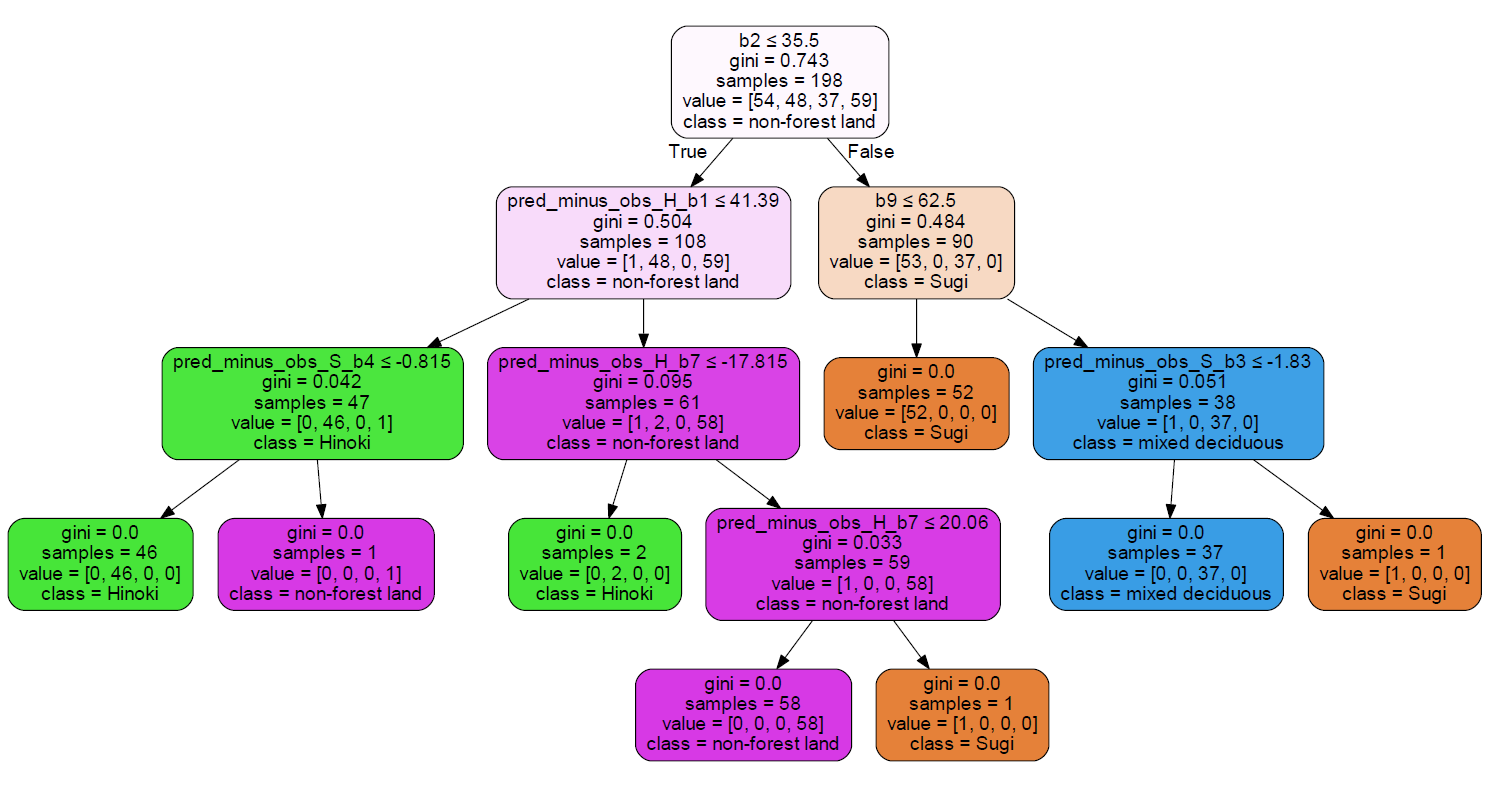
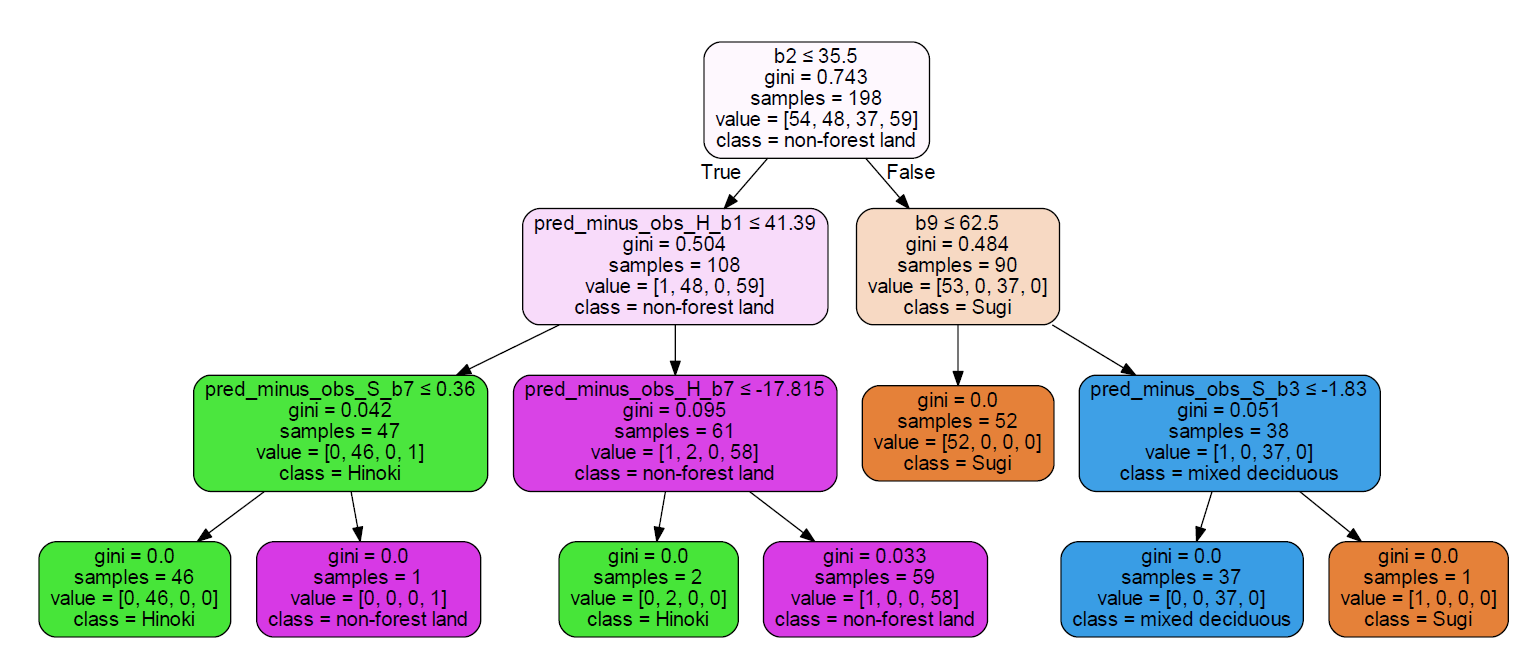
