

# FINLANDS SUPPORT FOR TREE IMPROVEMENT IN TANZANIA



United Republic of Tanzania  
MINISTRY OF NATURAL RESOURCES  
AND TOURISM  
Forestry and Beekeeping Division



**SUOMI  
FINLAND**

## Southern Highlands seed orchards and seed stands



Tanzania is one of Finland's long-term development cooperation partner countries. Here Finland's development cooperation has focused on public sector development and good governance, as well as livelihoods and employment, particularly in the forestry sector.

The goal of this collaboration is to empower Tanzanian communities to manage their natural resources in an inclusive and sustainable manner and to strengthen their means of livelihood, thereby contributing to combating climate change and strengthening climate resilience.

Tanzania and Finland established the bilateral Private Forestry Programme after recognizing that Tanzania's Southern Highlands provide a unique environment in which plantation forests can be grown profitably to provide feedstock for rapidly emerging local industries responding to growing local and international markets, and that the majority of residents were already invested as small scale growers or processors.

In this case, forestry provided an incredible opportunity to catalyze inclusive and equitable economic development while also contributing to climate change mitigation and resilience.

Tree improvement was prioritized early on, recognizing the need to address shortcomings in the trees being grown, improve productivity, and improve fire resilience, while also diversifying to meet the variety of growing conditions and markets.

The PFP had established significant seed stands of *Pinus maximinoi* and *Pinus tecunumanii* by the end of its first year, using seed from improved seed sources in Brazil. These trees were managed for seed production through a series of thinning and roguing operations that kept only the trees that performed best in Southern Highlands conditions and allowed them plenty of space to keep lower cone-bearing branches from which the cones could be easily harvested. Early harvests come in first in 2021. Since then, both smallholders and larger commercial growers have benefitted from these locally adapted improved tree seeds.

Seed orchards for *Pinus patula*, *P. oocarpa*, *P. maximinoi*, *P. tecunumanii*, and *P. caribea*, as well as *Eucalyptus saligna*, *E. urophylla*, *E. cloeziana*, and *E. grandis*, have been established since this early start. Except for *P. caribea*, which was planted recently and is expected to bear cones in 2024, all of these are now producing improved tree seeds.

Using geo-tagged photographs and maps, we account for the improved tree seed sources that have been established, as well as their distribution and current statuses.

## SEED ORCHARDS ESTABLISHMENT

Planting Year	District	Location	Altitude	Species	Area (Ha)	Seed source	seed type	
2015	Mufindi	MPM, Makungu	1,247	P. maximinoi	11	Brazil	Bulk	
				P.tecunumanii	10			
		Idete	1485	P.maximinoi	10	Brazil	Bulk	
				P. tecunumanii	12			
2018	Ludewa	Ibumi	1365	P.oocorpa	3	Zimbabwe	Families	
				P. tecunumanii	5			
	Madaba	Njelela	1652	P.maximinoi	6	Zimbabwe	Families	
				Ifinga	1277	E.saligna	5	Zimbabwe
		P.tecunumanii	5					
		Mbinga	Maweso	1299	P.maximinoi	5	Zimbabwe	Families
	Utili				1410	P.maximinoi	4	Zimbabwe
		P.tecunumanii	6					
2019	Ludewa	Njelela	1615	E.grandis	3	Zimbabwe	Families	
	Makete	Usagatikwa	1923	P.patula	3	Tanzania & South Africa	Families	
	Madaba	Ifinga	1294	E.urophylla	3	Zimbabwe	Families	
		Mkongotema	1075	P.caribaea	4	Zimbabwe	Families	
	Mufindi	Holo	1472	P.caribaea	1	Zimbabwe	Families	
				P.oocorpa	3		Families	
			1458	E.grandis	1	Zimbabwe	Families	
				E.saligna	2	South Africa	Families	
	Sao hill div 1	1984	P.maximinoi	11	Zimbabwe	Families		
			P.tecunumanii	15		Families		
			Sao hill div 2	1880		E.cloeziana	3	Tanzania
E.saligna						4	Zimbabwe	Families
E.grandis	5	Zimbabwe			Families			





### Holo/ Idete seed stand

Seed source/ Origin: Brazil

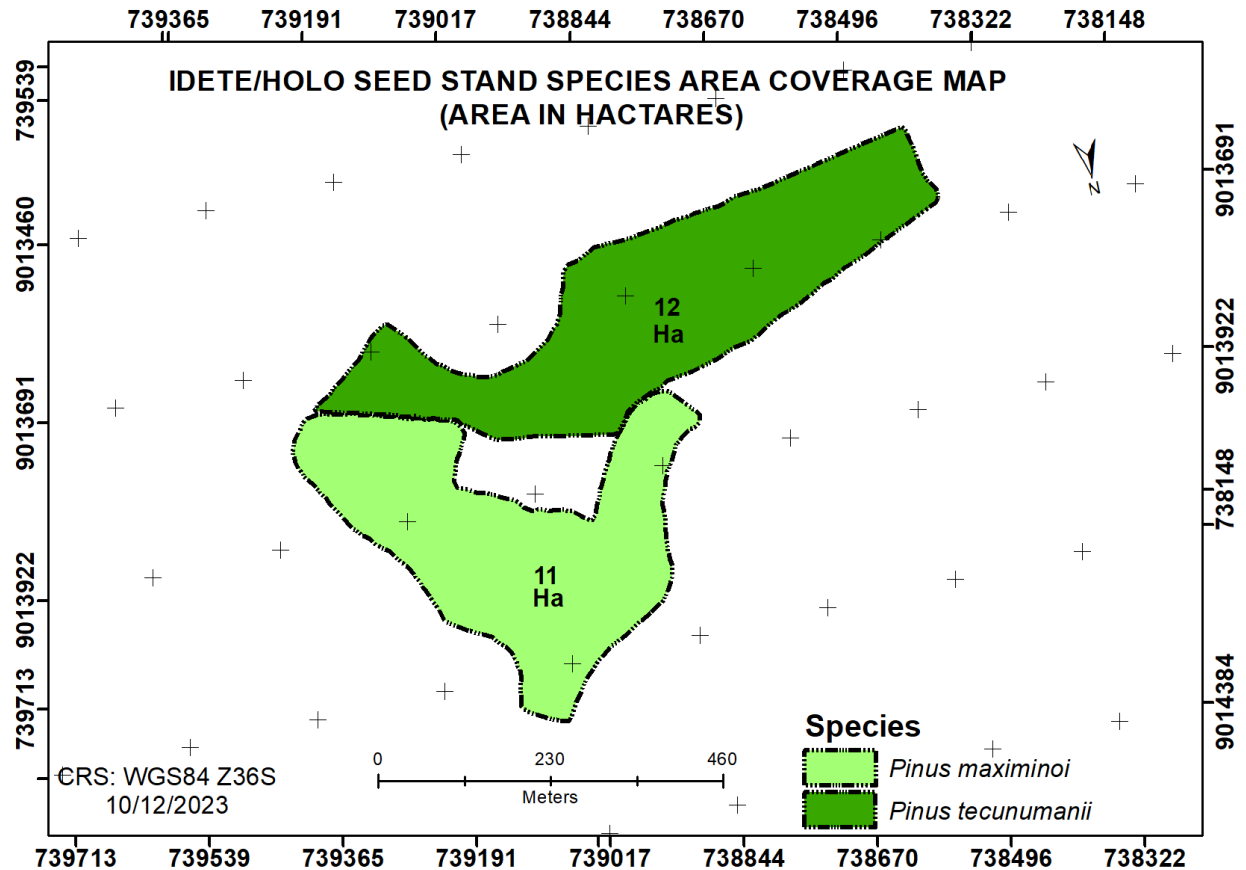
Species name: *Pinus maximinoi*  
and *Pinus tecunumanii*

Planting year: 2015

Area: 22 Ha

Altitude: 1485 m

Coordinates:  $-8.916127^{\circ}$ ,  $35.172827^{\circ}$



## *Pinus maximinoi*

Planting year: 2015

Date of photo: 03.11.2023

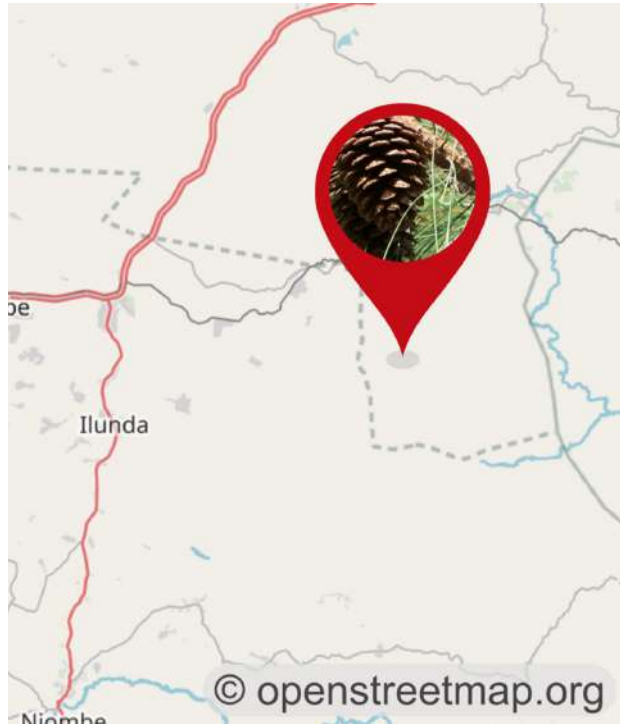
Area: 10 Ha

Altitude: 1485 m

Coordinate: -8.916127°, 35.172827°

Management status:: Thinned

Start of harvesting: 2021



### Features:

**Height:** Tree, medium to tall, height to 20-40 meters.

**Diameter at Breast Height:** It ranges from 70-90 (-100+) cm.

**Trunk:** The trunk is monopodial, straight, and slender, the lower half of the bole usually free of branches.

**Altitude:** The elevation is from 450 - 2,800 metres.

**Rainfall:** Mean annual precipitation ranges from around 900 - 2,500mm.

**Temperature:** Mean annual temperatures vary from 17 to 22 °C.

## *Pinus tecunumanii*

Planting year: 2015

Date of photo:

Area: 12 Ha

Altitude: 1485 m

Coordinate: -8.916127°, 35.172827°

Management status: Thinned

Start of harvesting: 2021



### Features:

**Height:** Large evergreen trees can reach 50 - 55 m tall.

**Diameter at Breast Height:** trunk to 1.2m – 1.4 m.

**Trunk:** monopodial, erect, straight, bole of large trees usually clear of branches. it can grow a straight bole with large dimensions.

