

La Niña is Back!

Southeast Climate Consortium
November 1, 2011

The El Niño-Southern Oscillation (ENSO) phenomenon is the biggest player in the game of year-to-year climate variability. El Niño and La Niña events tend to develop during April-June and tend to reach maximum strength during December-February. Typically they persist for 9 to 12 months. La Niña conditions take place when surface water temperatures in the tropical Pacific Ocean along the equator turns colder than normal. La Niña can be thought as the opposite of El Niño conditions, in which the same area of the Pacific is warmer than normal.

La Niña affects weather patterns in many areas of the world. In the case of the Southeast U.S.A. it usually brings a drier and warmer winter and spring (November through March). For Florida, central and lower Alabama, and central and southern Georgia rainfall may be 40 to 60 percent lower than normal and temperatures 3 to 4 degrees warmer than normal.

La Niña events may last more than one year, in fact, they do tend to last longer on average than El Niño events. Examples of events that lasted longer than one year include the La Niñas of 1954-56 (extreme drought in the southeastern U.S.), 1973-75, and 1999-2001. This year is the second year of a La Niña pattern that started back in July of 2010 and returned after a brief period of neutral conditions during the summer. Figure 1 shows average rainfall anomalies (Nov-Jan) observed during the 2nd year of La Niña events in the past. Although La Niña events are never the same, it indicates that drier than normal conditions are generally observed in most of the southern U.S.A.

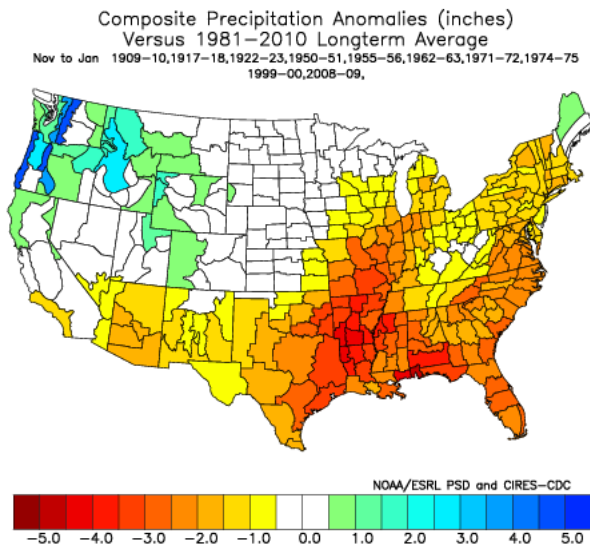


Figure 1. Average rainfall anomalies observed during second year La Niña events.

The current drought outlook for October 2011 through January of 2012 published by the NOAA Climate Prediction Center (CPC) confirms this trend signaling for drier conditions in most of the same areas (Figure 2).