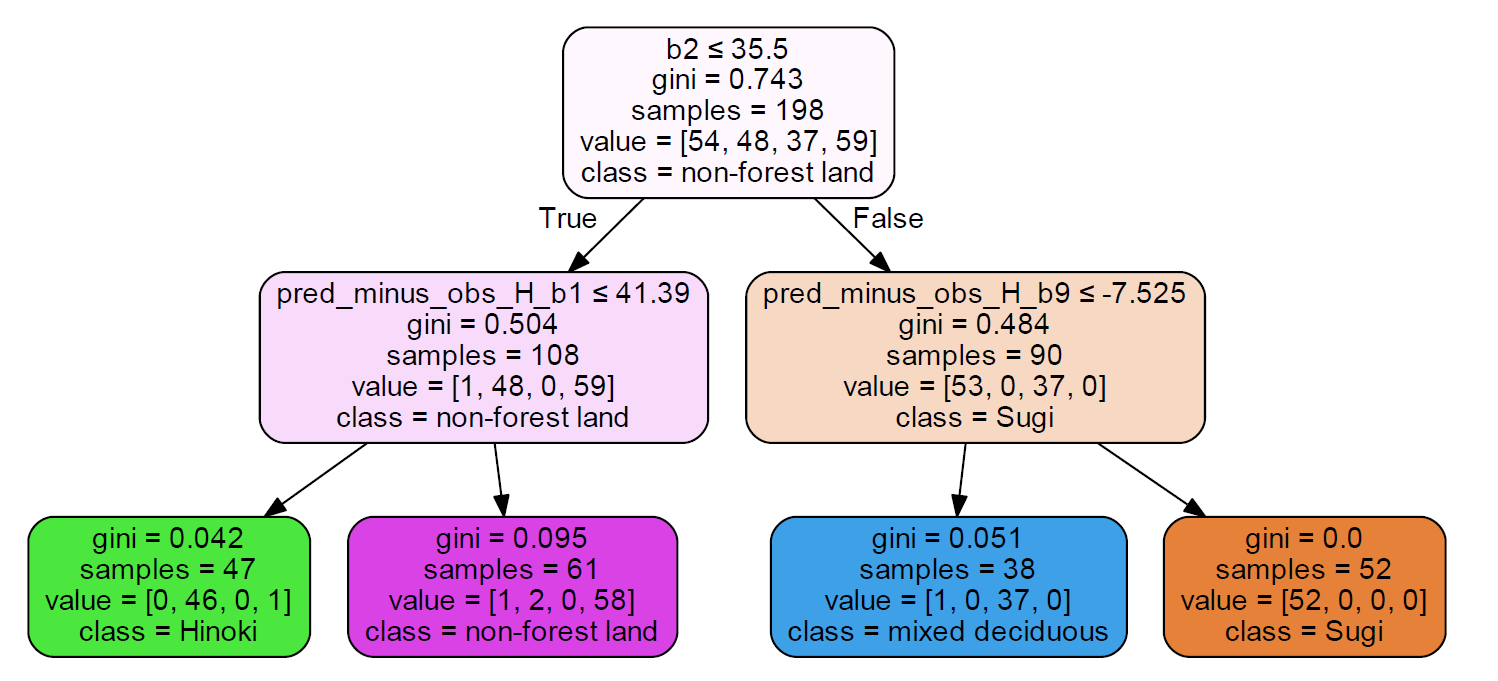
1. Training set partition

