



Land Degradation Processes in the Humid Ethiopian highlands

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Land degradation after forest clearing forces a distinct pattern on agricultural production starting with high yields just after clearing to poor productivity or even abandonment after 30-40 years. In the humid Ethiopian highlands forest soils have initial a high organic matter content that decreases with time after clearing. When the organic matter becomes less than 3%, aggregates break up, other cementing elements are being leached out and the texture becomes finer. Since settling velocity in water is related to particle size, the finer soil increases sediment concentration in the infiltration water and hardpan formation accelerates restricting deep percolation of water. This in turn affect the hydrology in which an excess water flows more rapidly as lateral flow to valley bottoms which become wetter with gully formation starting to transmit the additional water down slope approximately 10 years after the initial clearing.

This degradation pattern occurs in all soils in the Ethiopian highlands, but the severity varies with climate and parent material. Although we do not yet understand to what degree these factors influence the degradation pattern, it is important to recognize the process because it directly affects the effectiveness of imposed management practices. In this presentation, we will highlight the degradation process for two watersheds in the semi humid Ethiopian highlands. We will document how soil properties changes and discuss hardpan formation and gully development. In addition, we will consider the effect of presently implemented governmental sponsored conservation practices and alternative management practices that might be more beneficial. We are looking forward to discussions on combating the effect of soil degradation in tropical monsoonal regions.