## Table a : Summary of CSSRI Subsurface Drainage Experiments

| Location | Year Installed | Area (ha) | Mean annual rainfall (mm) | Texture (Km/day) | Drain spacing (m) | Drain Depth (m) | ECe(0-30 cm) DS/m Initial | 1988 1989 | Crop Yield (1988 1989) t/ha |
|---|---|---|---|---|---|---|---|---|---|
| **Haryana** | | | | | | | | | |
| Sampla (Rohtak District) | 1984 | 10 | 660 | Sandy Loam (10) | 25.50 75 | 1.75 | 50 | <6 | PM 1.1 W 4.0 B 3.0 M 1.5 |
| Mundalana (Sonepat | 1986 | 8 | 500 | Sandy Loam | 30.67 84 | 1.75 | 25 | <6 | PM 6.1 |
| District) | 1987 | 16 | | (0.8) | 50 | 1.5 | 30 | <6 | W 3.6 |
| Ujhana (Jind District) | 1987 | 33 | 465 | Clay Loam to Loam (0.6) | 60 | 1.4 | 11.50 | 11 | W 3.6 B 0.9 |
| Bhana Srahmana (Jind District) | 1988 | 62 | 465 | Clay Loam (0.6) | 67 | 1.5 | 12.60 | <10 | W 3.1 B 1.9 M 1.5 |
| **Gujarat** | | | | | | | | | |
| Dabhu | 1987 | 50 | 800 | Clay Loam (0.15) | 50 | 1.5 | 28 | <8 | PM 2.6 B 2.2 |

**PM - Pearl Millet : W - Wheat; B - Barley : M- Maize**

**Table b : Expected Threshold ECe Vlaues and Corresponding Yields**

| Research Site | Crop | Threshold ECe (ds/m) | ECe 50 (ds/m) |
|---|---|---|---|
| Sampla | Wheat | 4.0 | 5.7 |
| | Mustard | 6.0 | 0.3 |
| Karnal | Mustard | 3.8 | 11.0 |
| | Sorghum | 2.2 | 6.9 |
| Agra | Wheat | 8.2 | 10.7 |
| | Mustard | 6.1 | 8.5 |
| Dharwad | Wheat | 2.3 | 4.7 |
| | Sorghum (W) | 2.1 | 14.9 |
| Indore | Maize | 0.5 | 6.8 |
| Chalakudy | Rice (Transplanted) | 0.6 | 19.1 |

**Table c : Representative subsurface drainage experiments for waterlogged/saline soils**

| Locations and state | Type of drains | Depth (m) | Spacing (m) | Major conclusions | Reference |
|---|---|---|---|---|---|
| **Pre-Independence** | | | | | |
| Manjri (Maharashtra) | Random combination of open and tile drains | 1.50 | | Increased crop yields | Talati R.P. (1941) |
| Chakanwali* (Punjab) | Open drains | 0.90 | 33-66 | Significant increase in in crop yield | Mehta, M.L. (1951) |
| * Now in Pakistan | | | | | |
| **Post independence** | | | | | |
| Ludhiana (Punjab) | Interceptor and combination of open and tile tile drains | | 1.2 | Significant increase in kharif (maize), no significant increase in rabi (wheat) | Michael (1967) |
| Digod (Rajasthan) | Mole<br>Plastic<br>Asbestos | 2-2.5<br>8-12<br>15-20 | 0.6-0.8<br>1.0-1.3<br>1.2 | Mole drains are cheap and consume less time during installation | Lovas (1972) |
| Sirugupa (Karnataka | Open drains | 12 | 1.2 | Significant increase in crop yield over undrained | Channabasiah (1972) |
| Pant Nagar (U.P.) | Tile drains | 15-35 | 1.0 | More water storage and hence less runoff from drained lands | Chauhan & Ram (1972) |
| IARI (New Delhi) | Open drains | 32 | 1.0 | Significant increase in sorghum & wheat yield | Yadav (1975) |
| Indore (M.P.) | Tile drains | 6.5-4 | 0.6-0.9 | Significant increase in crop yield. Yield decrease as spacing increase | Yadav (1975) |

**Table d : Recent subsurface drainage works at various centers in India**

| Place and state | Soil type | Spacing (m) | Depth (m) | Type of drains | Major conclusions |
|---|---|---|---|---|---|
| Karnal[1] (Haryana) | Sandy/loam (Alkali) | 10.30 | 1.5 | Tile drains Open drains | horizontal drainage not desirable for alkali soils |
| Sampla[2] (Haryana) | i) Sandy loam | 20.0 | 1.5 | Open drains | Increased crop and reduced salinization; Favorable salt and Water balance |
| | ii) Sandy loam | 50.0 | 1.5 | Tile drains | |
| | iii) Sandy loam[4] | 25,50,75 | 1.75 | Tile drains (Cement Concrete) | |
| Kailana[3] Khas (Haryana) | Sandy/loam | 58.5 | 1.5 | Open drains | Increased crop yields Favorable salt and Water balance |
| Canning[5] (W.B.) | Silty clay loam | 15-45 | 1.75 | Open drains | 15 m spacing is beneficial for leaching and reducing resalinization |
| Parbhani[6] (Maharashtra) | Vertisols (clay soils) | 13 | 1.5 | Brick, stone and tile drains | under irrigated conditions net profit of Rs 6651 per ha is envisaged |
| Bidaj[7] (Gujarat) | Clay soil | 15-25 | 1.50 | Open drains | Overall imporvement in Waterlogged and salinity situation |
| Hissar[8] (Haryana) | Sandy loam | 3-5* | 3.5-4 | Open Wells | Open wells helps in conjunctive use of water; Tile drains are only recently installed |
| | | 24-72 | 2.5 | Tile drains | |

1. Jaiswal and Dhruva Narayana (1972), 2. Gupta S.K. (1979), 3. Singh O.P. (1982), 4. Rao and Pandy (1982), 5. Rao and Kumar (1984), 6. Holsambre et al (1982), 7. Dhruva Narayana et al. (1981), 8. Kumar et al.

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