

Locust
Series

CENTER OF
AGRICULTURAL
SUSTAINABILITY FOR
SOUTH PUNJAB (CAS-SP)



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POLICY
NOTE-1

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LOCUST DAMAGE ASSESSMENT BASED ON MULTIPLE DAMAGE SCENARIOS

Desert locust has been a serious threat for the food security and agrarian economies across the globe since long. FAO has already warned against the increasing threats of locust attack during recent months. In Pakistan, locust attacks have been seen from last many years mainly in the deserts of Sindh, Baluchistan and Punjab. However, in 2019, due to unusual climatic conditions, locust swarms also infiltrated through the irrigated and intensive cropping areas of Punjab creating an emergency situation for the agriculture sector and farming community of Pakistan especially in the Punjab.

In response to the emerging threat of the locust, the Government declared a “National Emergency on Locust” upon the advice of the Ministry FS&R. A comprehensive National Action Plan for Surveillance and Control of Desert Locust in Pakistan, 2020-21 was prepared and adopted by the Cabinet. Among many initiatives of this National Action Plan (NAP), damage assessment scenarios were also developed across the Punjab for Rabi crops. It has been reported that the losses to agriculture in case of a locust invasion can reach about PKR 205 billion, considering a 15% damage level for the production of major Rabi crops. At 25% damage level, the total potential losses are estimated to be about PKR 353 billion for the rabi crops, and about PKR 464 billion for Kharif crops. In the midst of additional impacts by COVID19 on health, livelihoods and food security and nutrition of the most vulnerable communities and populations of Pakistan.

To extend the above analysis further in Punjab for Kharif season 2020, MNS-University of Agriculture has started working on the loss assessment so that a relief package for the affected farmers can also be suggested. To ascertain the extent of the damage of locust (in terms of area, crop and financial terms), it is essential that we can build rationale scenarios and their narratives so that further assessment can be based accordingly.

EXTREME DAMAGE SCENARIO

Existing Kharif season could be more devastating in terms of Locust attack, if the migratory populations of the locust, which usually enters in Pakistan through Baluchistan borders and spread through Cholistan and then travel back, may face similar climatic conditions as of last year thus infiltrating through the cropped area of south and central Punjab while the local inbred generation (which has already started showing-up) will be activated (as already presence of the Nymphs and adults have been identified in 16 districts of the province from D.G. Khan to Jhang and Chakwal to Okara, and Lodhran, Jalal Pur, Multan). There will also be migration of locust from the adjoining districts of KP province (from D.I. Khan and Tank districts) which will affect Attock, Mianwali, Rawalpindi and Chakwal districts).

Scenario Narrative:

- i. Migratory population extent: High (Based on Global projections for locust migration)
- ii. Climate situation: Adverse (restricting movement of locust going back to the breeding sites)
- iii. Local in-bred population intensity: High (due to favorable temperature, in form of crops ample amount of availability of food, rainfall and ineffective control on breeding sites)
- iv. Control on local adult population: Low to medium
- v. Control on migratory population: Low

MID-DAMAGE SCENARIO

This scenario is based on the situation if the migratory population of the locust can be able to travel back from Cholistan through Baluchistan having it's a "little more than historical extent of damage" (as historically evident) in few districts of Punjab (Bahawalnagar, Bahawalpur, R.Y.Khan and Rajan pur). But, the local population will continue to be a threat in the extensively cropped areas of Punjab (especially in the districts of Okara, Sahiwal, Vehari, Lodhran, Layyah, Jhang, Muzzafargarh, Multan) in extended pockets. There will be minimum migration of the locust from the province of KP in joining districts of Punjab.

Scenario Narrative:

- i. Migratory population extent: As per historical trends
- ii. Climate situation: According to historical trends of temperature and rainfall (allowing migratory populations to move back)
- iii. Local in-bred population intensity: Medium (low control on breeding sites but less favorable climatic conditions)
- iv. Restricted movement of inbred local locust swarms with in the Punjab.
- v. Control on local adult population: Effective
- vi. Control on migratory population: Effective

LOW-DAMAGE SCENARIO

This scenario is based on the situation where we are expecting that migratory populations will return to the Baluchistan by causing a minimum damage in the desert areas and adjoining pockets of the cropped areas in Punjab while active surveillance and control strategy would work for the local in-bred populations of locust so to control their damage in isolated pockets of affected areas.