**Altitude:** Growing in the tropical, montane forests, at elevations of 550 - 2,700 metres.

**Rainfall:** It grows in areas with a mean annual rainfall within the range of 1,000 - 3,000mm and a dry season of up to 6 months.

**Temperature:** It requires a sunny position.





**Holo seed stand**

Seed source/ Origin: Zimbabwe

Species name: Eucalyptus

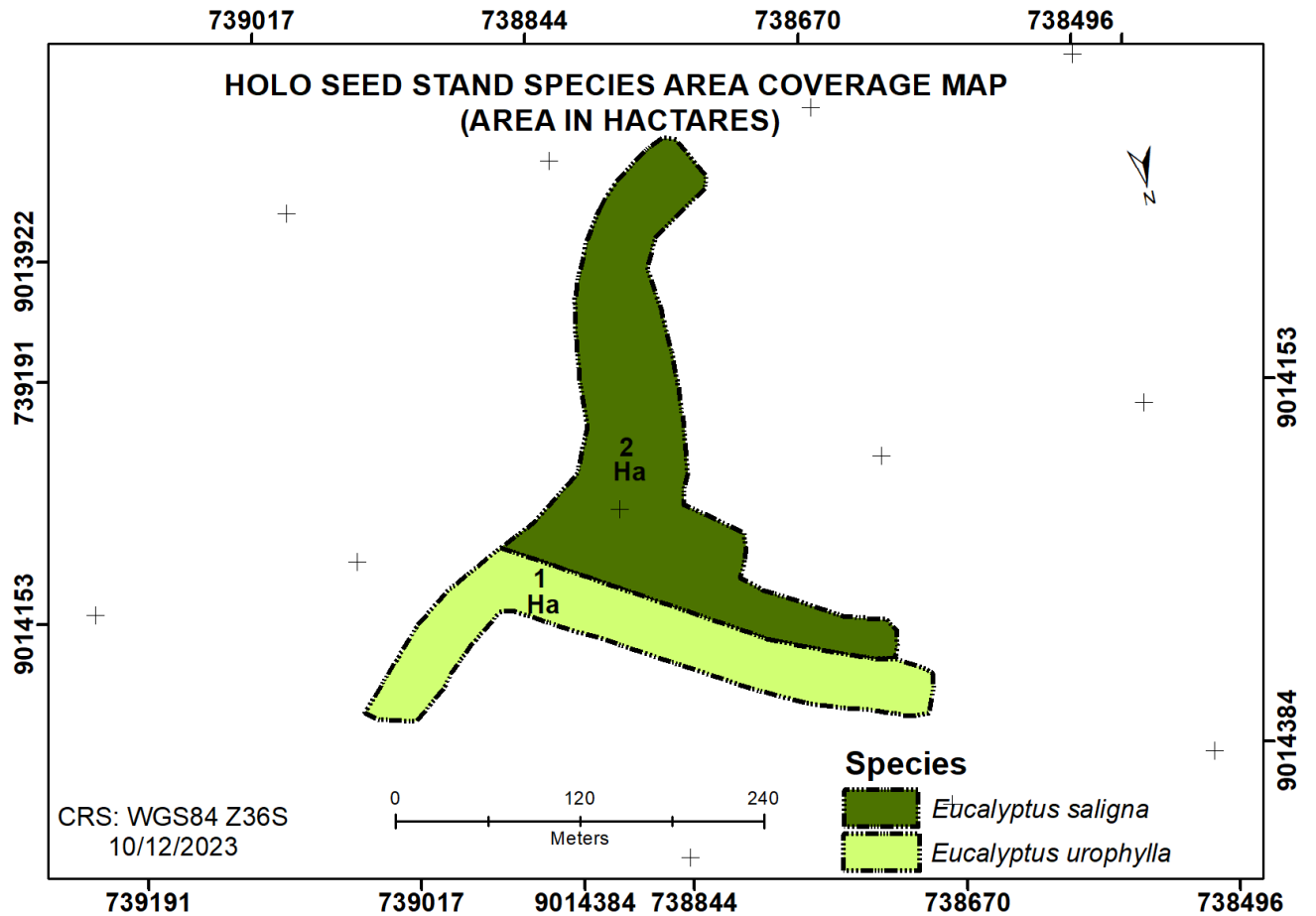
saligna and Eucalyptus urophylla

Planting year: 2019

Area: 3 Ha

Altitude: 1458 m

Coordinates: -8.913273°, 35.171853°



## ***Eucalyptus saligna***

Planting year: 2019

Date of photo: 09.12.2023

Area: 2 Ha

Altitude: 1458 m

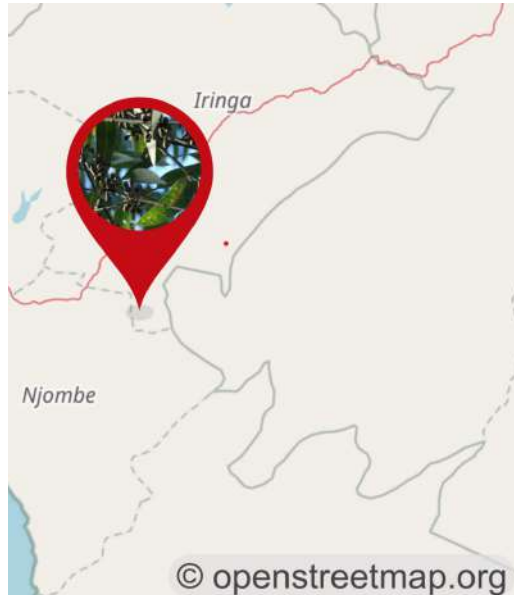
Coordinate: -8.913273°,

35.171853°

Management status::

Thinned

Start of harvesting: 2024



### **Features:**

**Height:** It grows 30 - 50 metres tall.

**Diameter at the Breast Height:** A diameter at breast height of up to 2 metres.

**Trunk:** The bole is generally straight and clear of branches for half to two-thirds of the total tree height.

**Altitude:** It grows at an elevation of up to 300 metres and 1,980 metres above sea level.

**Rainfall:** Mean annual rainfall in its native range varies from 800 - 1,270 mm.

The tree achieves its best growth on sites with about 2,540 mm annual rainfall, rather than on wetter sites.

**Temperature:** It has also proved to be highly suited for short-rotation plantations in tropical montane regions.

## *Eucalyptus urophylla*

Planting year: 2019

Date of photo: 09.12.2023

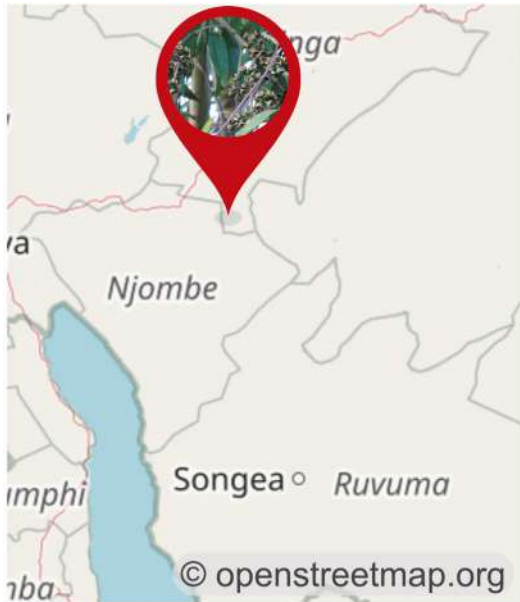
Area: 1 Ha

Altitude: 1458 m

Coordinate: -8.913273°, 35.171853°

Management status: Thinned

Start of harvesting: 2024



### Features:

**Height:** Tree up to 35 - 45 m tall, or, in unfavourable conditions, a shrub.

**Diameter at the Breast Height:** up to 2 m in diameter

**Trunk:** Bole is straight and branchless for up to 30 m. Bark variable depending on moisture and altitude, usually persistent and subfibrous, smooth to shallow, close longitudinal fissures, red-brown to brown; sometimes rough, especially at the base of the trunk.