*Image 1: Training set using max depth =4*



*Image 2: Training set using max depth =3*



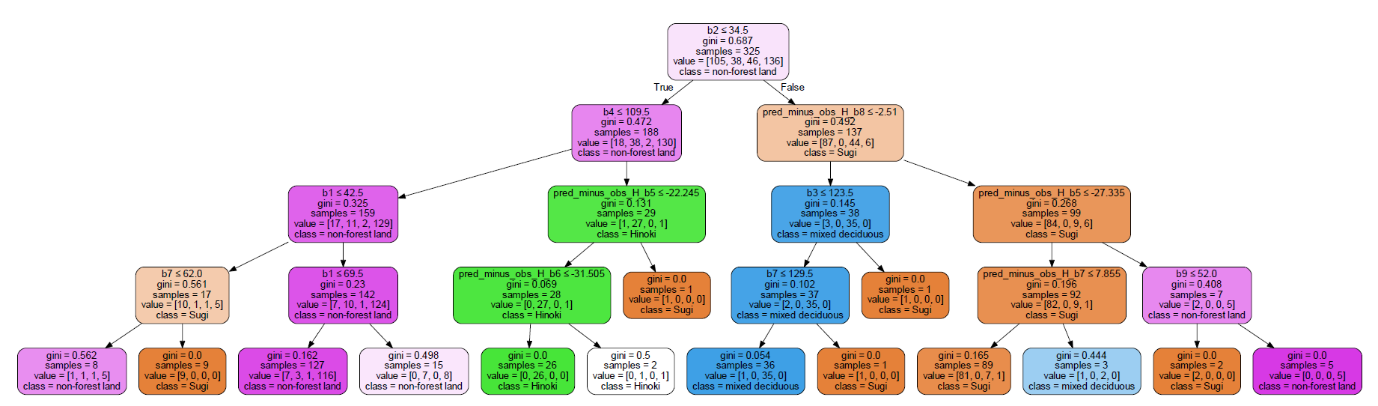
*Image 3: Training set using max depth =2*

