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Worsening Drought Conditions Affect Relay Cropping in Central India

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In the Chhattisgarh region of central India (Figure 1), rice is grown on about 3.7 million ha, of which 80% is under rainfed conditions. The rice crop is grown mostly under the broadcast biasi system of cultivation (see *Drought Network News*, Vol. 5, No. 3 [October 1993], pp. 6–7). The rainy season is the southwest monsoon (June–September) season. Farmers grow traditional local tall varieties of rice, which flower in mid-October and mature by mid-November.

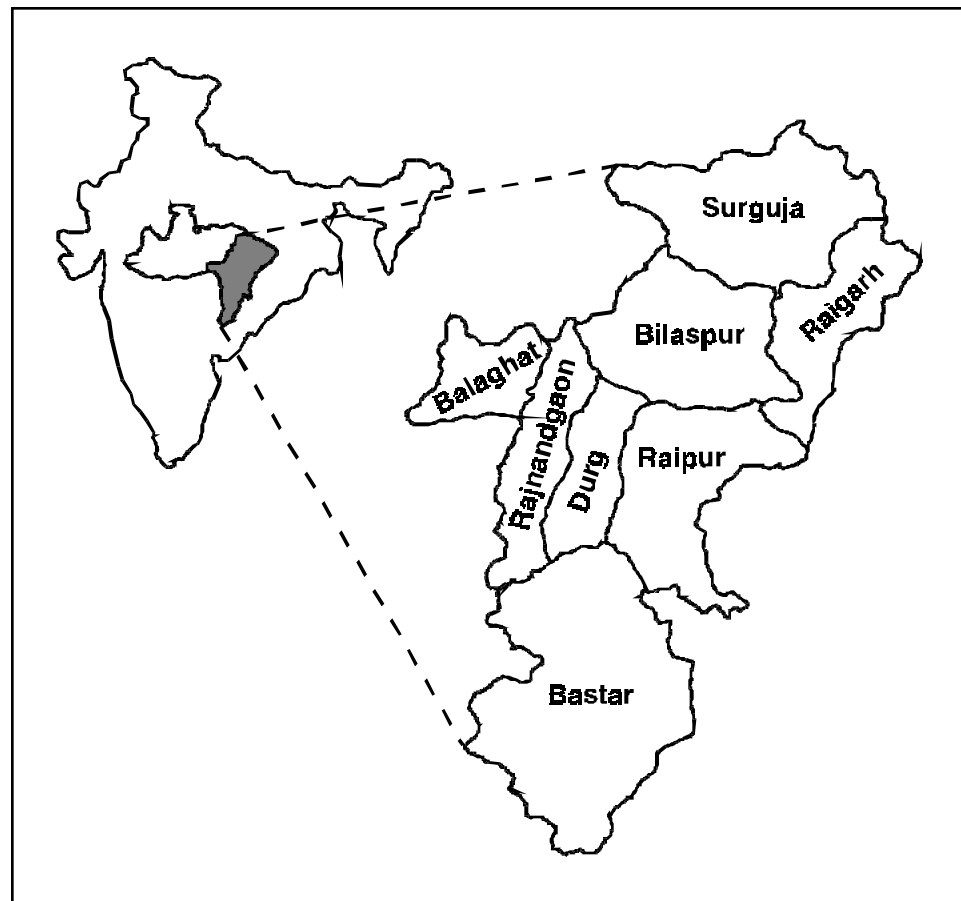


Figure 1. The Chhattisgarh region of India.

Soils in the region vary considerably. In almost every village, soils include lateritic, sandy loam, clayey loam, and deep black. During the post-monsoon season (October–November), the area receives rains because of the cyclonic activity in the Bay of Bengal. To conserve the fertilizers and soil

moisture (recharged through October rains) left from the paddy crop, lathyrus and linseed crops are grown as relay crops. The seeds of these crops are broadcast in the paddy fields after removing the water just 20–25 days before harvesting the paddy. After harvesting the paddy, the lathyrus and linseed crops thrive on the conserved soil moisture and fertilizer. The relay crops are planted in heavy soils like clay loam and clayey soils, whose moisture-holding capacity is high. Later, during the winter (December–January) rainy season, these relay crops produce some grain. If the winter rains are negligible, the lathyrus crop is used as a fodder crop.