**Altitude:** It grows between 350 - 3000 meters above sea level.

**Rainfall:** Mean annual rainfall is between 1000 - 1500 mm.

**Temperature:** Mean annual temperature is between 80C - 290C.



**Holo seed orchard**

Seed source/ Origin: Zimbabwe

Species name: *Pinus oocarpa*

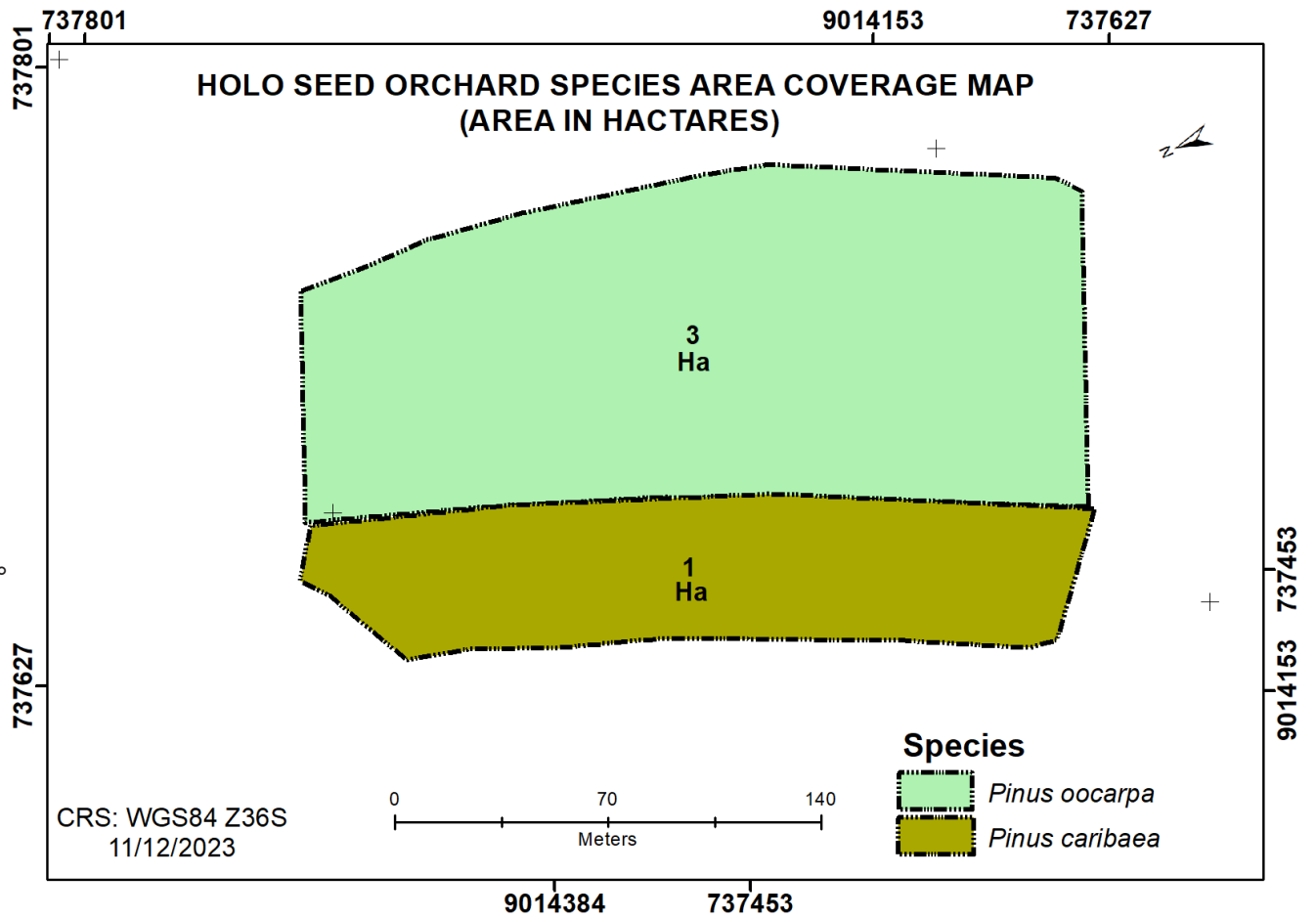
and *Pinus caribaea*

Planting year: 2019

Area: 4 H

Altitude: 1472 m

Coordinates: -8.912288°, 35.160558°



## ***Pinus oocarpa***

Planting year: 2019

Number of families: 100

Date of photo: 09.12.2023

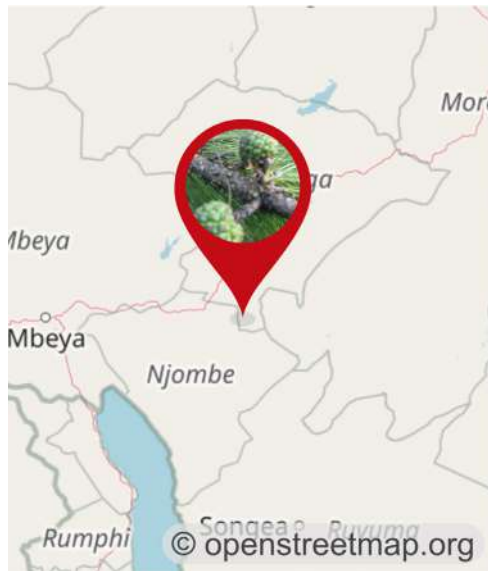
Area: 3 Ha

Altitude: 1472 m

Coordinate: -8.912288°,  
35.160558°

Management status: Thinned

Start of harvesting: 2024



### **Features:**

**Height:** Tree, medium to tall, height to 10-15 or 30-35 m, depending on variety and site condition.

**Diameter at Breast Height:** It has a DBH of 40-60 or 100-125 cm.

**Trunk:** Trunk is monopodial, erect, straight or tortuous, terete, often clear of branches for 2/3 of tree height.

**Altitude:** It occurs at elevations of 1,000 - 2,700 metres, reaching its best development at elevations between 1,200 - 1,800 metres.

**Rainfall:** It grows in areas where the mean annual rainfall can be as low as 600 - 800 mm.

**Temperature:** It can tolerate a dry season of up to 5 months. Mature plants require a sunny position, though young plants can tolerate some shade.

## ***Pinus caribaea***

Planting year: 2019

Number of families: 89

Date of photo: 09.12.2023

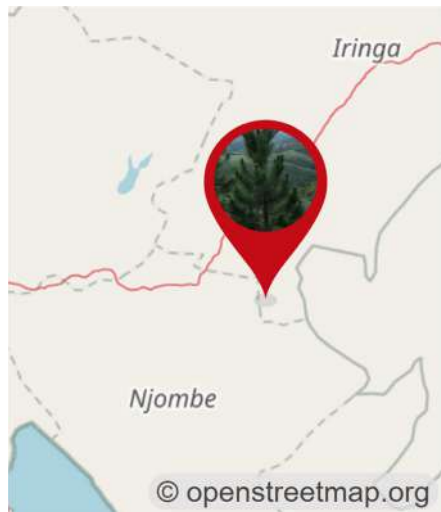
Area: 1 Ha

Altitude: 1472 m

Coordinate: -8.912288°,  
35.160558°

Management status: Thinned

Start of harvesting: 2024



### **Features:**

**Height:** The tree grows from 20 - 35 m tall, but it is usually smaller when grown in plantations.

**Diameter at the Breast Height:** Trunk to 0.5m - 1 m diameter.

**Trunk:** The bole is generally straight and well-formed. The lower branches are large, horizontal and drooping; the upper branches often ascend to form an open, rounded pyramidal crown, whilst young trees have a dense, pyramidal crown. Plantation-grown trees can be free of branches for up to 21 metres.

**Altitude:** Hillsides and plains at low elevations from sea level to 1500 metres.

**Rainfall:** It grows in areas where the mean annual rainfall is 1,000 - 3,000mm.

**Temperature:** It grows best in a sunny position. The mean annual temperature is in the range 22 - 37°C.



### Mufindi Paper Mills seed stand

Seed source/ Origin: Brazil

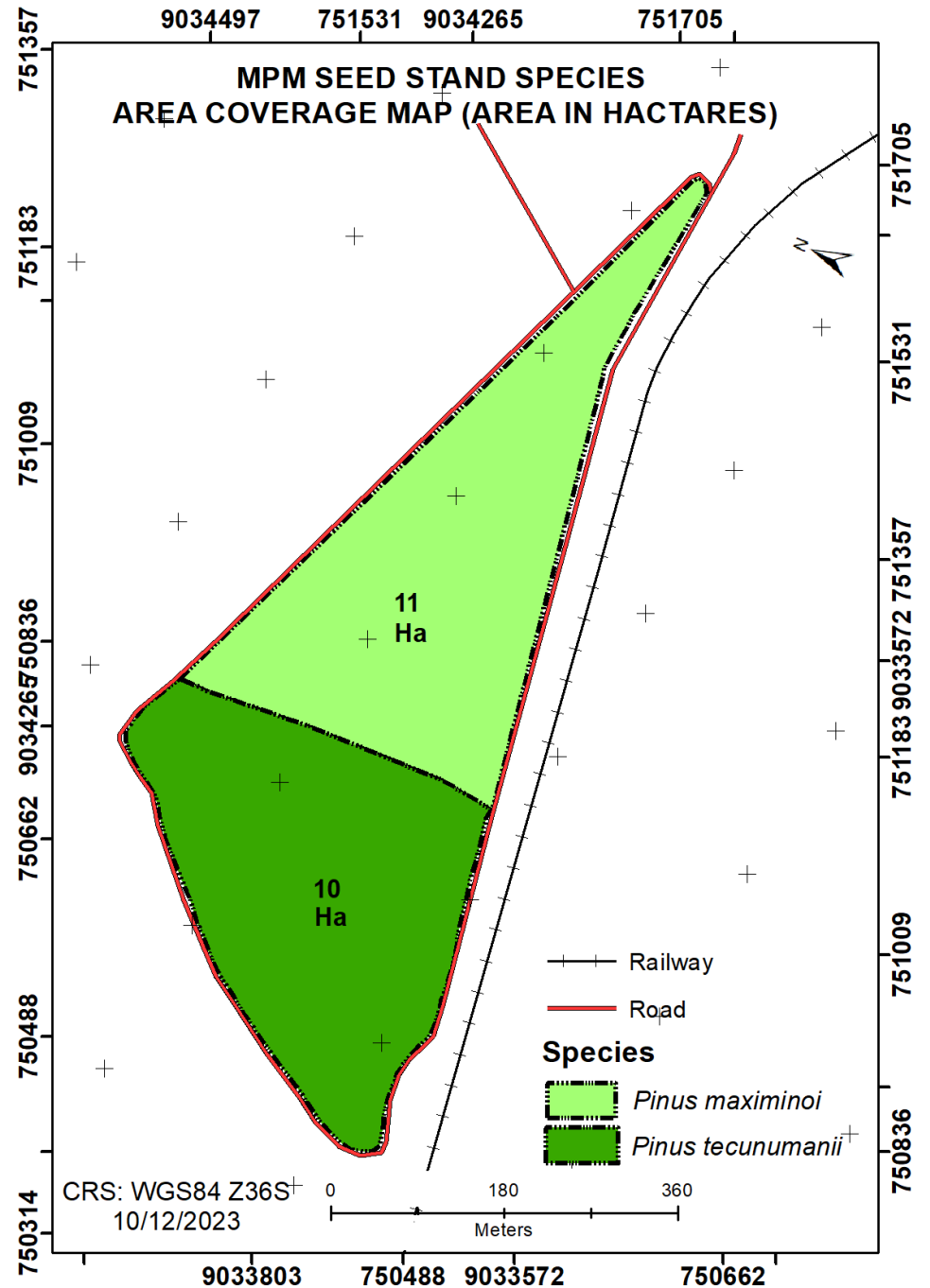
Species name: *Pinus maximinoi* and  
*Pinus tecunumanii*

