

## Hurricane Otto Affected the Plantations of Reforestation Group International S.A Severely

First, to explain or define in our context the term affected, which we refer to as damage caused by Hurricane Otto to the teak trees, in which limit the rescue of the wood partially or totally.

Among the most important observed damages it can be mentioned;

- **Fallen trees:** The strong winds caused many trees to fall to the ground, roots up. When one tree fell on another it caused a strong impact between two wood trunks, which again caused that many of them tears up internally and thereof the wood of these cannot be commercialized. There is the possibility that some trees will not suffer damage when they fall and that the wood can be used if market conditions permit (Figure 1).



Figure 1. Fallen tree, cracked wood.

- **Broken trees:** These trees were broken by the force of the wind or by other trees that fell directly on them. The wood of these trees cannot be sold because the wood is cracked internally (Figure 2).



Figure 2. Broken tree.

After some visits made to the different farms, the percentage of loss by fallen and broken trees in each farm was estimated. In this fieldwork, we used a drone to capture overview photos. The result is shown in the following table.

**Percentage of loss by fallen and broken trees in the different farms of RGI SA; December 2016.**

Plantation	Planted year	Areal reforested (ha)	% of loss
Amparo	2000-2001	88,38	55%
Arco Iris	2001-2002	174,01	60%
Cristo Rey	2002	193,38	90%
El Parque	2003	358,53	20%
Vasconia	1997	24,85	40%
Olger	2002	12,04	15%
Mairena	2004	25,10	75%
Carrizal	2006	92,91	20%
Combate	2007-2008	169,83	25%
Gallito	2009-2010	72,81	25%

Figure 3. Table of each farm

Due to our experience in the behavior of trees after strong winds; We know that these percentages presented in the table will increase. This because the strong winds of a hurricane cause the trees to lose their leaves and some of their branches that in the next phase will lead to diseases and can affect the trees in to fatal result.

Therefore, the aftermath of hurricane Otto cannot be done before in some months, especially now when the summer is approaching and teak trees drops their leaves and it is simply makes it impossible to know if standing trees are healthy or sick.

The wood that is down are on the market for sale already and the importance of being fast to the market was clear for us already day one after the hurricane stroke the zone and we got to know that our plantations was affected. We have buyers already working on some of the most affected farms and the idea is to reduce the losses at the highest level as possible.

The loss of so many trees leaves the remaining trees pretty much unprotected, this makes them susceptible to the wind. Even normal wind for these zones can tear down these trees and cause more

losses, that is why we took the decision to clear cut at least those areas most affected. We are also calculating the cost vs possible gain on the areas with clusters of standing trees to see what size of clusters is needed to be a gaining solution.

It is important to know that the teak market will be saturated in the coming months, sales prices will be reduced considerably due to; - the costs of extraction of the wood increased significantly since access to the plantations is very complicated by the large number of fallen trees with root up and the holes after them. – huge quantity of wood to be sold fast before insects causing pin holes in the wood (This is not accepted for export quality).



Figure 4. Air photos from a drone overflying the farms

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