A historical analysis of rainfall data shows that October rainfall is decreasing in the Chhattisgarh region (Figure 2). Winter (December–January) rainfall is also decreasing in some parts of the region (Figure 3). Although the quantum of winter rainfall is low, it is sufficient to provide life-saving moisture to the linseed and lathyrus crops. As a consequence, the area of these crops is decreasing in some districts. In the partially irrigated areas (through canal irrigation), farmers are shifting to remunerative crops like chickpea; this also contributes to the decreasing area of lathyrus and linseed

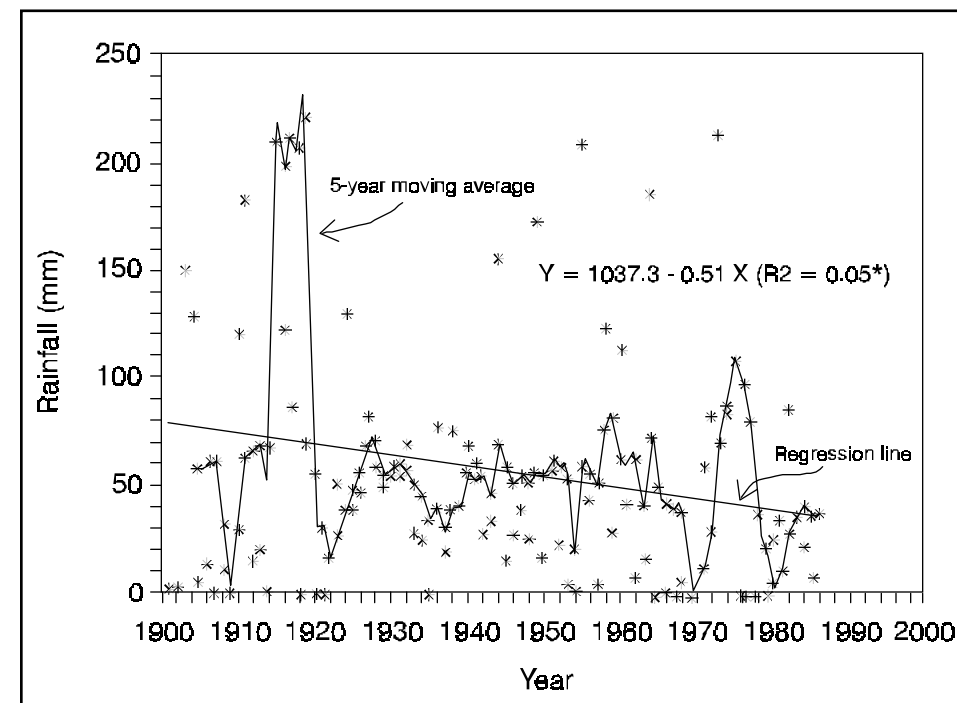


Figure 2. Trend of October rainfall at Bilaspur (data base, 1901–86).