Planting year: 2015

Area: 21 Ha

Altitude: 1247 m

Coordinates: -9.732905, 35.280884



***Pinus maximinoi***

Planting year: 2015

Date of photo: 17.11.2023

Area: 11 Ha

Altitude: 1247 m

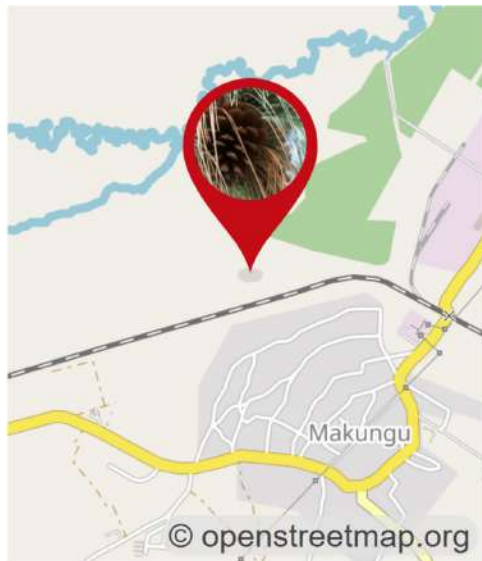
Coordinate: -9.732905,

35.280884

Management status::

Thinned

Start of harvesting: 2021



**Features:**

**Height:** Tree, medium to tall, height to 20-40 meters.

**Diameter at Breast Height:** It ranges from 70-90 (-100+) cm.

**Trunk:** The trunk is monopodial, straight, and slender, the lower half of the bole usually free of branches.

**Altitude:** The elevation is from 450 - 2,800 metres.

**Rainfall:** Mean annual precipitation ranges from around 900 - 2,500mm.

**Temperature:** Mean annual temperatures vary from 17 to 22 °C.

## *Pinus tecunumanii*

Planting year: 2015

Date of photo: 17.11.2023

Area: 10.Ha

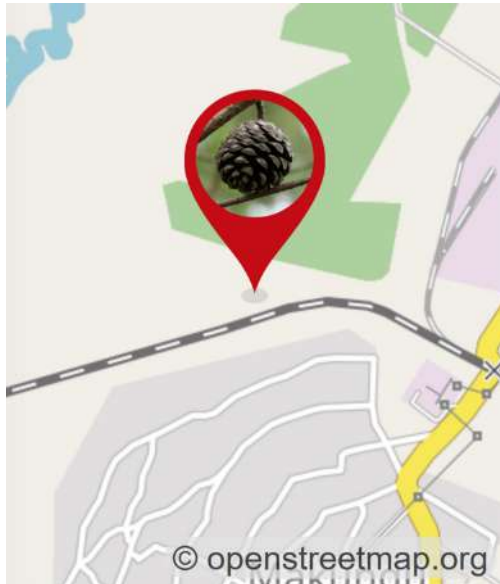
Altitude: 1247 m

Coordinate: -9.732905,

35.280884

Management status:: Thinned

Start of harvesting: 2021



### Features:

**Height:** Large evergreen trees can reach 50 - 55 m tall.

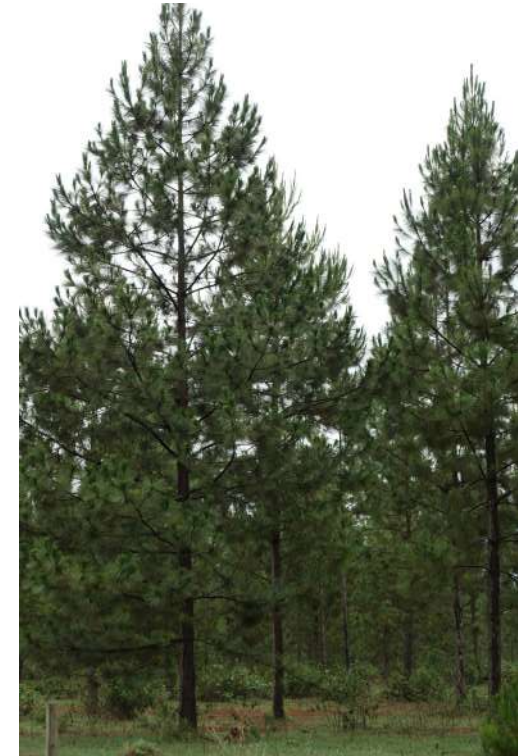
**Diameter at Breast Height:** trunk to 1.2m – 1.4 m.

**Trunk:** monopodial, erect, straight, bole of large trees usually clear of branches. it can grow a straight bole with large dimensions.

**Altitude:** Growing in the tropical, montane forests, at elevations of 550 - 2,700 metres.

**Rainfall:** It grows in areas with a mean annual rainfall within the range of 1,000 - 3,000mm and a dry season of up to 6 months.

**Temperature:** It requires a sunny position.





### Sao hill Division 1

Seed source/ Origin: Zimbabwe

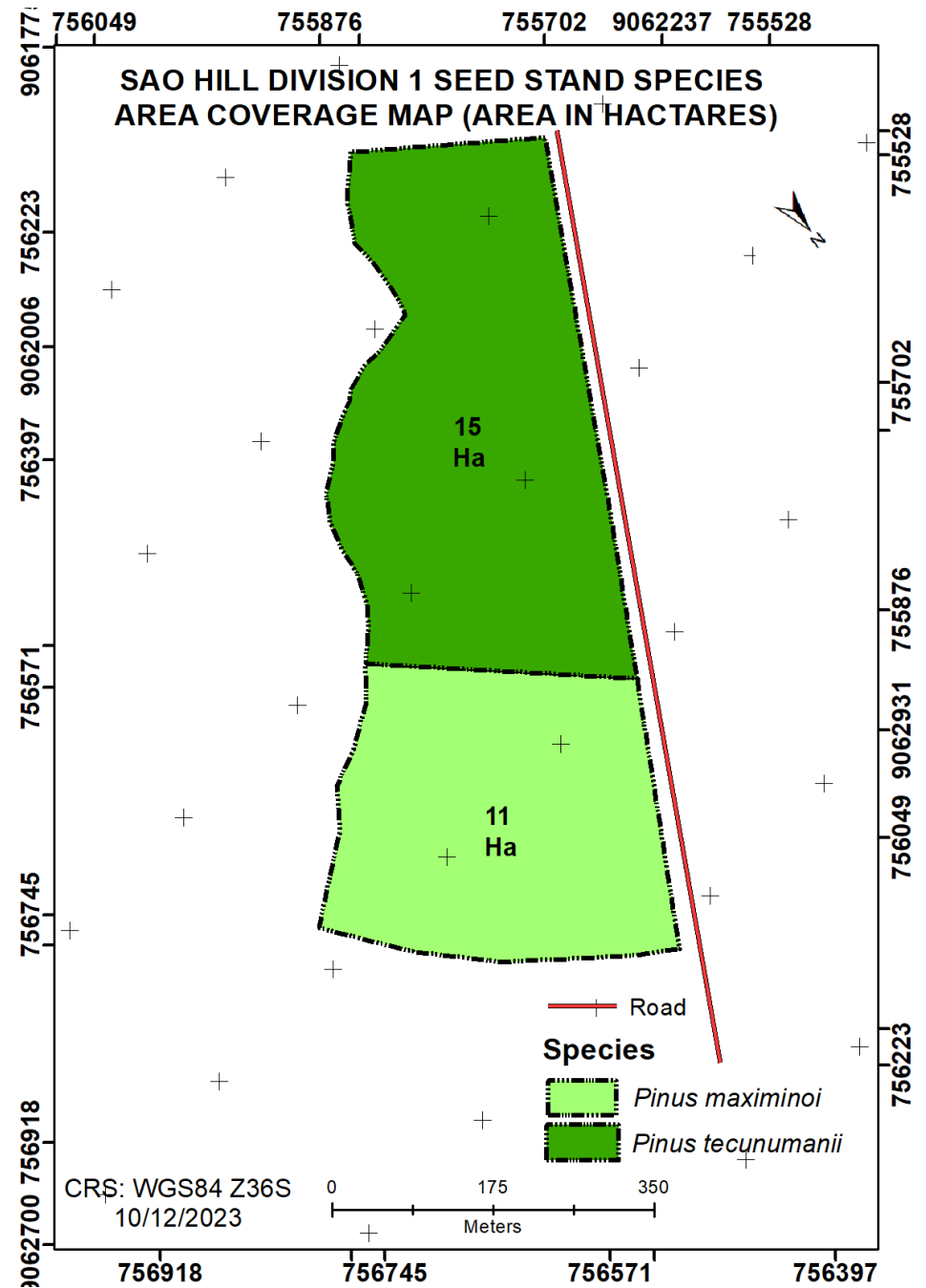
Species name: *Pinus maximinoi* and  
*Pinus tecunumanii*

Planting year: 2019

Area: 26 Ha

Altitude: 1984 m

Coordinates: -8.476064°, 35.325764°



## ***Pinus maximinoi***

Planting year: 2019

Date of photo: 27.11.2023

Area: 11 Ha

Altitude: 1984 m

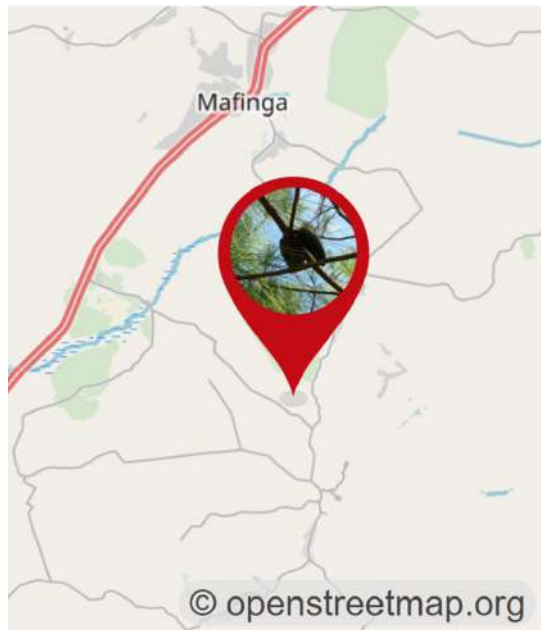
Coordinate: -8.476064°, 35.325764°

Management status:: Not thinned

Start of harvesting: Mature and ready

for seed harvesting after thinning/

rogueing



### **Features:**

**Height:** Tree, medium to tall, height to 20-40 meters.

**Diameter at Breast Height:** It ranges from 70-90 (-100+) cm.

**Trunk:** The trunk is monopodial, straight, and slender, the lower half of the bole usually free of branches.

**Altitude:** The elevation is from 450 - 2,800 metres.

**Rainfall:** Mean annual precipitation ranges from around 900 - 2,500mm.

**Temperature:** Mean annual temperatures vary from 17 to 22 °C.



## ***Pinus tecunumanii***

Planting year: 2019

Date of photo: 27.11.2023

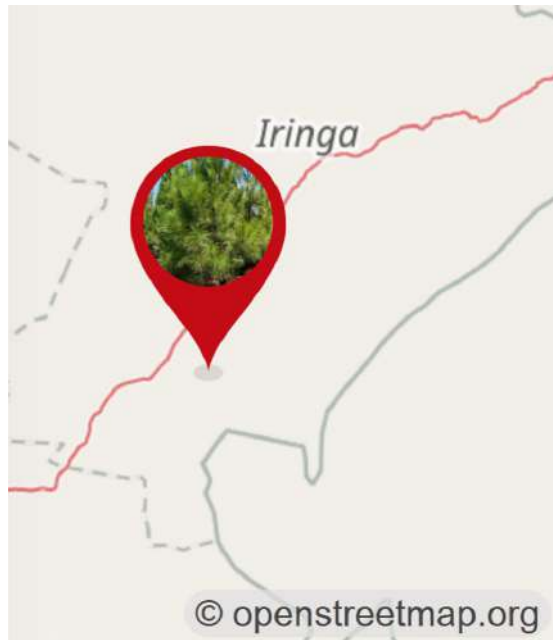
Area: 15 Ha

Altitude: 1984 m

Coordinate: -8.476064°, 35.325764°

Management status: Not thinned

Start of harvesting: Mature and ready for seed harvesting after thinning/rogueing



