Infosheet

Youth in Plantation Establishment as an Occupation Project: Performance, Challenges and Lessons

Lessons Learnt

- The Youth in Plantation (YIP) project has the potential to contribute to bridging the gap between national timber demand and supply by establishing forest plantations.
- Creating entrepreneurship opportunities for unemployed graduates in plantation establishment contributes to the larger goal of creating wealth and increasing Ghana's forest cover.
- Regular ecological assessments of the project sites to identify areas for improvement, and providing training on silvicultural management practices will ensure the growth and form of the planted trees.
- A clearly documented benefit-sharing arrangement and full commitments from project beneficiaries, the Forestry Commission and other actors are crucial factors for the success of the YIP project as an occupation project.

Background

The Forest Plantation Development Fund (FPDF) was established in the year 2000 by the Forest Plantation Development Fund Act, 2000 (Act 583) and an Amendment Act, 2002 (Act 623) to accelerate the rate of establishment of forest plantations. This would be achieved by providing financial assistance for developing private forest plantations on lands suitable for commercial timber production and by providing funds for research and technical advice to persons involved in commercial plantation forestry on specified conditions. The FPDF Board in 2018 introduced a plantation development scheme called "Youth in Plantation Establishment as an Occupation Project" to encourage interested young entrepreneurs to develop private commercial forest plantations within selected degraded forest reserves. The YIP project was designed under three different implementation models. Model 1 targeted unemployed graduate foresters or unemployed graduates of similar backgrounds and was piloted in three (3) regions - Eastern, Ashanti and Bono. Model 2 focused on youth of any background, educated or uneducated and was piloted in the Volta region. Model 3 was to focus on offering financial support to prisons close to forest reserves to undertake plantation establishment while at the same time meeting their food needs from the foodstuffs produced from the farms. Model 3 is yet to kick start.

This infosheet presents empirical information on the growth performance of established trees, challenges, lessons and future implications for the youth in plantation establishment as an occupation project of the Forest Plantation Development Fund Board.

Methods

An ecological field-level assessment was carried out in all the established plots within three forest reserves under Model 1 - Tain II (Bono region), Tinte Bepo (Ashanti region), and Essen Epam (Eastern region) - and on farmers' fields outside forest reserves (Model 2) in the Volta region (Figure 1).

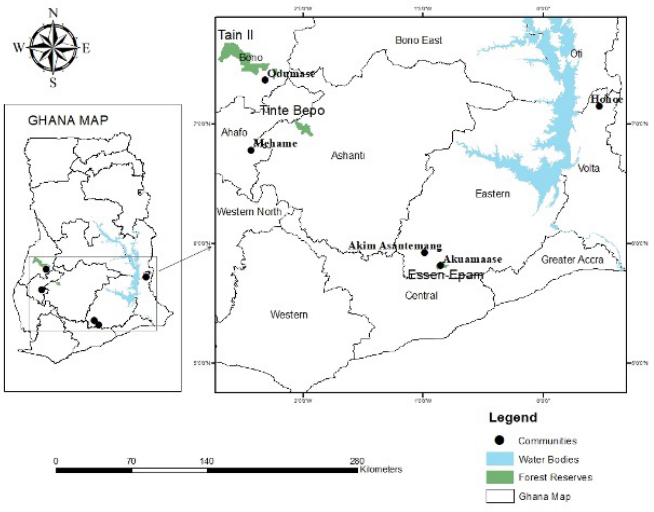

Figure 1. *Map of the study area*

Growth Performance of Established Trees in Model 1

Tain II Forest Reserve

On average, the annual growth rate of the planted Teak trees in five compartments was almost the same. However, the annual growth rate in compartment 334 was relatively faster than the other four compartments (Figures 2 & 3).

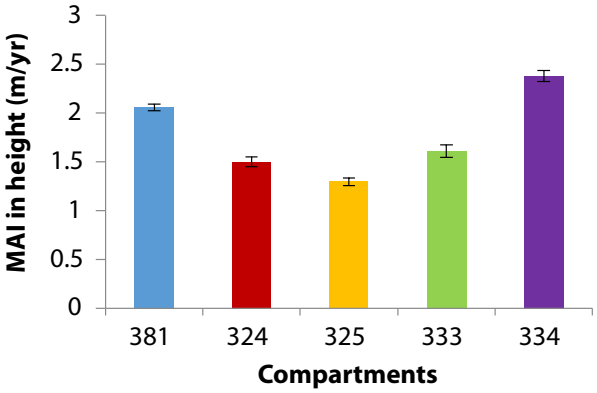

Figure 2. *Mean annual increment (MAI) in diameter at breast height (DBH) of Teak trees in Compartments*