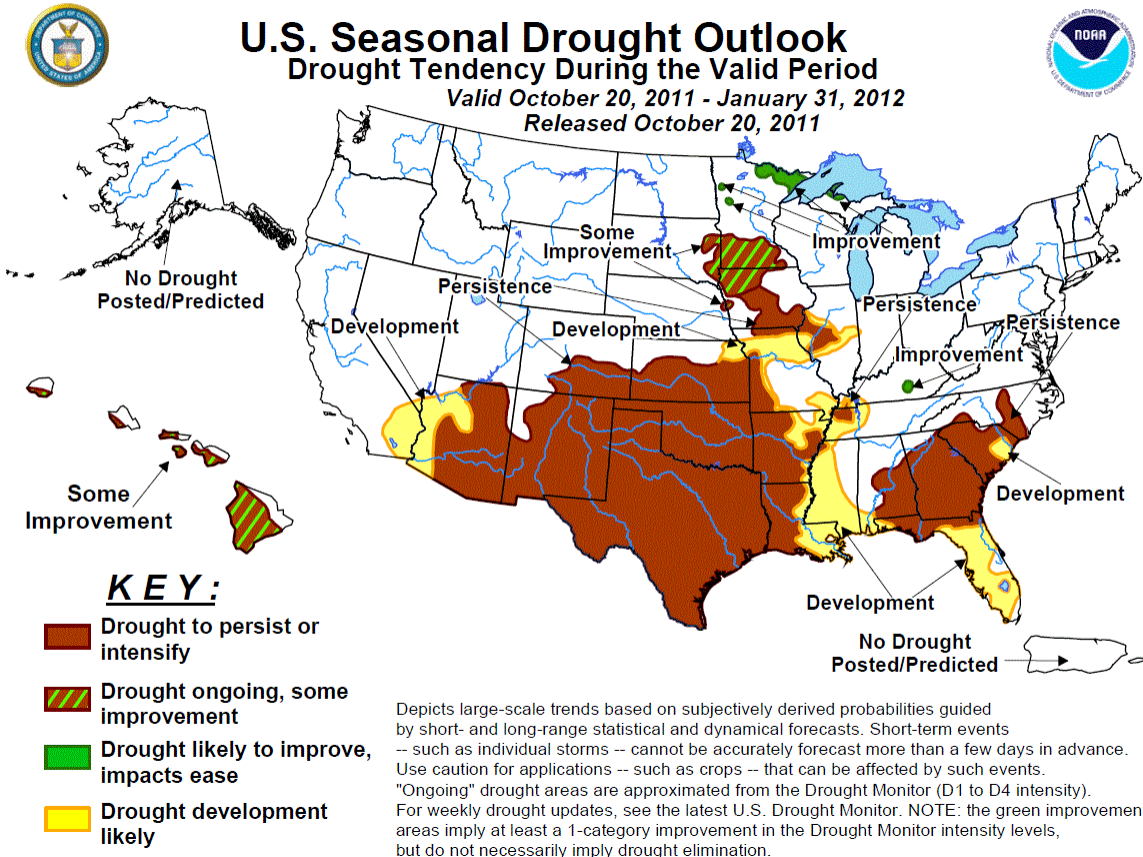
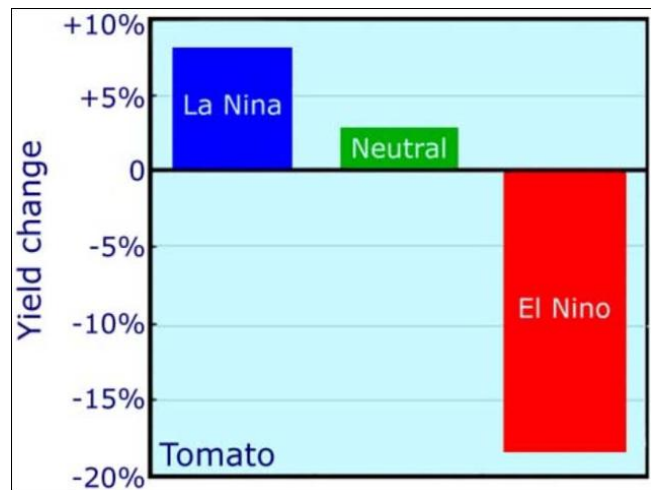


Figure 2. Drought outlook for Oct-Mar, according to NOAA-CPC.

Potential Impacts of La Niña Events on Crops

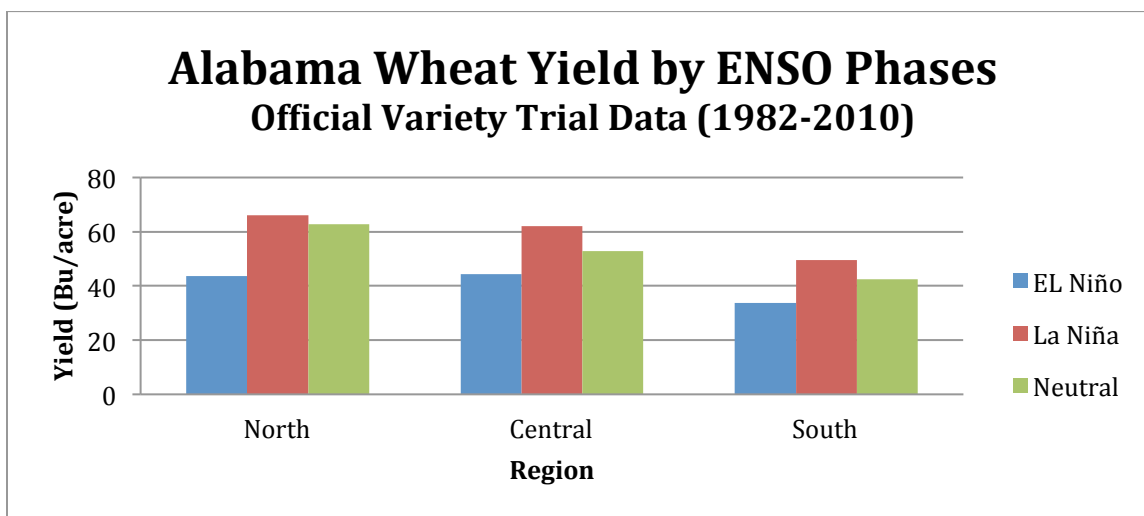
Winter Vegetables: Tomato and green peppers generally yield **more** during La Niña years than during Neutral or El Niño years. Dry weather generally decreases fungal and bacterial diseases and help growers reduce the number of fungicide applications, however viruses caused by thrips (Tomato Spotted Wilt [TSW]) and white fly (Tomato Yellow Leaf Curl [TYLCV]) are problems. High nighttime temperatures (above 65°F) can be a problem for fruit setting. For more information on how to apply climate information for reducing tomato production risks check the following UF- Extension EDIS publication:

<http://edis.ifas.ufl.edu/ae269>



Tomato yields are on average about 10% higher during La Niña years and 15-20% lower during El Niño years.