### **Features:**

**Height:** Large evergreen trees can reach 50 - 55 m tall.

**Diameter at Breast Height:** trunk to 1.2m – 1.4 m.

**Trunk:** monopodial, erect, straight, bole of large trees usually clear of branches. it can grow a straight bole with large dimensions.

**Altitude:** Growing in the tropical, montane forests, at elevations of 550 - 2,700 metres.

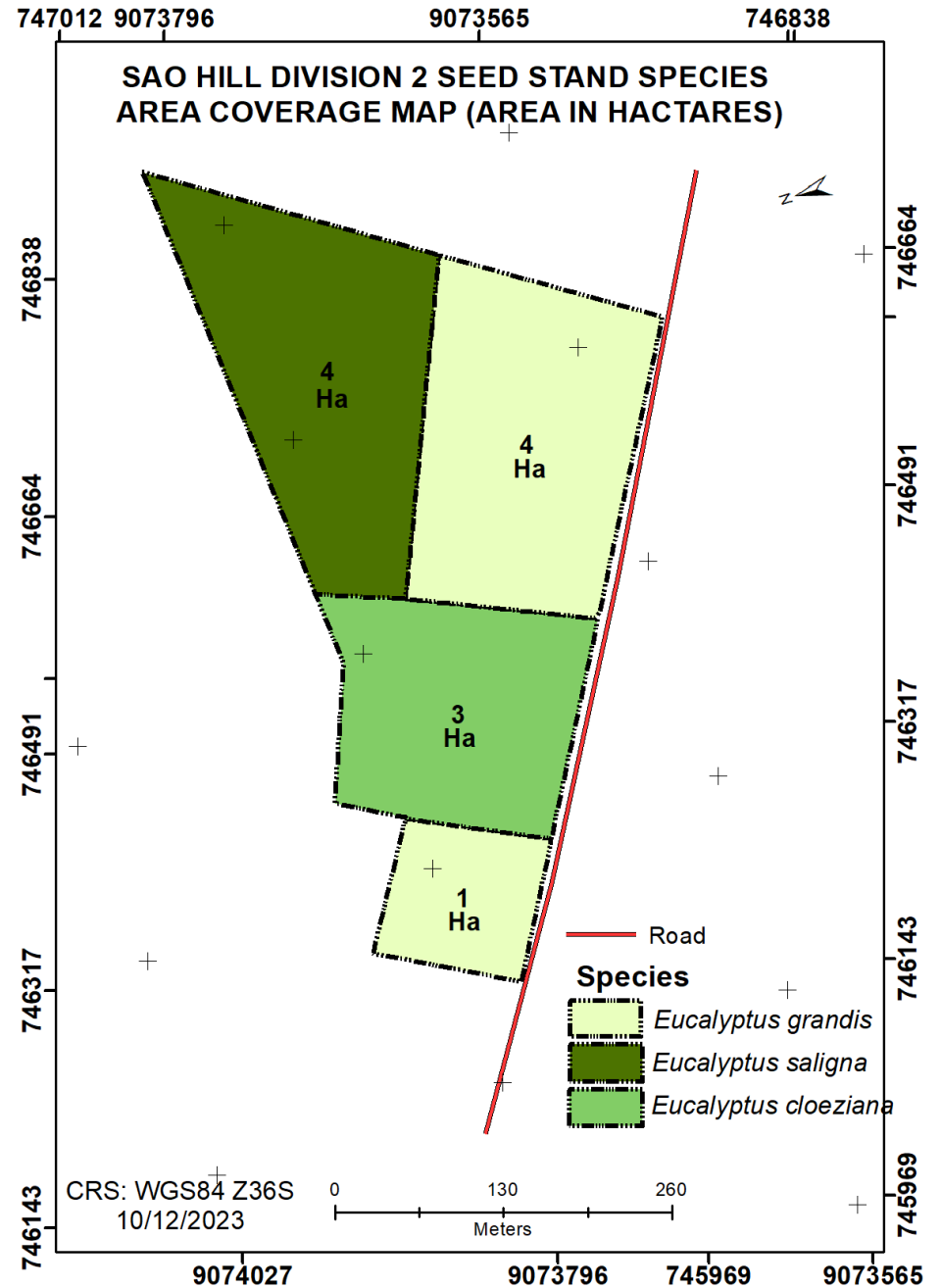
**Rainfall:** It grows in areas with a mean annual rainfall within the range of 1,000 - 3,000mm and a dry season of up to 6 months.

**Temperature:** It requires a sunny position.



### Sao hill Division 2

Seed source/ Origin: Zimbabwe/ Tanzania  
Species name: Eucalyptus grandis, Eucalyptus saligna and Eucalyptus cloeziana  
Planting year: 2019  
Area: 12 Ha  
Altitude: 1880 m  
Coordinates: -8.37432, 35.23895



## *Eucalyptus grandis*

Planting year: 2019

Date of photo: 07.11.2023

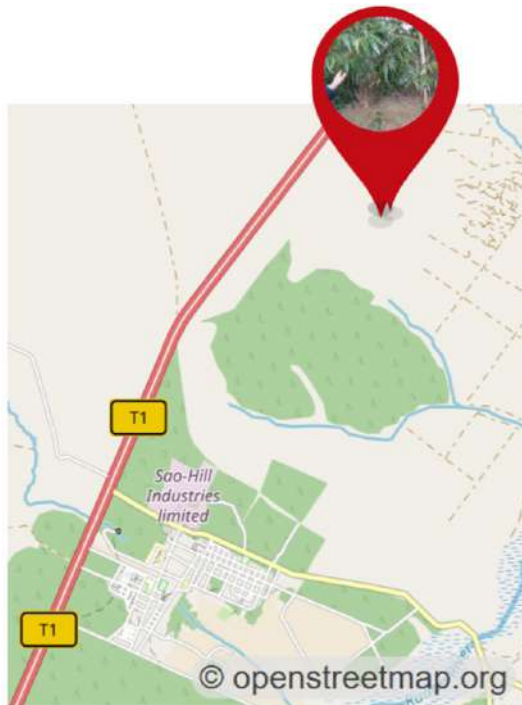
Area: 5 Ha

Altitude: 1880

Coordinate: -8.37432, 35.23895

Management status:: Not thinned

Start of harvesting: Mature and ready for seed harvesting after thinning



### Features:

**Height:** It usually grows 40 - 55 metres tall but exceptionally to 75 metres.

**Diameter at Breast Height:** It is about 1.2 - 3m in diameter

**Trunk:** The bole is straight and cylindrical, unbranched for up to 50 - 75% of its height.

**Temperature:** Prefers the humid subtropical and tropical with mean minimum temperatures ranging from 2 - 10°C and mean maximum near 29°C during the hottest month.

**Rainfall:** Mean Annual Rainfall averages 1,020 - 1,780mm.

## *Eucalyptus cloeziana*

Planting year: 2019

Date of photo: 07.11.2023

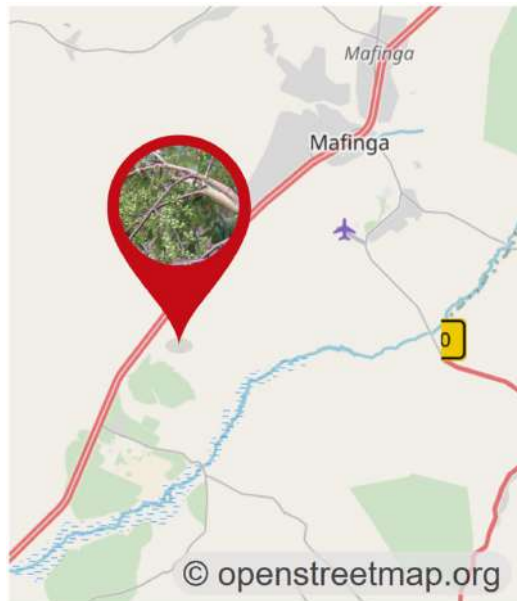
Area: 3 Ha

Altitude: 1880 m

Coordinate: -8.37432, 35.23895

Management status: Not thinned

Start of harvesting: Mature and ready for seed harvesting after thinning



### Features:

**Height:** A tree that typically grows to a height of 55 m in the forest. It usually grows 10 - 25 metres tall in shallower soils, and up to 45 metres in deeper soils.

**Diameter at Breast Height:** The long bole can be up to 150cm in diameter, exceptionally to 300cm.

**Trunk:** It has thick, rough, fibrous to flaky, brownish to grey bark on the trunk and smooth grey to orange bark on the branches.

**Altitude:** It can be grown at elevations up to 2,350 metres.

**Rainfall:** It prefers a mean average annual rainfall of 700 - 2,000 mm, with a dry season of up to 5 months. In tropical Africa, it is especially recommended for regions with an annual rainfall of 1,000 - 1,500mm and a dry season of 4 - 5 months.

**Temperature:** It grows best in areas where the mean annual temperature is in the range of 16 - 27°C. It grows in the subtropics to the tropics.