Scenario Narrative:

- i. Migratory population extent: As per historical trends
- ii. Climate situation: According to historical trends of temperature and rainfall (allowing migratory populations to move back)
- iii. Local in-bred population intensity: Low (Effective control on breeding sites and less favorable climatic conditions)
- iv. Control on local adult population: Effective
- v. Control on migratory population: Effective

ASSUMPTIONS

Based on the above narratives, loss assessment has been carried out by making certain assumptions and other considerations as discussed below (for the Kharif season 2020 only).

1. The assessment of the actual loss to the farmer is being made based upon the last year cost estimates of the Kharif crops provided by the Agriculture department. Similarly, prices are also assumed to be fixed at last year level. Cost and yield estimates are being prepared considering the average production operations and yield (at all Punjab level).

Kharif crops are grouped into three categories bases upon the global review and last year observations for the extent of damage from locust attack in different districts of the Punjab. Loss to the minor crops (which are sown on negligible area in locust susceptible districts of Punjab) is not been taken in the report due to the non-availability of reliable data. However, for payment of compensation to the individual farmers these must have to be considered. The crops are indicated as H, M or L against their names indicating High, Medium and Low preference for the locust damage.

3. The damage percentage is being set assuming the areas having mix of Khariief vegetation. The damage extent can vary for any area which comes under the locust attack and vast area is being sown under a single crop. In this case, the locust damage to any crop under low category can reach to a maximum level.

4. The financial loss of the farmer has been estimated in different scenarios. These losses do not include any economic losses (in terms of lost opportunity cost, family labour involvement etc.). Impact of land rent has been included. Similarly, this is not loss to the lost to the economy which could raise the estimates considerably. Loss to the economy for only crop (i.e. Cotton) has been estimated which exceeds 200% of the financial loss.

SUMMARY TABLES

Table 1: **Extreme Case Scenario**

| Crop | High Damage Crops | | Low damage crops | | Total Loss (Rs. Million) Area x loss per acre |
|---|-------------------|--|------------------|---|--|
| | Area in acres | Loss in (Rs. / acre) (50% or higher for (H) and 30% on crops with (M)) | Area in acres | Loss in (Rs. / acre) for Low preferred crops (up to 20% loss) | |
| Maize (H) | 289320 | 31365 | | | 9074.40 |
| Sorghum (H) | 148560 | 12000 | | | 1782.72 |
| Bajra (H) | 306560 | 15000 | | | 4598.4 |
| Sugarcane (M) | 590800 | 27000 | | | 15954.44 |
| Sesame (M) | 60129 | 7350 | | | 441.95 |
| Moong (M) | 158979 | 7243 | | | 1151.563 |
| Rice (L) | | | 925600 | 9639 | 8922.41 |
| Cotton (L) | | | 1861200 | 11933 | 22210 (44,700) |
| Potato (L) | | | 135661 | 21703 | 2944.33 |
| Groundnut (L) | | | 91601 | 11000 | 1007.61 |
| Guar Seed (L) | | | 84596 | 5000 | 422.982 |
| Mango (L) | | | 104063 | 30000 | 3121.896 |
| Estimated Effected Area: 4.75 Million acres | | | | | Estimated Loss: 71632.74 |

(H,M,L: High, Medium, Low)

The estimated financial loss of around Rs. 71.6 billion to the farmers indicate may yield much higher economic loss to the economy by considering market price of the output and forward and backward linkages in the economy during Kharief season. The loss to the farmers in Medium and Low damage scenarios range to Rs. 30 and 7.8 billion respectively as detailed below in Table 2 & 3.

Table 2: **Medium-Damage Scenario**

| Crop | High Damage Crops | | Low damage crops | | Total Loss (Rs. Million) Area x loss per acre |
|---|-------------------|--|------------------|--|--|
| | Area in acres | Loss in (Rs. / acre) (50% or higher for (H) and 30% on crops with (M)) | Area in acres | Loss in (Rs. / acre) For crops with (L) can be assessed 20% loss | |
| Maize (H) | 112425 | 31365 | | | 3526.16 |
| Sorghum (H) | 58275 | 12000 | | | 699.3 |
| Bajra (H) | 104600 | 15000 | | | 1569.0 |
| Sugarcane (M) | 212000 | 27000 | | | 5725.02 |
| Sesame (M) | 23135 | 7350 | | | 170.03 |
| Moong (M) | 65946 | 7243 | | | 477.68 |
| Rice (L) | | | 370750 | 9639 | 3573.89 |
| Cotton (L) | | | 929500 | 11933 | 11091.91 |
| Potato (L) | | | 54881 | 21703 | 1191.12 |
| Groundnut (L) | | | 49609 | 11000 | 545.70 |
| Guar Seed (L) | | | 40463 | 5000 | 202.31 |
| Mango (L) | | | 43308 | 30000 | 1299.22 |
| Estimated Effected Area: 2.06 Million acres | | | | | Estimated Loss: 30071.4 |