3 decision trees have been generated based on the training set data with 198 samples using the max depth as parameter. Firstly, we can see that the higher the max depth, the deeper the tree, the more leaf nodes it has and it includes more information. Focusing on the zero Gini index, the higher max depth has more zero Gini index, which summarized as below:

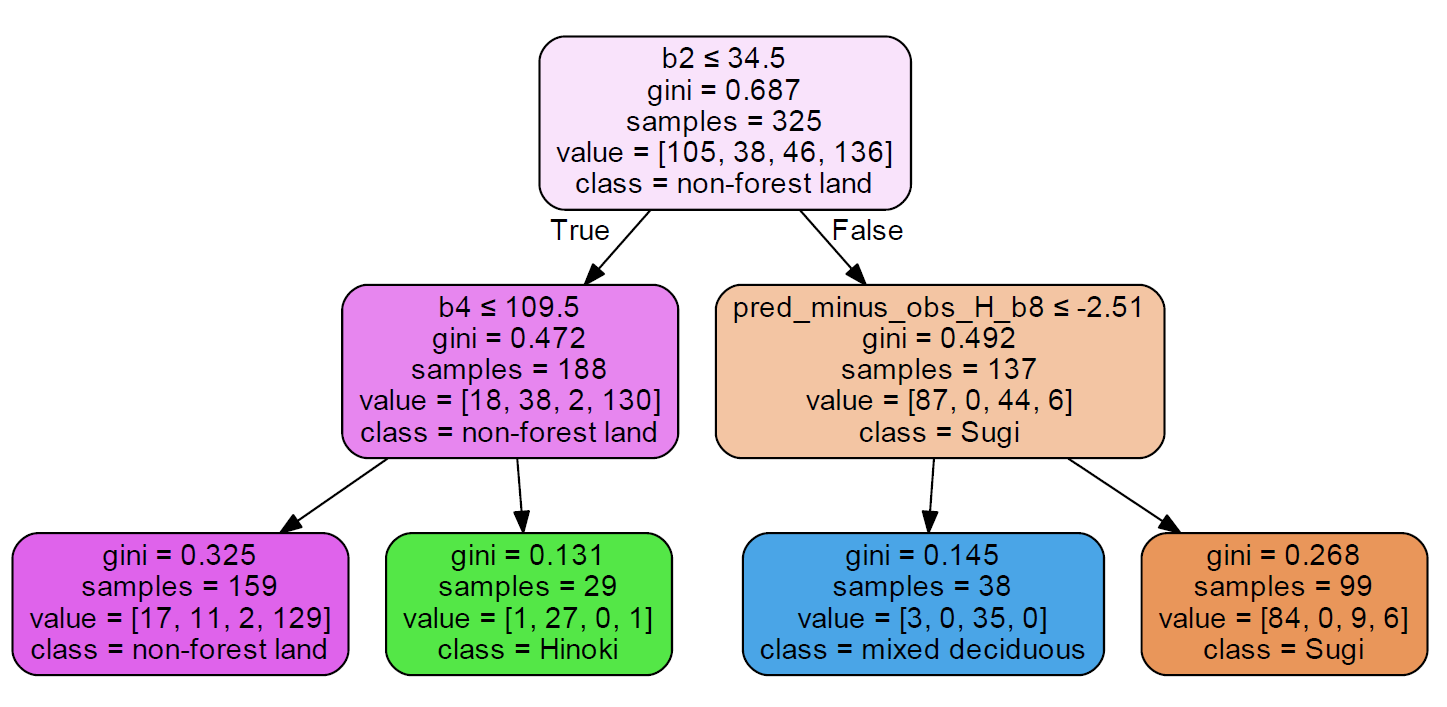
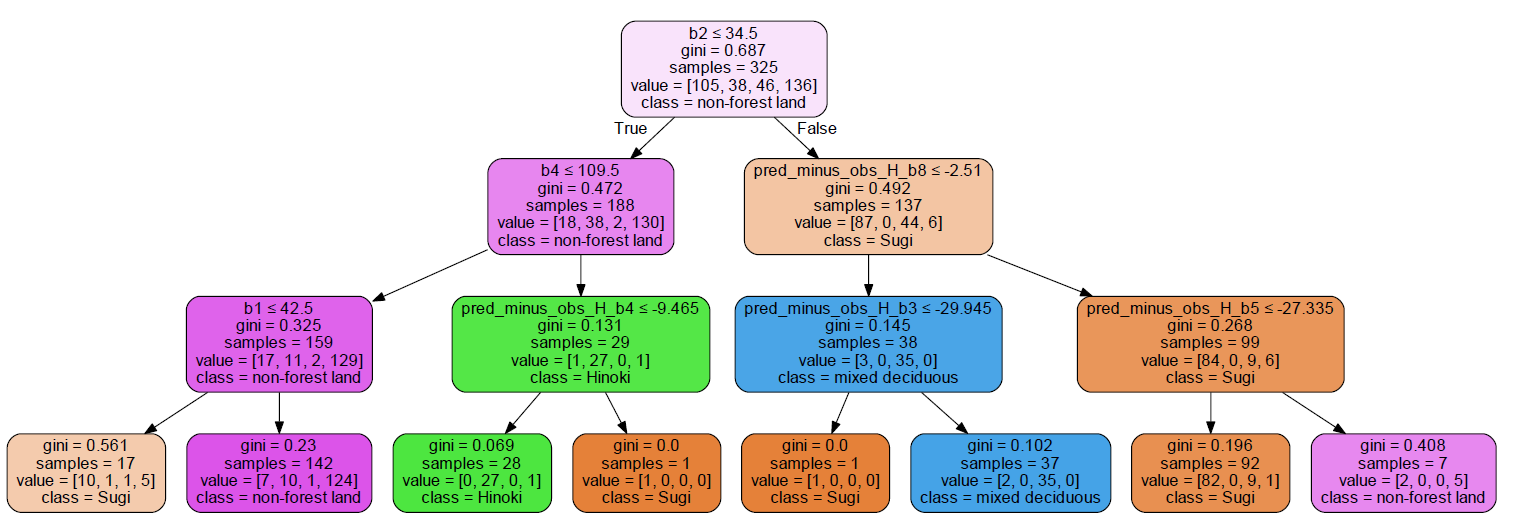
* 4 Max depths 🡪 8 zero Gini index
* 3 Max depths 🡪 6 zero Gini index
* 2 Max depths 🡪 1 zero Gini index

As a result, there higher depth, the information is more reliable as there are more zero Gini index. In the case of max depths equal of 4, Gini index of every end nodes of the tree is equal to zero, which indicates no impurity, all 198 samples are correctly classify. On the other hand, for the case of 2 max depths, there are only 1 end nodes has the zero Gini index, which contains of 52 samples, meaning that only 52 samples among 198 samples confirm they belongs to Sugi forest type.

Also, note that the zero Gini index of image 1 and 2 which are 4 max depths and 3 max depths respectively cover all the 4 forest classes, however, the zero Gini index in image 3 which used 2 max depths merely cover 1 forest class which is Sugi.

(b) Testing set partition

*Image 4:* *Testing set using max depth =4*

*Image 5:* *Testing set using max depth =3*

*Image 6:* *Testing set using max depth =2*