike resembles a lax inflorescence of sorghum. Develops persistent rhizome from which new shoots arise during the rainy season. The aerial shoots die out in hot weather. In the north, it infests crops such as jowar and maize from which it is distinguishable in early stages. In western and southern India, it occurs in heavy rainfall areas and is found from sea level up to elevation of 2000 ft. In young stages the plant contains HCN which is poisonous to stock. It can be fed after flowering. Fields severely infested by this weed is difficult to eradicate by cultural practices. Hand digging and uprooting of rhizome is a means to check its spread.

28 31 STRIGA LUTEA, Lour., N.O. Scrophulariaceae. A hemi-parasitic herbaceous annual. Three species viz. S. lutea, S. densiflora and S. euphrasiodes are common. These attack jowar, bajri, maize, sugarcane and other graminaceous crops. In some parts of the country, the attack on sugarcane is so severe as to reduce the vitality and quality of the crop. Severe infestation smothers the crop it attacks. Part of its life is spent below and part above ground. Individual plant produces 20,000 to 30,000 seed which can remain viable in soil for 10-12 years. Seed requires stimulation of host root for germination. Cultural practices can only partly eradicate the weed. Complete eradication without affecting the host plant is possible by application of 2,4-D. Repeated application in successive seasons can rid the soil of the parasite.

29 32 TRIBULUS TERRESTRIS, Linn., N.O. Zygophyllaceae, V.N. Gokhru, Chota Gokhru, C.N. Puncture vine or tack weed. A procumbent much branched annual herb. Bears spiny seeds. Occurs in dry soils of many parts of India. Very common in garden lands and along bunds and paths around cultivated fields. Can be easily destroyed by uprooting before the plant is in flower and the fruits are formed. Once in fruit the plants should be gathered and burnt.

\*31. TRIDAX PROCUMBENS, Linn., N.O. Compositeae, V.N. Ek dandi.  
 An annual weed commonly occurring over greater part of southern and western India. Appears with the rains. Grows on dry as well as moist soils and occurs in garden, orchard and cultivated crops. Propagates by seed. Plant is brittle, can be easily uprooted when soil is moist. Hand weeding and hoeing keeps it in check.

32. XANTHIUM STRUMARIUM, Linn., ~~N.O.~~ N.O. Compositeae, V.N. Bhakra, C.N. Burr weed. An annual herb. A common weed of moist areas with a wide distribution over greater part of the country. Plants appear with rains and die out during hot weather after producing spiny fruits bearing seed. The spines of the fruit spoil the quality of wool of sheep that graze in fields infested with this weed. It can be easily suppressed by hand weeding before fruiting or by application of 2,4-D ester at  $1/2$  lb ~~(4 lbs)~~ 1 gallon water per acre

33. ZIZYPHUS JUJUBA, Lamk., N.O. Rhamnaceae, V.N. Ber or bor. A hardy perennial shrub or tree. Invades cultivated fields in the dry zones. Commonly found in Saurashtra, Rajasthan, Punjab and Himachal Pradesh, to lesser extent in other parts of India. A very difficult weed to eradicate because of its deep root system and power to regenerate. ~~Propagates~~ by seed. The fruit is eaten by birds and seeds dispersed through their droppings. The weed can seriously interfere with cultivation. Difficult to eradicate by cultural practices. Application of arsenic to stem of plants cut above ground level kills the plant. Fields over run by the weed are abandoned from cultivation.

At the Indian Agricultural Research Institute spraying

with 2,4,5-T was found at the rate of  $1/2$  gallon - 1 gallon

per acre was found to control the stand. Application

had to be repeated as and when new growth appeared. The most susceptible stage appeared to be the flowering stage.

of Z. Rotundifolia

Note of Explanation

- N.O. = Natural Order
- S.O. = Sub-order
- V.N. = Vernacular name in Hindi.
- C.N. = Common name

\* ~~These weeds may be deleted if curtailment of text is necessary for want of place.~~

All India	Wheat area (Thousand acres)	1953-54 26,098	1946-47 <del>4431</del>
"	Wheat production (Thousand tons)	7792. (range from 1949-50 to 1953-54 is 6290 to 7792)	4971

In. 1946-47	1946-47		1947-48	
	Area (in acres)	Production (in acres)	Area	Production
C.P. Berar	2833	112	1749	268
Bombay	1965	111	2066	337

Wheat - Yield per acre (lbs.)

	1949-50	1950-51	1951-52	1952-53	1953-54
<u>INDIA.</u>	<u>584</u>	<u>592</u>	<u>582</u>	<u>681</u>	<u>669</u>
Andhra	373	204	280	280	320
Assam	1,120	747	896	747	747
Bihar	470	377	377	553	562
Bombay	378	369	325	326	402
M.P.	431	499	432	463	474
Madras	-	-	560	-	560
Orissa	560	597	560	560	560
Punjab	907	803	868	991	943
U.P.	706	732	683	758	754
W. Bengal	529	735	707	740	640
Hyderabad	245	225	262	243	261
J. & K.	822	841	544	885	604
M.B.	347	366	206	337	337
Mysore	-	747	-	448	560
PEPSU	843	677	994	975	1,015
Rajasthan	398	528	584	962	770
Saurashtra	667	686	620	716	760
Ajmer	434	459	517	976	908
Bhopal	308	466	280	522	584
Delli	520	560	646	1022	1045
Him. Pradesh	432	393	407	297	423
Kutch	589	373	693	913	910
N. P.	334	446	417	619	648

In 1946-47 there was severe rust epidemic in central & peninsular India  
 All India yield/acre in 1946-47 was 445 lbs.