## ***Eucalyptus saligna***

Planting year: 2019

Date of photo: 07.11.2023

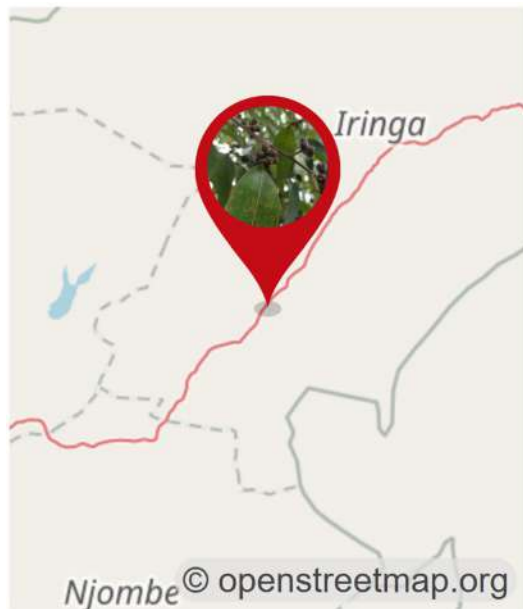
Area: 4 Ha

Altitude: 1880 m

Coordinate: -8.37432, 35.23895

Management status: Not thinned

Start of harvesting: Mature and ready for seed harvesting after thinning



### **Features:**

**Height:** It grows 30 - 50 metres tall.

**Diameter at the Breast Height:** A diameter at breast height of up to 2 metres.

**Trunk:** The bole is generally straight and clear of branches for half to two-thirds of the total tree height.

**Altitude:** It grows at an elevation of up to 300 metres and 1,980 metres above sea level.

**Rainfall:** Mean annual rainfall in its native range varies from 800 - 1,270 mm. The tree achieves its best growth on sites with about 2,540 mm annual rainfall, rather than on wetter sites.

**Temperature:** It has also proved to be highly suited for short-rotation plantations in tropical montane regions.





**Njelela seed orchard**

Seed source/ Origin: Zimbabwe

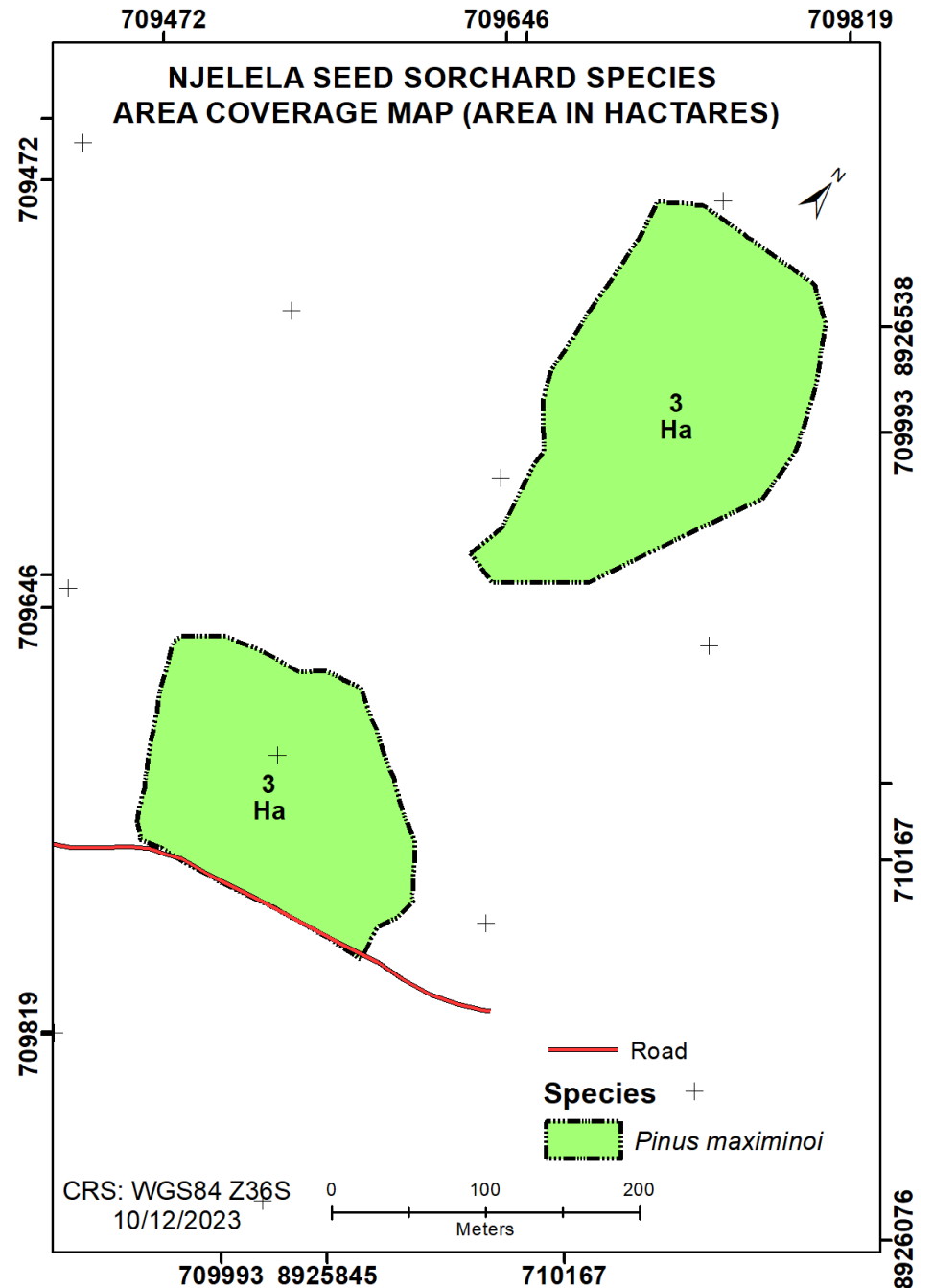
Species name: *Pinus maximinoi*

Planting year: 2018

Area: 6 Ha

Altitude: 1652 m

Coordinates: --9.711042, 34.91246



Portion A

***Pinus maximinoi***

Planting year: 2018

Number of families: 176

Date of photo: 28.11.2023

Area: 3 Ha

Altitude: 1652 m

Coordinate: -9.711042, 34.91246

Management status: Thinned

Start of harvesting: 2023



**Features:**

**Height:** Tree, medium to tall, height to 20-40 meters.

**Diameter at Breast Height:** It ranges from 70-90 (-100+) cm.

**Trunk:** The trunk is monopodial, straight, and slender, the lower half of the bole usually free of branches.

**Altitude:** The elevation is from 450 - 2,800 metres.

**Rainfall:** Mean annual precipitation ranges from around 900 - 2,500mm.

**Temperature:** Mean annual temperatures vary from 17 to 22 °C.

Portion B

***Pinus maximinoi***

Planting year: 2018

Number of families: 176

Date of photo: 28.11.2023

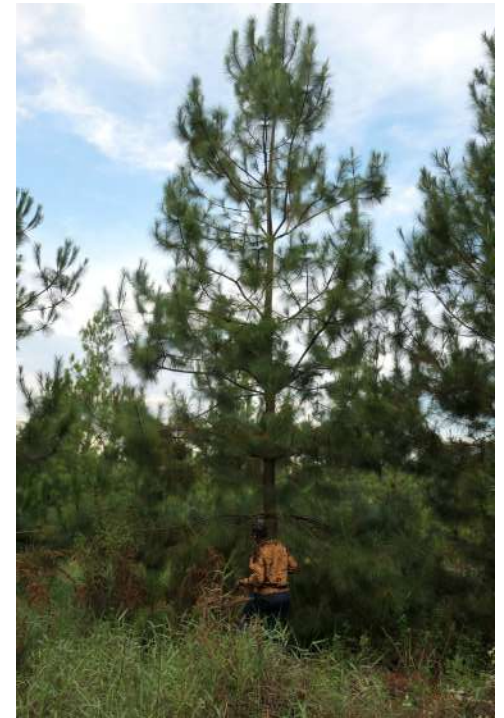
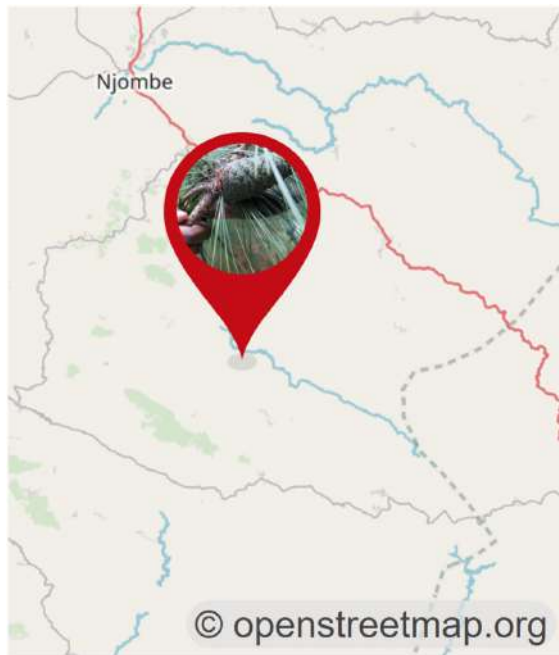
Area: 3 Ha

