

PRIMER on **EL NIÑO**



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BUREAU OF SOILS AND WATER MANAGEMENT

What is El Niño?

El Niño is one of the climate abnormalities that is either in the form of extended dry spell and drought.

What is La Niña and how does it differ from El Niño?

La Niña is the other side of climate abnormality that is generally related to excessive and extended periods of rainfall that cause extensive flooding in low lying areas of the country.

How do El Niño and La Niña differ from seasonal dry spell experienced in areas of the country with type 1 climate (i.e. distinct wet and dry climate in areas of Central Luzon, Iloilo, and other provinces in the country).

El Niño and La Niña are international phenomenon caused by abnormal increase in temperature of the Pacific Ocean, while the extended drought in many places of the country are local occurrences, characterized by the decline in the amount of rainfall over extended period and what is generally characterized by delayed monsoon rain and fewer/weaker typhoons.

When will El Niño occur?

It will occur in the last quarter of the year and extend up to June 2003.

What is the importance of knowing these dates?

With the exception of the Eastern portion of Cagayan Valley and the Northeastern portion of CARAGA and the Compostela Valley area in the last quarter of the year, practically, rainfall will start to decline in at least 80% of the country up to December until finally



rainfall becomes very low in the first quarter of 2003. During the last quarter of the year, all dams especially in the Luzon area shall have filled their water requirement sometime in July, August and September when we have heavy rainfall provided by typhoons. It is therefore necessary to monitor water level in relation to the decline of rainfall and the increase of water demand during the last quarter of 2002 and the first quarter of 2003.

During this prolonged period of mild El Niño and reduction of rainfall, what can be the general problem and what can be done?



The situation may threaten the domestic water supply during the summer of 2003 (first quarter). The dry months will continue on to June 2003 which might cause reduction of the planting of rice in the irrigated areas. This may require close monitoring of all multi-purpose dams

and close coordination with the concerned agencies in domestic water. It is, therefore, imperative to conduct Cloudseeding over all dams as a major strategy.

How does the Department of Agriculture treat El Niño and La Niña?

The Department considers preparedness as the best strategy to ensure agricultural production and food security, even if El Niño, as pronounced by PAGASA, is a weak one or its prediction remain uncertain.

Because of the effects of El Niño on food security, especially the poor farming and non-farming rural communities and because of the uncertainty of the magnitude and timing of El Niño, the Department has prepared contingency plans for areas that identified as vulnerable and which has been historically and always affected by even normal dry spell and by past El Niño events.

What are the preparations of the Department?

The Department has opted to give priority funding and quick action on, but not limited to, the following:

- The establishment of small-scale irrigation systems, such as small water impounding projects, small river diversion dams, shallow tubewells, small farm reservoirs
- The rehabilitation of communal and national irrigation systems.
- Seed procurement and establishment of Provincial Seed Systems, which enable the Department, collaborate with small farmers in the production and distribution of high quality seeds.
- Promotion of proper use of farm inputs, especially the judicious use and combination of organic and inorganic fertilizers, through the adoption of Balanced Fertilization Strategy. A total budget of P55.6 million was released to the Bureau of Soils and Water Management to implement the balance use of organic and inorganic fertilizers on rice growing areas that have been getting rice yields lower than the national average of 3.2 tons per hectare.



- Information and awareness campaign.

What El Niño mitigating facilities are already on the ground?

The Department, as of this year, has already established



a total of 123,149 hectares of additional irrigation water that ensure the adequate supply of rice, vegetables, and freshwater fish to each farm family in the area. These additional irrigation areas are obtained from the establishment of a total of 564 sites of small water impounding and small river diversion dams, 20,999 shallow tubewells, 24,161 small farm reservoirs.

In addition to these efforts, the Department will be able to finish early next year another additional small water impounding projects providing irrigation water to a total of 11,507 hectares of new irrigated rice and vegetable and freshwater fish production areas.

What are the areas in the country that maybe critically affected by El Niño?

As earlier stated, the effects of El Niño on agriculture and fish production are dependent on which particular part of the year it will occur.

Initially, the Department has identified the provinces where small reduction of rainfall can hamper crops especially those in critical stage of grain information.

Table 1. Provinces where small reduction of rainfall can hamper crops especially those in critical stage of grain formation.

MONTH	Threatened Provinces (need monitoring)
July	Cagayan Valley, Northern portion of Isabela, Southern tip of Quezon, Masbate Leyte, Cebu, Bohol Agusan Del Norte, Southern tip of Zamboanga del Norte and Sur, North Cotabato provinces, South Cotabato, Sarangani

