Armenia features one major crop season (spring) starting in March-April, with harvest of production taking place August-September. Meanwhile, the planting of the second (winter) season has just ended across the country. Despite the recent downward trend in agricultural production (WB, FAO-GIEWS), the agricultural sector still employs 35.3% of the population (CCKP) – including the most vulnerable given the increasingly erratic and variable weather.

Cropping Season Context

Armenia

<table>
<thead>
<tr>
<th>Crop Calendar</th>
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<tbody>
<tr>
<td><em>major foodcrop</em></td>
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<table>
<thead>
<tr>
<th>Coarse Grains</th>
<th>Wheat (Winter)*</th>
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Sowing: Brown
Growing: Green
Harvesting: Yellow

Source: FAO/GIEWS.

Key crop growing regions across the Ararat Valley, Armavir & Shirak experienced below normal rainfall in 2019, particularly at the start of the spring season, as evidenced in the charts below. On the other hand, September brought above-average rainfall, favorable to healthy development of current winter wheat production.

Distribution of croplands in Armenia

Weekly Climate Chart for Shirak
Latitute: 40.71, Longitude: 43.96, Date range: 2019-03-01 to 2019-11-18

Weekly Climate Chart for Armavir
Latitude: 40.12, Longitude: 43.96, Date range: 2019-03-01 to 2019-11-18

The weekly climate charts compare the precipitation and temperature from March 2018 – November 2019 to the long-term normal (LTN) corresponding to 2006-2018, of aWhere’s historical rainfall data. The blue bars show weekly precipitation and should be compared to the orange line, which shows the LTN (rainfall patterns farmers expected). The red line and black line are LTN and current temperature patterns respectively. These are evidence of the climatic variability producers face year in, year out.
Analysis

The map to the right shows the difference between the observed rainfall and the long-term normal (2006-2018) for May 2019, key period for crop growth across Armenia and the region. It spatially evidences that, while the northeast experienced above-average rainfall for this period, the remainder of the country including highly agriculturally-productive regions had overall rainfall deficit. In addition, the graph below shows that, beginning at the end of March (dekad 15 in x axis), NDVI (proxy to plant growth) has tracked steadily below the historical average, recovering only in early September. Thus, despite wide use of irrigation systems, production was still affected by lack of rainfall early in the season and over key periods of crop growth.

Implications & Recommendations

Providing timely weather information and tailored advice is of paramount importance in helping farmers overcome the challenge of adapting to increasingly variable weather conditions. Key management activities, such as when to turn on irrigation systems and for how long, can help increase yield outputs but also properly manage limited water resources. As pointed out in study led by IFPRI, Central Asia will have growing challenges with spring crops, but also opportunities in winter crops and specific crops. Farmers need up-to-date information on latest varieties available, conservation practices, market opportunities, changing environmental trends among other information in order to make the best decisions on livelihoods options. Despite Armenia’s downward trend in Agricultural production pointed out, the country also has great potential for strategic development of viticulture, fruits and flowers production as well as livestock rearing among other products of higher aggregate value. This includes the use of a host of grape and fruit varieties endemic to the country and region. Harnessing such potential can increase income generation, retain and attract youth to rural areas as well as maintaining an rich agricultural heritage.

*NDVI is the Normalized Difference Vegetation Index and is used to determine density of green on a patch of land (see NASA for more info)

Source: JRC-ASAP

Reach out to csartoratosilvaf@worldbank.org and efernandes@worldbank.org for further information!