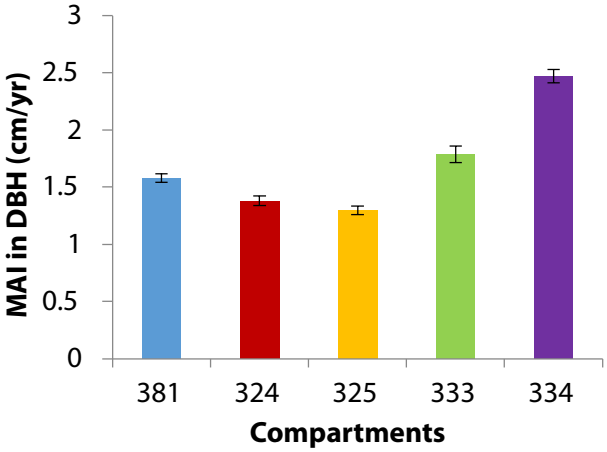

Figure 3. *Mean annual increment (MAI) in height of Teak trees in Compartments*

Tree plantations in Tain II Forest Reserve

Tinte Bepo Forest Reserve

The annual growth rate of the species followed the expected trend, with *Cedrela odorata* (Cedrela) growing faster than *Khaya senegalensis* (Mahogany) and *Terminalia superba* (Ofram) irrespective of the compartment (Figures 4 & 5). On average, the DBH of Cedrela and Mahogany in compartment 93 grew faster than in compartment 92. However, the annual growth in DBH of Ofram in compartment 92 was faster than in compartment 93 (Figure 4). The annual growth in height of all species in compartment 92 was slower than in compartment 93 (Figure 5).

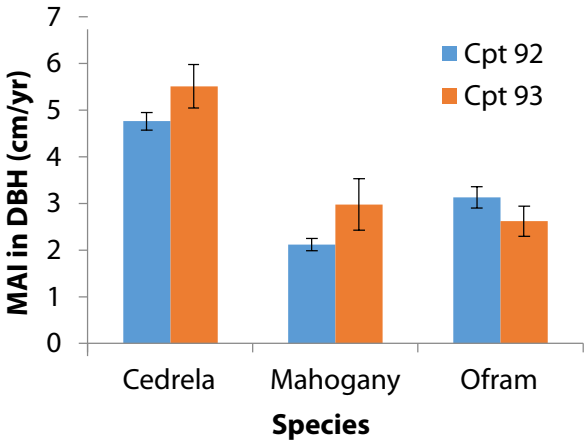

Figure 4. *MAI in DBH of trees in Compartments*

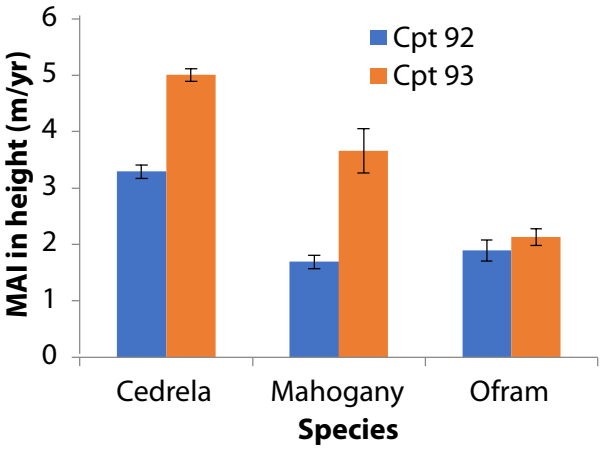

Figure 5. *MAI in height of trees in Compartments*

Tree plantations in Tinte Bepo Forest Reserve

Essen Epam Forest Reserve

The Cedrela and Ofram in compartment 14 were larger and taller than those in compartment 12, which is probably reflective of local site conditions such as soil or maintenance. In conformity with previous research, the annual growth rate in terms of DBH and height of Cedrela was relatively faster than Ofram, irrespective of the compartment (Figures 6 & 7).