Small Grains: In South Carolina and Alabama, wheat usually performs better during La Niña years than El Niño years. Wet seasons delay planting and affect crop yield potential. Anaerobic condition caused by a water logged soil, during an El Niño year, reduces root growth and results in N and P deficiency.



Summer Row Crops: La Niña impacts are less evident on annual summer crops since its strongest signal occurs during fall, winter and spring. Warm conditions may help certain pests and diseases. Warm, dry winter may increase flower thrips abundance. Yellow mustard and wild pansy are ideal hosts for thrips, and a warm winter may provide ideal growing conditions for these and many other host plants. Warm conditions may also help soybean rust over-winter on kudzu in South Georgia and throughout the Panhandle of Florida. If conditions are dry during the spring it may be best to kill cover crops earlier in order to preserve more moisture in the soil.

If La Niña conditions persist into the spring next year or conditions return to Neutral, then corn growers in North Carolina may want to consider delaying planting into May. A recent study has indicated that planting as early as possible during an El Niño event may reduce the risk of drought stress during the critical pollination and grain-setting period, whereas waiting to plant until mid-May may reduce this risk during a La Niña or Neutral phase. These differences are primarily due to differences in rainfall patterns during July in El Niño, La Niña, and Neutral events. The later planting is delayed, the more important late-season insect control becomes.

Pasture: Success of winter pastures depends on rainfall. This is especially true when overseeding. In central and south peninsular Florida overseeding of cool-season annuals into a established grass sod often fails due to insufficient soil moisture and this is generally not recommended unless irrigation is available since dry conditions can be exacerbated during La Niña seasons. Related extension resources:

- ✓ UF Forages website: <http://agronomy.ifas.ufl.edu/foragesofflorida/>
- ✓ UGA Forages website: <http://www.georgiaforages.com/>

Temperate Fruits: Seasonal climate variability impacts deciduous fruit production mainly through changes in the satisfaction of dormancy that occurs by the accumulation of chilling hours (temperature at or below 45°F) and changes in the accumulation of heat units that promote flowering and fruit development. Also affected can be the extent of the threat from freeze damage during flower and fruit development, and the timing and severity of diseases and pests. La Niña conditions developed later this year and may not result in significant decrease in overall chill accumulation.

The dry weather during La Niña years is usually not conducive to fungal diseases such as Anthracnose and Botrytis fruit rots. In the case of strawberry, these are the two major diseases of concern. During La Niña expected drier conditions, regular applications of fungicides may not be needed as often to suppress these diseases, especially when moderately or highly resistant cultivars such as Strawberry Festival are grown. So it may be a good opportunity for growers to extend spray intervals and reduce fungicide costs without a great risk of compromising their profits.

Winter annual broadleaf weeds may thrive under warm and dry conditions, and these weeds act as host plants for catfacing insects (sucking bugs) of peaches. High populations of cat-facing insects have been documented in peach orchards where winter annual broadleaf weeds are allowed to grow.

Forestry: Warm and dry conditions associated with La Niña events may prompt managers to consider re-scheduling planting of drought vulnerable seedlings, reinforce existing control efforts of southern pine beetle, and delay the harvest of pine straw to retain soil moisture. La Niña also brings the potential for a very active wildfire season. Average acreage burned during La Niña years is often more than doubled as seen in 1998 and 2001. Extension publication: EDIS publication: Using Seasonal Climate Forecasting to Plan Forest Plantation Establishment: <http://edis.ifas.ufl.edu/ae282>

For more information about of the potential effects of La Niña on our agricultural industry and on rainfall and temperature patterns in your county visit *AgroClimate* at <http://www.agroclimate.org>

Contacts:

Dr. Clyde Fraisse
University of Florida
Agricultural and Biological Engineering
352-392-1864 ext 271
cfraisse@ufl.edu

Dr. Mark Boudreau
University of Georgia
Biological and Agricultural Engineering
706-542-7851
markb26@uga.edu

Dr. Brenda Ortiz
Auburn University
Agronomy and Soils
334-844-5534
bortiz@auburn.edu

Dr. Ahmad Khalilian
Clemson University
Biosystems Engineering
803-284-3343 ext 230
akhlln@clemson.edu