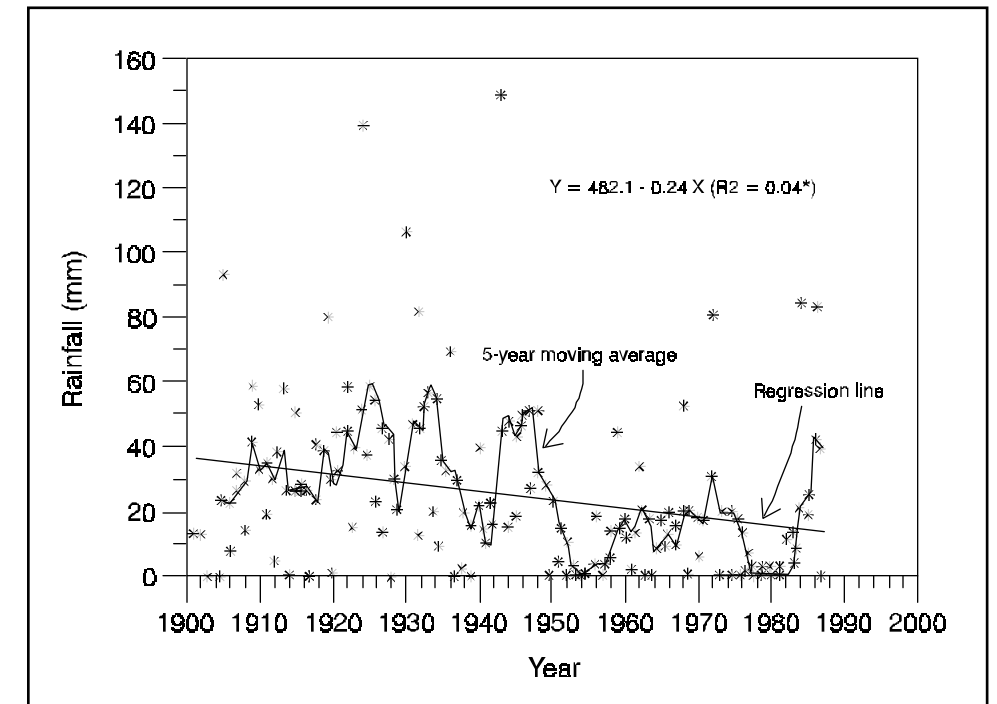


Figure 3. Trend of winter rainfall at Durg (data base, 1901–87).

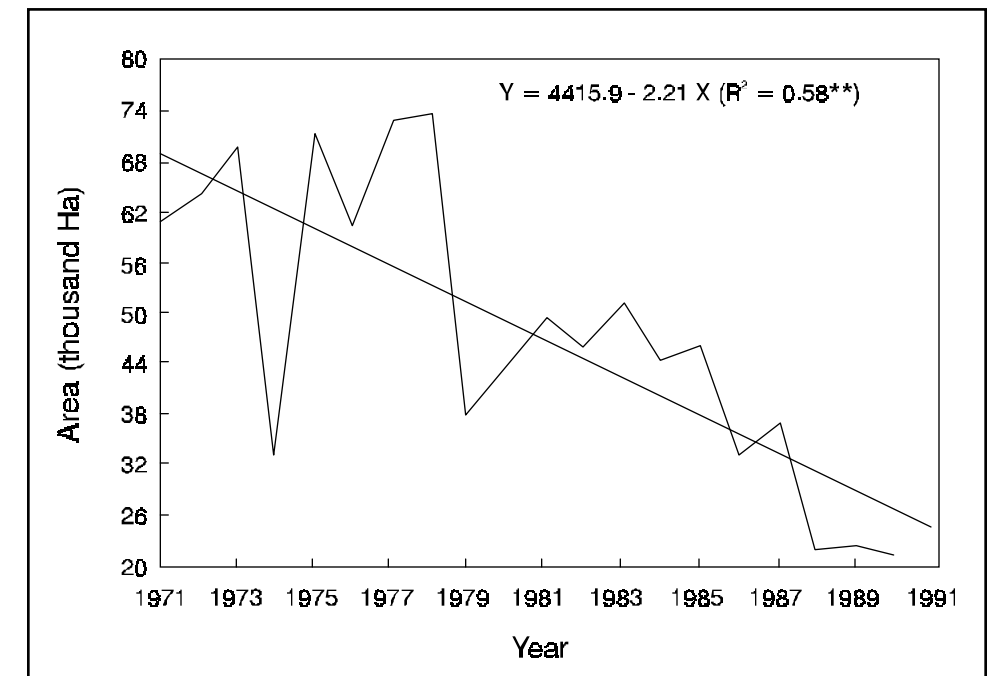


Figure 4. Trend of linseed area in Raipur.