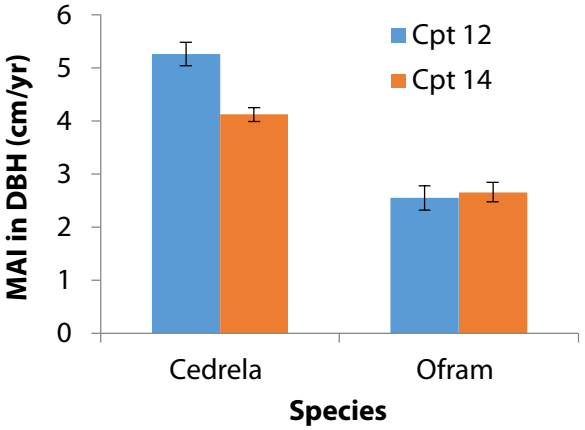

Figure 6. *MAI in DBH of trees in Compartments*

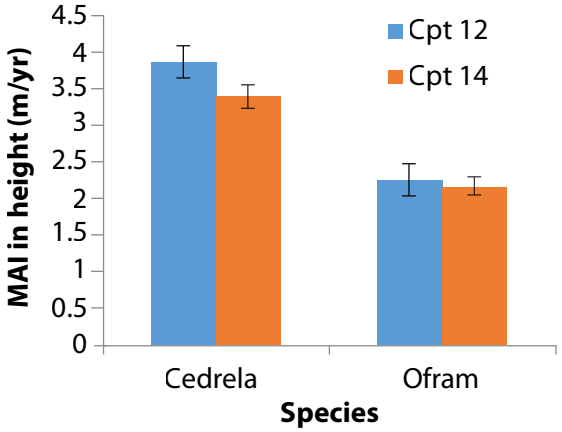

Figure 7. *MAI in height of trees in Compartments*

Tree plantations in Essen Epam Forest Reserve

Growth Performance of Established Trees in Model 2

Off-Reserve Farms – Volta Region

The DBH of the Teak on the off-reserve farms ranged from 1.1 cm to 13.3 cm, while height ranged from 1.1 m to 15.5 m. On average, the DBH of Teak increased at an annual rate of 2.1 cm while height increased by 2.0 m. On average, the annual increment in height was 1.9 m.

Tree plantations in Volta Region

Implications of the growth performance of established trees

Several factors, such as climatic conditions, variation in genetics, effects of natural disturbances and human management activities and microsites, among others, are associated with differences in the growth rate of trees. It was unexpected to find slightly higher growth rates of Ofram and Cedrela in Tinte Bepo compared with Essen Epam. Such a result might be attributed to better site conditions or better management regimes in Tinte Bepo than Essen Epam. Although climate is an overarching factor affecting plant growth, other site-specific variations and land use or management interventions can potentially override climatic impacts. For example, poor site-species matching, selection of inappropriate planting materials, or failure to regularly control weeds could slow the growth of a species in a wetter location compared to a drier area.

An important factor in this study was fire events. The ecological assessment revealed very high fire events at Tain II, unlike Tinte Bepo (low likelihood of fire) and Essen Epam (no fire event). Although the fires most likely affected survival, growth, vigour and stand form at Tain II, the fire effects would have been more devastating if similar fires had occurred in Tinte Bepo or Essen Epam. This explains why fire education and prevention are very important activities of every landscape restoration initiative that aims for success.

Another important factor that exerts high impact on plantation success is the management and silvicultural interventions that are implemented. Key management interventions include weed control, singling, pruning, fire ride creation and maintenance, and thinning.

Constraints and Key Challenges

The following are the key constraints and challenges that were identified:

- Low-quality seed sources and delays in seedling supply
- Inadequate supply of farm inputs and lack of access to credit facilities
- Cattle grazing and wildfire
- Lack of documentation on benefit-sharing agreement
- Lack of technical know-how of participants in plantation development
- Lack of coordination with forestry commission and lack of research components

Cattle grazing in parts of the Tain II Forest Reserve

Acknowledgement

This information sheet is produced under the consultancy services rendered to the Forest Plantation Development Fund Board (FPDFB) to assess the Youth in Plantation Establishment as an Occupation Project. The authors take sole responsibility for the information provided in this info sheet. The authors express appreciation to the FPDFB for the support and also acknowledge the contributions of participants and farmhands during the stakeholder workshop.

Authors

Elizabeth Asantewaa Obeng, Kwame Antwi Oduro, Stella Britwum Acquah, Reginald Tang Guuroh, Jewel Andoh, Adu-Gyamfi Asamoah