Altitude: 1618 m

Coordinate: -9.707837, 34.91283

Management status: Thinned

Start of harvesting: 2023



**Features:**

**Height:** Tree, medium to tall, height to 20-40 meters.

**Diameter at Breast Height:** It ranges from 70-90 (-100+) cm.

**Trunk:** The trunk is monopodial, straight, and slender, the lower half of the bole usually free of branches.

**Altitude:** The elevation is from 450 - 2,800 metres.

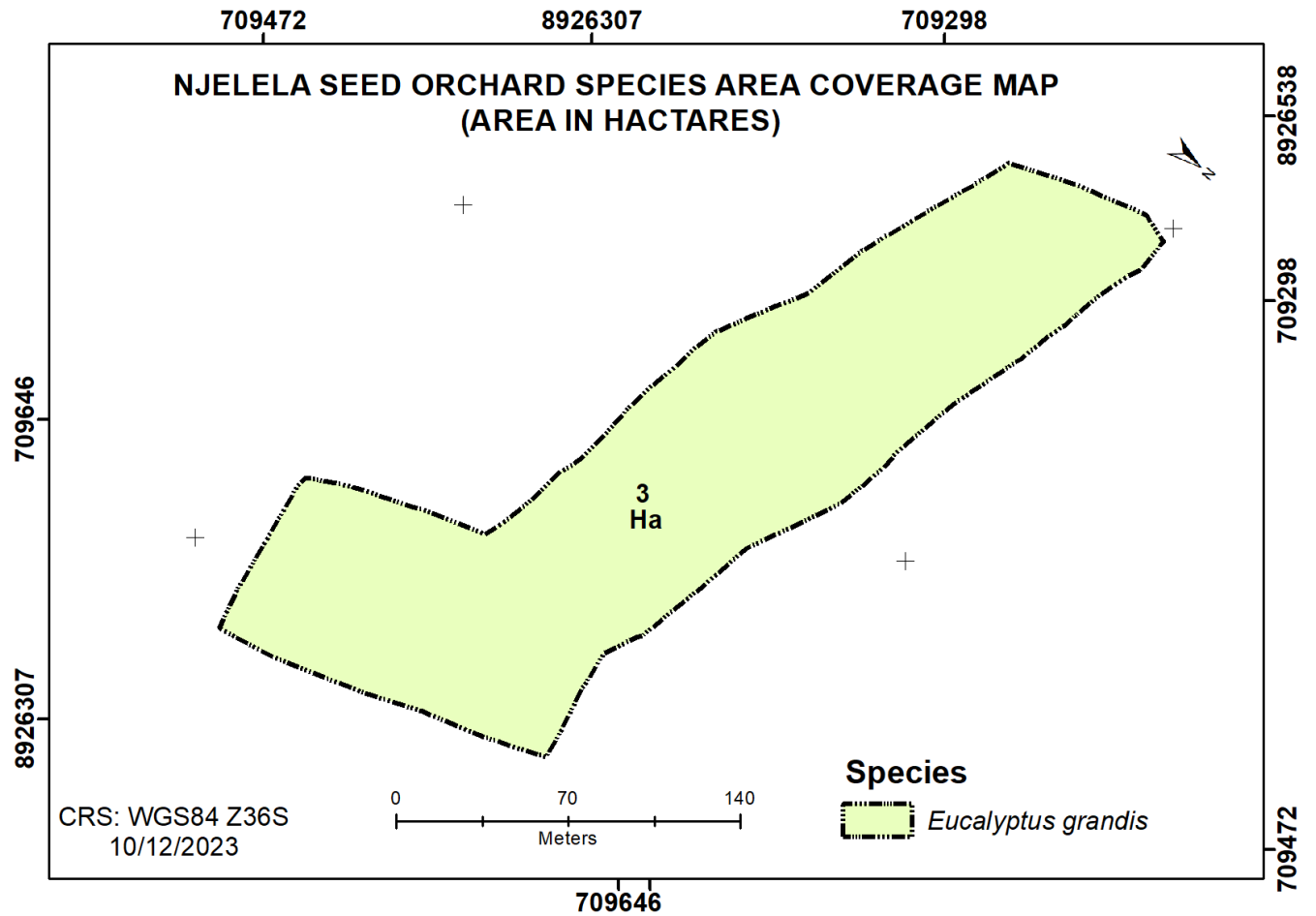
**Rainfall:** Mean annual precipitation ranges from around 900 - 2,500mm.

**Temperature:** Mean annual temperatures vary from 17 to 22 °C.



**Njelela seed orchard**

Seed source/ Origin: Zimbabwe  
Species name: *Eucalyptus grandis*  
Planting year: 2019  
Area: 3 Ha  
Altitude: 1615 m  
Coordinates: -9.707462, 34.9095



## ***Eucalyptus grandis***

Planting year: 2019

Number of families: 200

Date of photo: 28.11.2023

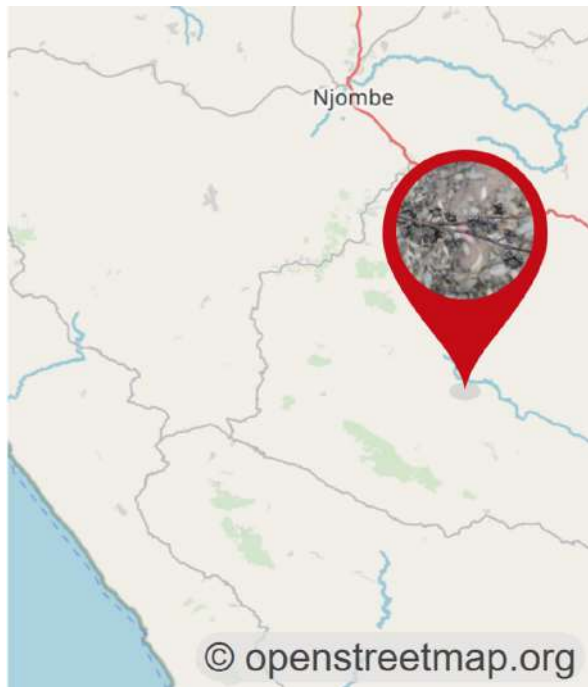
Area: 3 Ha

Altitude: 1615 m

Coordinate: -9.707462, 34.9095

Management status:: Thinned

Start of harvesting: 2024



### **Features:**

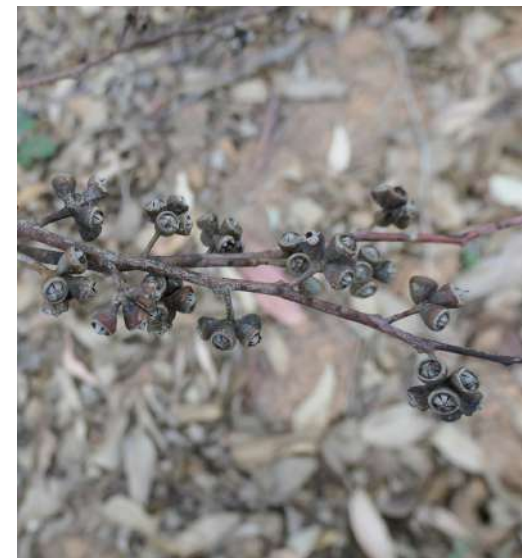
**Height:** It usually grows 40 - 55 metres tall but exceptionally to 75 metres.

**Diameter at Breast Height:** It is about 1.2 - 3m in diameter

**Trunk:** The bole is straight and cylindrical, unbranched for up to 50 - 75% of its height.

**Temperature:** Prefers the humid subtropical and tropical with mean minimum temperatures ranging from 2 - 10°C and mean maximum near 29°C during the hottest month.

**Rainfall:** Mean Annual Rainfall averages 1,020 - 1,780mm.

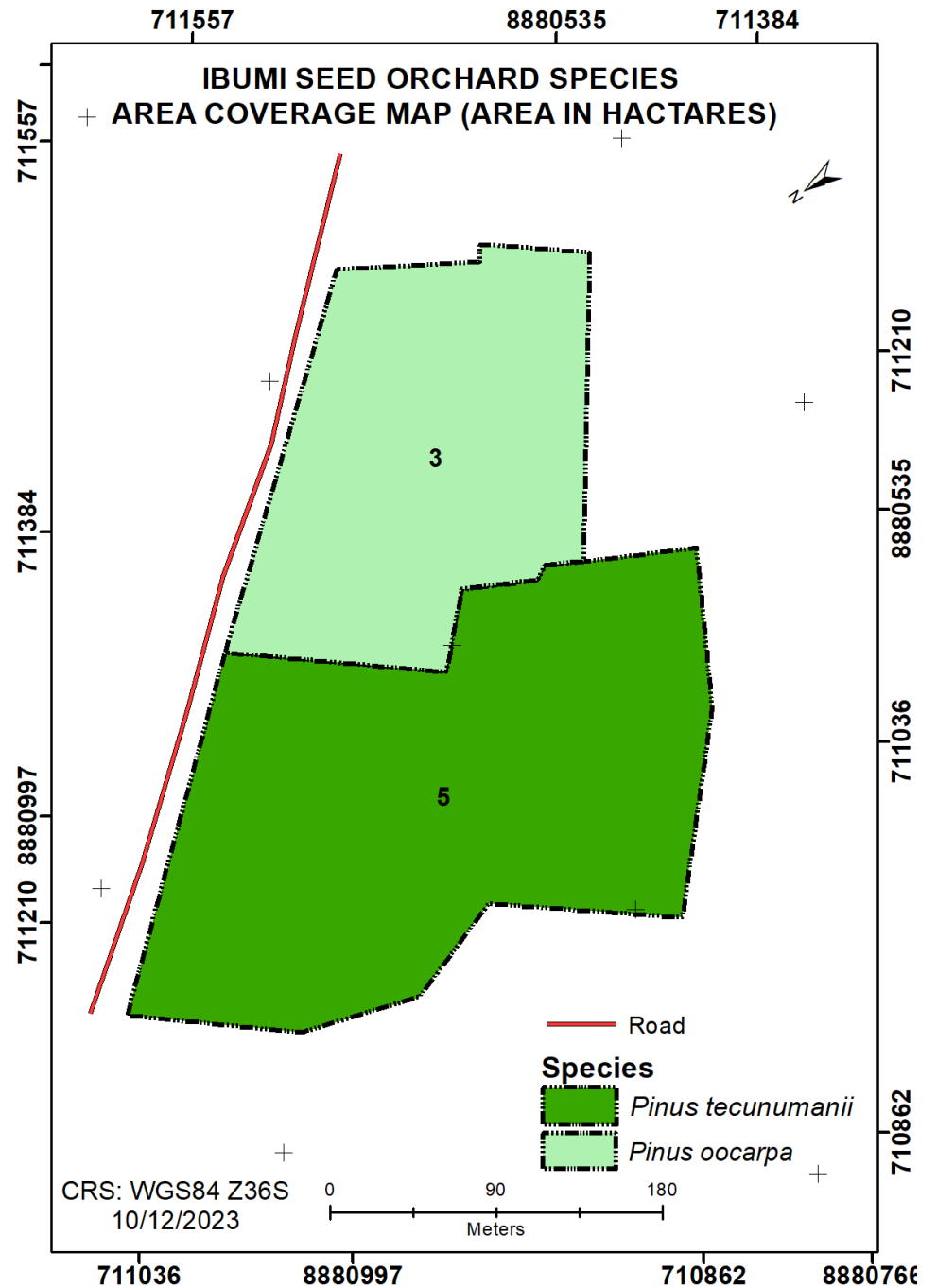






### Ibumi seed orchard

Seed source/ Origin: Zimbabwe  
Species name : *Pinus oocarpa* and  
*Pinus tecunumanii*  
Planting year: 2015  
Area: 8 Ha  
Altitude: 1365 m  
Coordinates:-10.12032, 34.92766