Table 3: **Low-Damage Scenario**

| Crop | High Damage Crops | | Low damage crops | | Total Loss (Rs. Million) Area x loss per acre |
|---|-------------------|--|------------------|--|--|
| | Area in acres | Loss in (Rs. / acre) (50% or higher for (H) and 30% on crops with (M)) | Area in acres | Loss in (Rs. / acre) For crops with (L) can be assessed 20% loss | |
| Maize (H) | 2140 | 31365 | | | 67.12 |
| Jawar (H) | 15500 | 12000 | | | 186 |
| Bajra (H) | 33330 | 15000 | | | 499.95 |
| Sugarcane (M) | 77800 | 27000 | | | 2100.98 |
| Sesame (M) | 7524 | 7350 | | | 55.29 |
| Moong (M) | 26053 | 7243 | | | 188.71 |
| Rice (L) | | | 73800 | 9639 | 711.41 |
| Cotton (L) | | | 252500 | 11933 | 3013.13 |
| Potato (L) | | | 1060 | 21703 | 23.10 |
| Groundnut (L) | | | 1164 | 11000 | 12.80 |
| Guar Seed (L) | | | 15880 | 5000 | 79.40 |
| Mango (L) | | | 8339 | 30000 | 250.17 |
| Estimated Effected Area: 0.51 Million acres | | | | | Estimated Loss: 7188.0 |

Note: Details of the districts and area estimation under each scenario are attached at Annexure-I

D: Farmer Relief / Compensation Strategy

Under the disaster compensation program, in many countries of the world, locust is being treated as a national disaster. In many countries of the world, this menace of locust is also being covered under the crop insurance schemes. In many EU countries like Austria, Hungary, Sweden, Insurance companies do cover the losses incurred by pest infestation in general while Bulgaria has special insurance tool to cover the losses incurred by the locust. In India, ongoing insurance scheme “Pradhan Mantri Fasal Bima Yojana (PMFBY)” provides coverage from locust’s attack, through the mid-season (from sowing to harvesting) adversity clause of the insurance policy. This provision can be invoked for a specific crop or group of crops in the notified insurance unit, by the state government through damage notification, wherein the expected yield during the season is likely to be less than 50% of the normal yield”.

Similarly, in India state of Gujrat, state government has announced a relief package of IRS. 18,500 per hectare (not exceeding 2 hectares per farmer) for all those who have incurred a loss of 33% or more to their crops (for an area of around 22000 hectares) in the month of April 2020.

In Punjab, crop insurance scheme is already in place in eighteen districts which can be linked to cover the adversities caused due to the attack of locust. Following SoPs are recommended for chalking out a strategy for compensation to farmers against locust infestation:

1. Coverage of 100% affected area under the scheme for each farmer.
2. Payment of 50% of the total damage caused by the locust. The damage estimate would be based on damage assessment survey in the affected districts only
3. Damage assessment would be on the base of the crop type, stage and average cost of production on the similar pattern already carried out by the Agri. Department.
4. Estimated financial burden of Compensation package is as under:
 - a. High damage Scenario: Rs. 35 Billion
 - b. Medium damage scenario: Rs. 15 Billion
 - c. Low damage scenario: Rs. 4 billion

ANNEXURE: A

A: Extreme Case Scenario:

| Districts under high infestation (extent of cropped area under sever attack (50%)) | Districts under low infestation (extent of cropped area under sever attack: less than 25%) | Tehsils under high infestation | Tehsils under low infestation | Kharief crops in high infestation areas (with susceptibility to locust attack mentioned as Low or High) | Kharief crops sown in low infestation areas (with susceptibility to locust attack mentioned as Low or High) | Extent of Expected affected cropped area (under sever or mild attack) (in acres) |
|---|---|---|---|---|---|--|
| Bahawalpur | | Bahawalpur Hasilpur Khairpur Tamewali Ahmadpur East Yazman | | Cotton (L) Rice (L), Tili (M) Guar (L), Fodders (H) | | 417169 |
| Bahawalnagar | | Minchanabad Fortabbas | Bahawalnagar Chishtian Haroonabad | Cotton (L), Tili (M), Guar (L), Fodders (H), Maize (H) | Cotton (L), Rice (L) Maize (H) | 437823 |
| R.Y.Khan | | Rahim Yar Khan, Sadiqabad | Khanpur & Liaqatpur. | | Cotton (L), Sugarcane (M), Maize (H), Guava (M), tomato, cucurbits (L) | 528717 |
| | Multan | Jalalpur Pirwala, Shujabad | Multan City, Multan Saddar | | Cotton (L), Rice (L), Sugarcane (M), Sunflower (M), Vegetables (L), Mango (L) , Pulses (M), Fodder (H) | 143161 |

| | | | | | | |
|--|-----------|-----------|--|---|---|--------|
| | Khanewal | | Khanewal Mian Channu Kabirwala Jahanian | | Cotton (L), Rice (L), Sugarcane (M), Sunflower (M), Vegetables (L), Mango (L) Pulses (M), Fodder (H) | 148882 |
| | Lodhran | | Lodhran, Kahor Pakka, Duniyapur | | Cotton (L), Rice (L), Sunflower (M), Vegetables (L), Maize (H), Pulses (M), Fodder (H) | 114348 |
| | Vehari | | Vehari Mailsi Burewala | | Cotton (L), Rice (L), Maize (H), Sugarcane (M), Vegetable (L) | 151056 |
| | Sahiwal | | Sahiwal and Chicawatni | | Maize (H), Potato (L), Lady finger (L) | 100638 |
| | Okara | Depalpur | Okara, Renala Khurd, Pattoki | Maize (H), Potato (L), Vegetable (L), Fodder (H) | Maize (H), Potato (L), Vegetable (L), Fodder crop (H) | 187044 |
| | Pakpattan | Pakpattan | Arif Wala, | Maize (H), Rice (L), Cotton (L), Potato (L), Vegetables (L) | Maize (H), Cotton (L), Potato (L), Vegetables (L) | 118762 |

| | | | | | | |
|-----------|--------------|----------------------------|--|--|---|--------|
| D.G. Khan | | Koh Suleman, Fort Manru | Dera Ghazi Khan, Choti Zeeren Taunsa Sharif | Vegetables (L), Fruit Plants Cotton (L), Fodder (H) | Cotton (L), Rice (L) Sugarcane (M) Sesame (M), Guar (L), Fodder (H) | 222441 |
| Rajanpur | | Jampur, Rojhan, | Rajanpur | Cotton (L), Rice (L), Sugarcane (M) Tili (M), Pulses (M) Fodder (H) | Cotton (L), Rice (H), Sugarcane (M) Pulses (M) Tili (M) Fodder (H) | 256635 |
| Layyah | | Karor, Choubara | Layyah, Fateh Pur | Cotton (L), Fodder (H) (Lucern, Sorghum) Sesame (M) | Cotton (L), Sugarcane (M), Citrus (L), Groundnut (L) | 192862 |
| | Muzaffargarh | Kot Addu, Muzaffargarh, | Ali Pur, Jatoi | Rice (L) Cotton (L) Mango (M) Sugarcane (M) | Rice (L), Cotton (L), Sugarcane (M), Potato (L) | 174850 |
| | Sargodha | | Bhalwal, Kotmomin, Sahiwal, Sargodha, Shahpur | | Citrus (L), Rice (L), Sugarcane (M) | 87793 |
| Khushab | | Khushab, Noorpur Thal, | Quaidabad and Naushera | Citrus (L), Groundnut (L), Guar (L) Cotton (L) | Groundnut (H), Fodder (H), Rice (L) Sugarcane (M) Vegetables (L), Pulses (M) | 95060 |
| | Mianwali | | Mianwali Isakhel Piplan | | Sugarcane (M), Rice (L), Cotton (L), Guar (L) Fodder (H) | 81049 |

