Floods in Punjab: Can the role of the inhabitants be neglected?

This year during monsoon, all the North Indian states, except Himachal Pradesh, have already received above-normal rainfall[1], and the monsoon is still continuing. Due to this heavy downpour, a large area (including urban and agricultural) of Punjab has been flooded. It is a well-known fact that floods are created only when the run-off water does not find any way to drain from the region. Due to lack of proper outlet, run-off water makes its own way according to the general gradient of the terrain and destroys everything which comes in its path. The alluvial plains of northern India are developed by the Ganga and its tributaries. It has taken thousands of years to attain the present stage. During these years, have not the seasonal drains made their own well-defined courses? If yes, then what is the cause for such a grim situation? No doubt, this year Punjab received excess rainfall than normal[1]. But is this heavy rainfall the only factor responsible for these floods, especially in a state like Punjab, which is named after its rivers? Why did the flood water depth in the city of Hoshiarpur, which is situated just downstream of the Shiwalik foothills where the drainage network is considered to be well developed, rise to 6 ft? Why did the flood water engulf vast agricultural areas in Kapurthala district, which drains to the Beas River with a well-defined drainage network? Do these regions still have a good network of drains or should we accept the bitter truth that we have either hampered or destroyed the natural drainage system of these regions for a small benefit? Before coming to the actual cause of these floods, I would like to mention about the change in pattern of rainfall in the last four decades[2]. The annual average rainfall in Punjab has decreased from 739.1 mm in 1980 to 565.9 mm in 2005. This declining trend has affected the use of seasonal drains. Seasonal flow through these drains has either completely stopped or reduced drastically. Taking advantage of the situation, inhabitants began encroaching on these drains and ultimately most of them have completely disappeared. Perusal of the natural drainage systems visible in the *Google Earth* images of Kapurthala District (Figure 1 *a*) and Hoshiarpur city (Figure 1 *b*) prove certain facts. Figure 1 *a* clearly shows that the sub-drain has completely disappeared just after covering a little distance from the main drain. In Figure 1 *b*, encroachment of natural drain by the urban population in Hoshiarpur city is shown. Where will the run-off go under such conditions? We have witnessed the answer this year. Secondly, the main drain shown in Figure 1 *a* looks more like vegetative strips. What will be the efficiency of a weed-covered natural drain during high flow conditions? This is not the case only in Punjab; everywhere in India we are continuously interfering with the working of nature. If we do not learn from the present calamities, then the situation will be grimmer in the future.

Figure 1. *Google Earth* images of encroached drains in (***a***) Kapurthala District and (***b***) Hoshiarpur city.

1. IMD website, 2008; www.imd.ernet.in/section/hydro/dynamic/seasonal-rainfall.htm
2. Vashisht, A. K., *J. Indian Water Resour. Soc.*, 2008, **28**, 1–8.

A. K. VASHISHT

Department of Irrigation and Drainage Engineering,
G. B. Pant University of Agriculture & Technology,
Pantnagar 263 145, India
e-mail: akvashisht74@yahoo.com