Continuation of **Table 1.**

MONTH	Threatened Provinces (need monitoring)
August	Eastern Calauag, Quezon; Masbate, Southern Palawan Leyte; Cebu; Bohol Agusan del Norte; Surigao del Norte; Davao Oriental; Compostela Valley
September	Cagayan Valley; Quezon, Southern Palawan, Eastern tip of Mindoro Oriental; Marinduque Cebu; Bohol; Leyte; Samar Agusan Norte; Surigao Sur and Norte; North Cotabato; South Cotabato; Davao City
October	Tarlac; Pampanga; La Union; Ilocos Norte and Sur Southern Palawan Cebu; Western Bohol; Northern portion of Leyte Misamis Oriental, Sultan Kudarat, Maguindanao; North and South Cotabato; Sarangani
November	Ilocos Norte and Sur; La Union; Pangasinan; Tarlac; Abra; Benguet; Western portion of Nueva Vizcaya; Mindoro Oriental; Northern Palawan Southern tip of Antique; Negros Oriental Lanao del Norte; Misamis Oriental; Sultan Kudarat; Maguindanao; North Cotabato; South Cotabato; Sarangani; Southern tip of Zamboanga del Norte and Sur
December	All of Luzon and Palawan except the Northern tip and Eastern Portions of Cagayan Valley, Quezon, Upper portion of Laguna Mindoro Oriental; Aklan; Capiz; Northern Negros Island,; Cebu; Bohol All of Mindanao except Misamis Occidental, Lanao Provinces; Agusan del Norte; Surigao; Compostela Valley

Are El Niño and La Niña bad for agriculture?

Yes and No. It depends on the timing of their occurrences.

Yes. That is, if El Niño occurs during the regular dry months, then its effect on agriculture can be serious depending on the duration and amount of reduction of rainfall.

No. On the other hand, if El Niño occurs during the wet months or during typhoon season, then, the effects on agriculture will be generally favorable.

What are the bad or negative effects of El Niño?

El Niño has negative effects in agriculture and fishery production, natural resources and environment, human health, incidence or outbreak of plant, animal and human diseases.

a. Impacts on agriculture production:

On agriculture, especially on areas with no irrigation facilities, standing crops can be destroyed by severe lack of moisture and farmers may not be able to plant their traditional food crops.



On the other hand, in areas served with irrigation, water supply may be reduced and the actual farm served with irrigation will likewise be reduced. This is especially true, if the water stored in the dam is already low during the progress of El Niño event.

b. Impacts on fish production:

The inland fisheries (freshwater and brackish water fishponds) will suffer from deterioration of water quality because of lack of freshwater needed in aquaculture production.

c. Impacts on the incidence of pests and diseases:

Locust infestation may occur especially in areas close to known breeding grounds, such as the lahar areas of Central Luzon and old volcanic sands in South Cotabato.

d. Impacts on human health

In highly urbanized areas, dusts and particulates from factories and cars pollute the air and this can cause various health problems.

e. Impacts on the natural resources and environment

Rivers may dry up and groundwater recharge is reduced. Forest and grassland fires can occur, which can cause massive atmospheric pollution, affecting not only in the Philippines but also in adjoining regions. This problem is clearly illustrated by the massive forest fire in Indonesia, which caused the serious problem of haze in Malaysia, Singapore and in Indonesia, itself.

What are the direct effects of El Niño on some important cash crops and major export high value crops of the country?

Coconut

A prolonged drought caused by El Niño will affect the yield the following year and then probably return or even improve the second year after El Niño, if year following will have good amount and distribution of rain.



Mango

Yield of mango will most likely improve but the year following El Niño may drop if the farm is adequately fertilized to allow the plant to recover from heavy fruiting during the El Niño event.



Sugarcane

The volume of sugarcane production may decline but the sugar recovery and production will increase.

Vegetable

Vegetables that are normally damaged by excessive rainfall and slight frost, as is the case of Baguio, will be successfully grown and will have higher production.

Aquaculture (fishpond production)

Under an extended drought, water quality may be affected for lack of supply of freshwater from the river source. In some cases and under mild El Niño water event, water temperature may be improved thus developing growth of algae in the pond and therefore potentially enhance the growth of fish in the pond.





What maybe done to reduce the problems of water supply caused by El Niño?

1. Do not burn rice straws and use them as composting materials or mulch/land cover to minimize moisture losses and as supplementary roughage (hay) to livestock.

2. Clean the irrigation canal and remove as much weeds to reduce irrigation water losses and improve farm water delivery.

3. Reduce the amount water level in the rice paddy to as low as one to two cms.

What other practical irrigation water management may be used to reduce irrigation water consumption?

Intermittent irrigation scheme can be an alternative system to the current practice of continuous submerge irrigation system.

The simple procedures are:

1. Maintain irrigation water (2 cm) from transplanting until the plants fully recovered (approximately 25 to 30 days from transplanting).

2. Cut off water supply and close the field drains to hold and store irrigation water

in the paddy and allow it to subside until the soil becomes almost dry. In three to four days, depending on soil texture, soil in the paddy will dry up and starts to crack. This practice, however, is not applicable in areas with problem of acid sulfate subsoil, such as swampy areas of Samar, Leyte and Agusan provinces. Drainage in these soils can cause extreme soil acidity (soil pH can drop to lower than pH 4.5) upon drainage.

3. Reintroduce irrigation water slowly up to 4 cm, before the soil finally develop cracks.

4. Repeat procedure number 2 and continue this until two weeks before harvest.