| | | | | | | |
|---------|------------|-------------------|---------------------------------------|--|---|--------|
| Bhakkar | | Mankera | Darya Khan, Kallur Kot Bhakkar, | Pulses (M), Groundnut (L), Fodders (H) | Pulses (M), Sugarcane (M) Groundnut (L), Cotton (L) Fodder (H), | 243904 |
| | TT Singh | | Kamalia | | Sugarcane (M), Rice (L), Cotton (L) | 71873 |
| | Chiniot | | | | Sugarcane (M), Rice (L), Cotton (L) | 80636 |
| Jhang | | Ahmed pur Sial | Jhang Shorkot | Rice (L), Sugarcane (M), Cotton (L), | Rice (L), Sugarcane (M), Cotton (L), Maize (H) | 180834 |
| | Rawalpindi | Pindi Khaip | | Pulses (M), Groundnut (L), Fodders (H) | | 29481 |
| Chakwal | | Chakwal | | Olive (M), Groundnut (L), Fodders (H), Maize (H) | | 111145 |
| | Jehlum | | Jehlum | | Rice (L), Sugarcane (M), Maize (H), Fodders (H), Vegetables (L) | 26410 |
| Attock | | Attock | | Maize (H), Groundnut (L), Rice (L), Sugarcane *M) | | 50702 |

Mid-Damage Scenario:

Damage Extent

| Districts under high infestation (extent of cropped area under sever attack (50%)) | Districts under low infestation (extent of cropped area under sever attack: less than 25%) | Tehsils under high infestation | Tehsils under low infestation | Khariief crops in high infestation areas (with susceptibility to locust attack mentioned as Low or High) | Khariief crops sown in low infestation areas (with susceptibility to locust attack mentioned as Low or High) | Extent of Expected affected cropped area (under sever or mild attack) (in acres) |
|--|--|--|---|--|--|--|
| Bahawalpur | | Bahawalpur Hasilpur Khairpur Tamewali Ahmadpur East Yazman | | Cotton (L), Rice (L), Tili (M) Guar (L), Fodders (H) | | 333735 |
| Bahawalnagar | | Minchanabad Fortabbas | Bahawalnagar Chishtian Haroonabad | Cotton (L), Tili (M), Guar (L), Fodders (H), Maize (H) | Cotton (L), Rice (L) Maize (H) | 350258 |
| R.Y.Khan | | RahimYar Khan, Sadiqabad | Khanpur & Liaqatpur. | Sugarcane (M), Cotton (L) | Cotton (L), Sugarcane (M), Maize (H), Guava (M), Vegetables (L) | 422973 |
| | Multan | Jalalpur Pirwala, Shujabad | | Cotton (L), Rice (L), Sugarcane (M), Sunflower (M), Vegetables (L), Mango (L), Pulses (M), Fodder (H) | | 114528 |

| | | | | | | |
|---------|------------|-------------------|---------------------------------------|--|---|--------|
| Bhakkar | | Mankera | Darya Khan, Kallur Kot Bhakkar, | Pulses (M), Groundnut (L), Fodders (H) | Pulses (M), Sugarcane (M) Groundnut (L), Cotton (L) Fodder (H), | 243904 |
| | TT Singh | | Kamalia | | Sugarcane (M), Rice (L), Cotton (L) | 71873 |
| | Chiniot | | | | Sugarcane (M), Rice (L), Cotton (L) | 80636 |
| Jhang | | Ahmed pur Sial | Jhang Shorkot | Rice (L), Sugarcane (M), Cotton (L), | Rice (L), Sugarcane (M), Cotton (L), Maize (H) | 180834 |
| | Rawalpindi | Pindi Khaip | | Pulses (M), Groundnut (L), Fodders (H) | | 29481 |
| Chakwal | | Chakwal | | Olive (M), Groundnut (L), Fodders (H), Maize (H) | | 111145 |
| | Jehlum | | Jehlum | | Rice (L), Sugarcane (M), Maize (H), Fodders (H), Vegetables (L) | 26410 |
| Attock | | Attock | | Maize (H), Groundnut (L), Rice (L), Sugarcane *M) | | 50702 |

