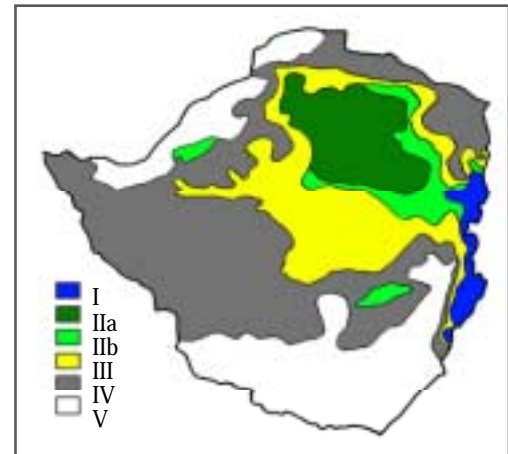


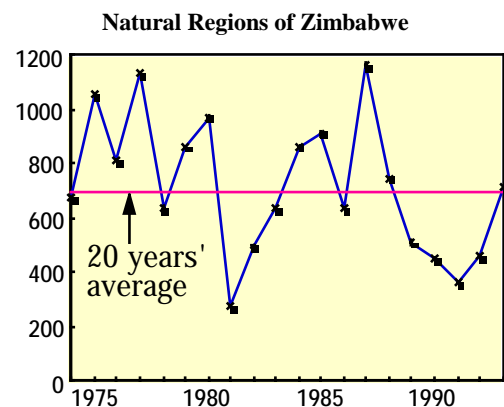
## Agriculture and irrigation in arid lands: From a viewpoint of sustainability (5)

### Part 5: Agriculture and supplementary irrigation in Zimbabwe

Precipitation in Zimbabwe varies considerably from region to region. Some areas experience over 1,000 mm of rainfall annually, however, there is also a significant amount of land that is semi-arid receiving just 500-600 mm of rain in a year. When considering agriculture in Zimbabwe, it is important to take into account the natural regions and the country's land tenure system. Zimbabwe can be divided into five natural regions as indicated in the illustration where they are graded from I to V. Areas that falls into categories I and II are suitable for agriculture and receive a fair amount of rain (between 750 and 1,000 mm per year). From regions III to V, conditions become increasingly harsh. In region V, annual precipitation is under 450 mm and, to make matters worse, rainfall is irregular. Such land is therefore unsuited to agriculture and is mainly used for extensive grazing.



When it comes to the land tenure system, Zimbabwe has five main systems. These are broken up into state land, large-scale and small-scale commercial farm lands, communal land and resettlement areas. The sizes of large scale commercial farm vary from some hundreds to some thousands of hectares and such farms are mainly owned or operated by Zimbabwe's white population. Small scale commercial farm usually covers from 50 to 200 hectares per household, and is granted to black farmers as private property. Communal land and resettlement areas are also farmed by the black population. If one superimposes a land tenure map on a natural region map, one can see that a lot of areas desirable for agriculture are occupied by large-scale commercial farm, whereas communal land and resettlement areas are concentrated in regions characterized by low precipitation which makes them undesirable for farming or by areas where extended grazing is the only option.



Take a look at the Midland province, in the central area of Zimbabwe. This serves as a good example. This region has an average annual precipitation of around 600 mm and is classified as natural region III. Farming is rain-fed and the main crops are maize, cotton, sunflowers and peanuts. The graph, which shows changes in annual rainfall over a 20 year period, indicates that there are large fluctuations in precipitation. In rain-fed agriculture, volume of production depends not just on the amount of precipitation but also on rainfall patterns. Some rainy seasons have a long period where no rain falls, which could inflict serious damage on crops, depending on their stages of growth. If supplementary irrigation can be provided during the crucial period that determines growth and yield of crops, it will have a tremendous effect when it comes to reducing drought damage and increasing production. What has been preventing the introduction of supplementary irrigation is the factor of cost. Supplementary irrigation, which employs the turning sprinklers used in large scale farms, is beyond the reach of small scale farmers who have insufficient capital. It is necessary to develop or improve cheap realistic technology and apply it to small scale farming. Possible irrigation methods include irrigation from small ponds, "pitcher irrigation" which supplements water through the burial of unglazed vases at crop roots, and saving rain water in underground (cistern) to prevent evaporation.



Small-scale farm depending on rain-fed farming



Large-scale farm irrigated by sprinkler