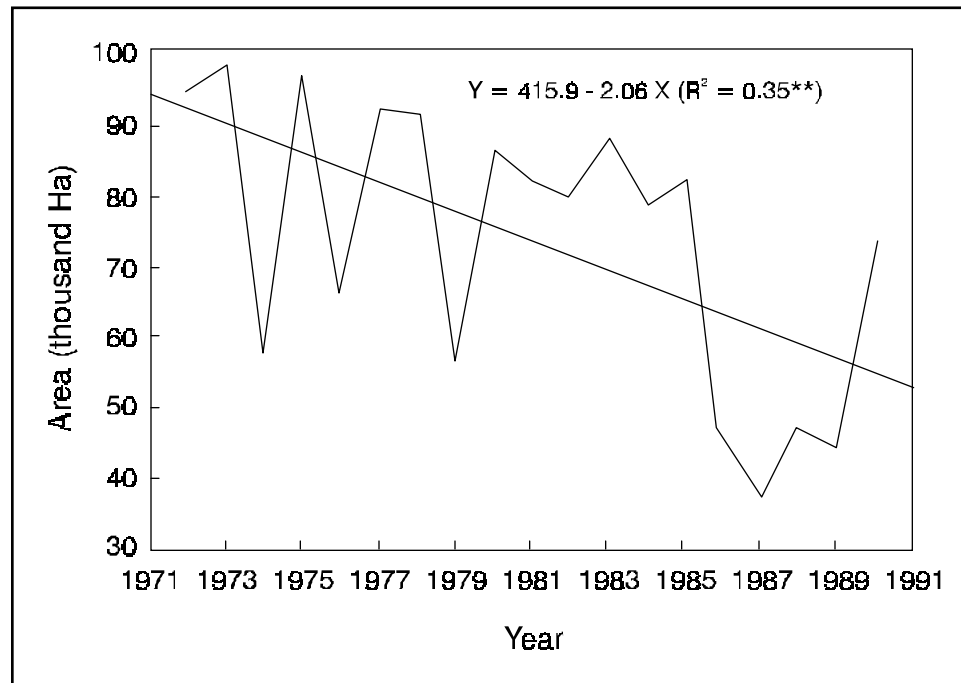


Figure 5. Trend of lathyrus area in Rajnandgaon.

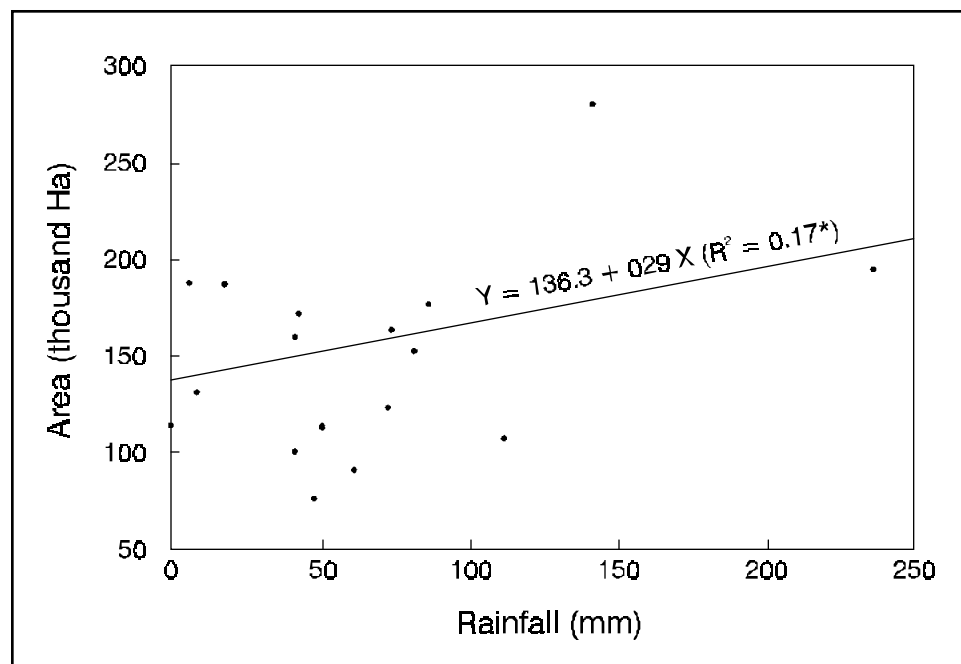


Figure 6. Relationship between lathyrus area and rainfall during October at Durg.

crops. However, lathyrus and linseed are the major rainfed relay crops, and their area is fast decreasing (Figures 4 and 5). An analysis of the relationship between rainfall and the lathyrus area, shown in Figure 6, reveals that there is a significant relationship between October rainfall and the area under lathyrus at Durg.

Because of decreasing rainfall and increasing drought conditions in rice crops in October, the area planted to linseed and lathyrus as relay crops in rice is decreasing significantly in the Chhattisgarh region of central India.