| | | | | | | |
|-----------|---------|-------------------------|---|---|--|--------|
| | Lodhran | | Lodhran, Kahor Pakka, Dunyapur | | Cotton (L), Rice (L), Sunflower (M), Vegetables (L), Maize (H), Pulses (M), Fodder crops (H) | 91478 |
| | Vehari | | Vehari Mailsi Burewala | | Cotton (L), Rice (L), Maize (H), Sugarcane (M), Vegetable (L) | 120845 |
| | Sahiwal | | Sahiwal and Chicawatni | | Maize (H), Potato (L), Lady finger (M) | 80511 |
| | Okara | Depalpur | | Maize (H), Potato (L), Vegetable (L), Fodder (H) | | 149635 |
| D.G. Khan | | Koh Suleman, Fort Manru | Dera Ghazi Khan, Choti Zeeren Taunsa Sharif | Vegetables (L), Cotton (L), Fodder (H) | Cotton (L), Sesame (M), Guar (L) Fodder (H) | 177952 |
| Rajanpur | | Jampur, Rojhan, | Rajanpur | Cotton (L), Rice (L), Sugarcane (M) Pulses (M) Fodder (H) | Cotton (L), Rice (L), Sugarcane (M) Pulses (M) Fodder (H) | 205308 |
| Layyah | | Karor, Choubara | Layyah, | Cotton (L), Fodder (H) (Lucern, Sorghum) | Cotton (L), Sugarcane (M), Citrus (L), Groundnut (L) | 154289 |
| Khushab | | Khushab, Noorpur Thal, | Quaidabad and Naushera | Citrus (L), Groundnut (L), Cotton (L) Fodder (H) | Groundnut (L), Fodder crops (H), Vegetables (L), Pulses (M) | 76048 |

| | | | | | | |
|---------|--|--------------------------------|---------------------------------------|---|--|--------|
| Bhakkar | | Mankera | Darya Khan, Kallur Kot Bhakkar, | Pulses (M), Groundnut (L), Fodders (H) | Pulses (M), Groundnut (L), Fodder (H), Citrus (L) | 195123 |
| Jhang | | Ahmed pur Sial 18 Hazari | Jhang Shorkot | Rice (L), Sugarcane (M), Cotton (L), | Rice (L), Sugarcane (M), Cotton (L), Maize (H) | 144667 |
| Chakwal | | Chakwal | | Zaitune (M), Groundnut (L), Fodders (H), Maize (H) | | 88916 |
| Attock | | Attock | | Maize (H), Groundnut (L), Rice (L), Sugarcane (M) | | 40562 |

Low-Damage Scenario:

Damage Extent

| Districts under high infestation (extent of cropped area under sever attack (50%)) | Districts under low infestation (extent of cropped area under sever attack: less than 25%) | Tehsils under high infestation | Tehsils under low infestation | Khariief crops in high infestation areas (with susceptibility to locust attack mentioned as Low or High) | Khariief crops sown in low infestation areas (with susceptibility to locust attack mentioned as Low or High) | Extent of Expected affected cropped area (under sever or mild attack) (in acres) |
|---|---|--------------------------------|---|--|--|--|
| Bahawalpur | | Bahawalpur Yazman | | Cotton (L) Rice (L), Tili (M) Guar (L), Fodders (H) | | 166868 |
| | Bahawalnagar | | Bahawalnagar Chishtian Haroonabad Minchanabad Fortabbas | | Cotton (L), Tili (M), Guar (L), Fodders (H), Maize (H) | 87565 |
| R.Y.Khan | | RahimYar Khan, Sadiqabad | | Cotton (L), Sugarcane (M), Maize (H), Vegetables cucurbits (M) | | 211485 |
| | D.G. Khan | | Choti Zeeren Koh Suleman, Fort Manru | | Vegetables (L), Cotton (L) Sesame (M), Guar (L) | 44488 |
| Rajanpur | | Rojhan, Rajanpur | | Cotton (L), Rice (L), Sugarcane (M) | | 102653 |

| | | | | | | |
|---------|--------|-------------------------------------|-----------------|--|---|-------|
| | Layyah | | Karor, Choubara | | Cotton (L), Fodder (H) (Lucern,Sorghum) | 38572 |
| Khushab | | <i>Khushab,</i> Noorpur Thal, | | Citrus (L), Groundnut (L), Cotton (L) Fodder (H), | | 38024 |
| Bhakkar | | Mankera | | Pulses (M), Groundnut (L), Fodders (H) | | 97562 |
| Jhang | | 18 Hazari | | Rice (L), Sugarcane (M), Cotton (L), | | 72334 |

COST OF PRODUCTION

| Crop | Cost of Production per acre (Rs.) |
|-------------|--|
| Rice | 48198 |
| Cotton | 59666 |
| Sugarcane | 90016 |
| Maize | 62729 |
| Potato | 108518 |
| Groundnut* | 55000 |
| Guar Seed* | 25000 |
| Sesame* | 24500 |
| Moong | 24145 |
| Sorghum* | 24000 |
| Bajra* | 30000 |
| Mango* | 150000 |

(Source: www.amis.pk)

*: Farmer survey