## ***Pinus oocarpa***

Planting year: 2018

Number of families: 140

Date of photo: 28.11.2023

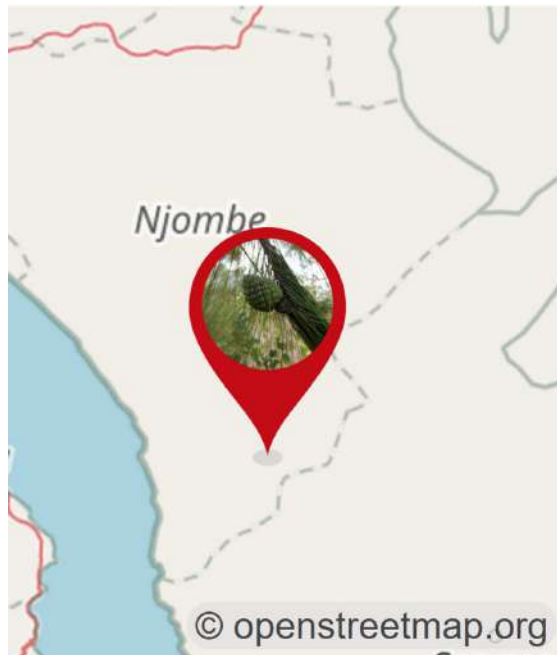
Area: 3 Ha

Altitude: 1365 m

Coordinate: -10.12032, 34.92766

Management status: Thinned

Start of harvesting: 2024



### **Features:**

**Height:** Tree, medium to tall, height to 10-15 or 30-35 m, depending on variety and site condition.

**Diameter at Breast Height:** It has a DBH of 40-60 or 100-125 cm.

**Trunk:** Trunk is monopodial, erect, straight or tortuous, terete, often clear of branches for 2/3 of tree height.

**Altitude:** It occurs at elevations of 1,000 - 2,700 metres, reaching its best development at elevations between 1,200 - 1,800 metres.

**Rainfall:** It grows in areas where the mean annual rainfall can be as low as 600 - 800 mm.

**Temperature:** It can tolerate a dry season of up to 5 months. Mature plants require a sunny position, though young plants can tolerate some shade.



## *Pinus tecunumanii*

Planting year: 2018

Number of families:196

Date of photo: 28.11.2023

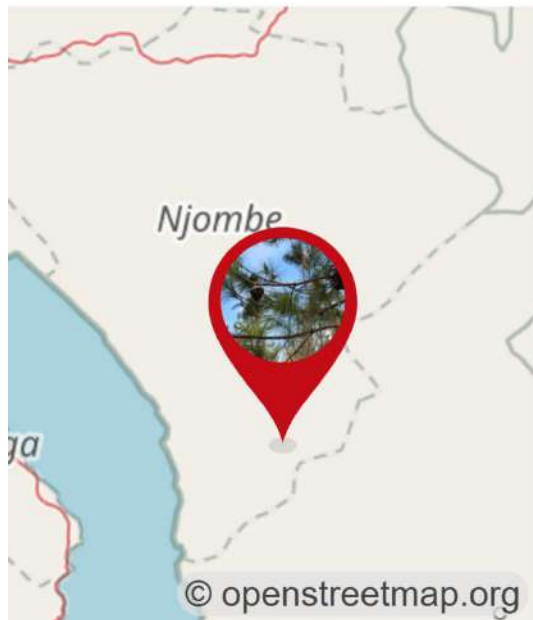
Area: 5 Ha

Altitude: 1365 m

Coordinate: -10.12098,  
34.928415

Management status:: Thinned

Start of harvesting: 2024



### Features:

**Height:** Large evergreen trees can reach 50 - 55 m tall.

**Diameter at Breast Height:** trunk to 1.2m – 1.4 m.

**Trunk:** monopodial, erect, straight, bole of large trees usually clear of branches. it can grow a straight bole with large dimensions.

**Altitude:** Growing in the tropical, montane forests, at elevations of 550 - 2,700 metres.

**Rainfall:** It grows in areas with a mean annual rainfall within the range of 1,000 - 3,000mm and a dry season of up to 6 months.

**Temperature:** It requires a sunny position.





**Usagatikwa seed orchard**

Seed source/ Origin: Tanzania and South Africa

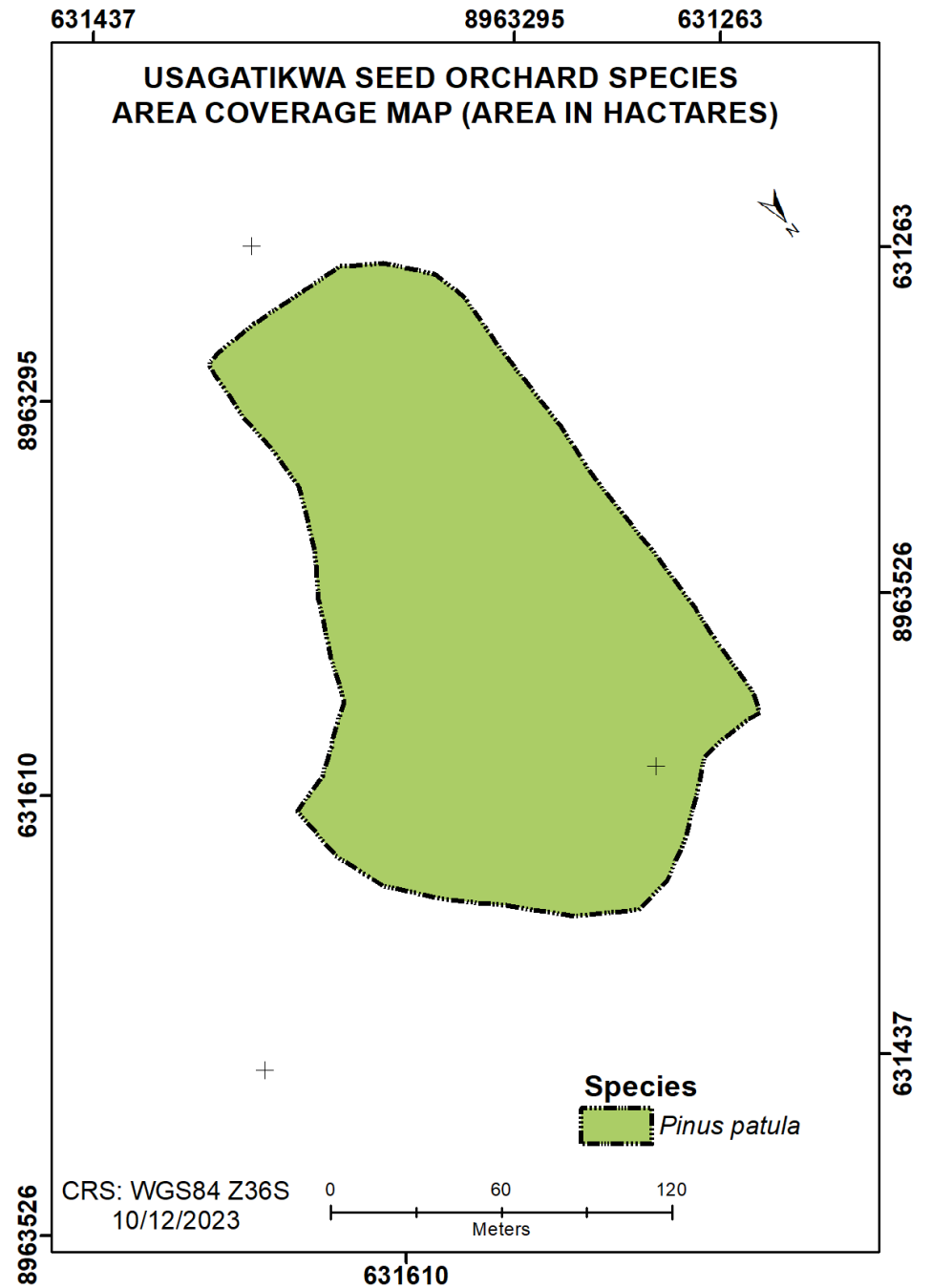
Species name: *Pinus patula*

Planting year: 2019

Area: 3 Ha

Altitude: 1923 m

Coordinates: -9.376138, 34.197152



## ***Pinus patula***

Planting year: 2019

Number of families: 144

Date of photo: 01.12.2023

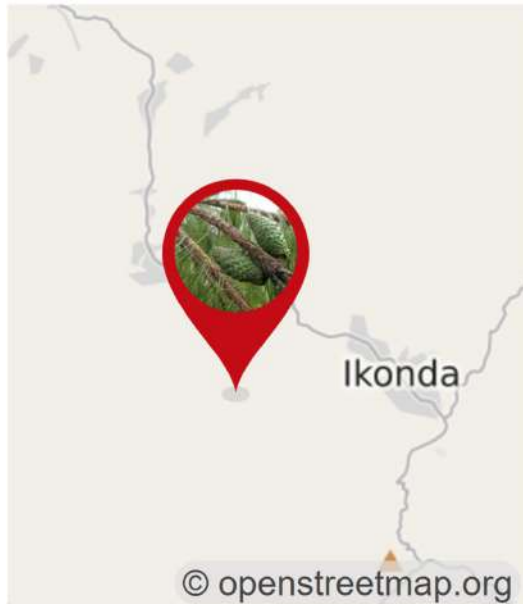
Area: 3 Ha

Altitude: 1923 m

Coordinate: -9.376138, 34.197152

Management status:: Thinned

Start of harvesting: 2024



### **Features:**

**Height:** Tree, usually tall, height to 35-40 m

**Diameter at Breast Height:** It has a diameter of 90-100 cm.

**Trunk:** The trunk is monopodial, erect, straight, slender, terete, and commonly free of branches for 2/3 or more of its length.

**Altitude:** Found in a variety of forest types, with conifers or with broad-leaved trees; at elevations from 1,500 - 3,000 metres. It prefers a sunny position.

**Rainfall:** It is found mainly in areas with abundant annual precipitation ranging from 1,000 - 2,200mm, though it can tolerate 750 - 3,000mm.

**Temperature:** It grows best in areas where annual daytime temperatures are within the range of 18 - 29°C, but can tolerate 10 - 33°C.

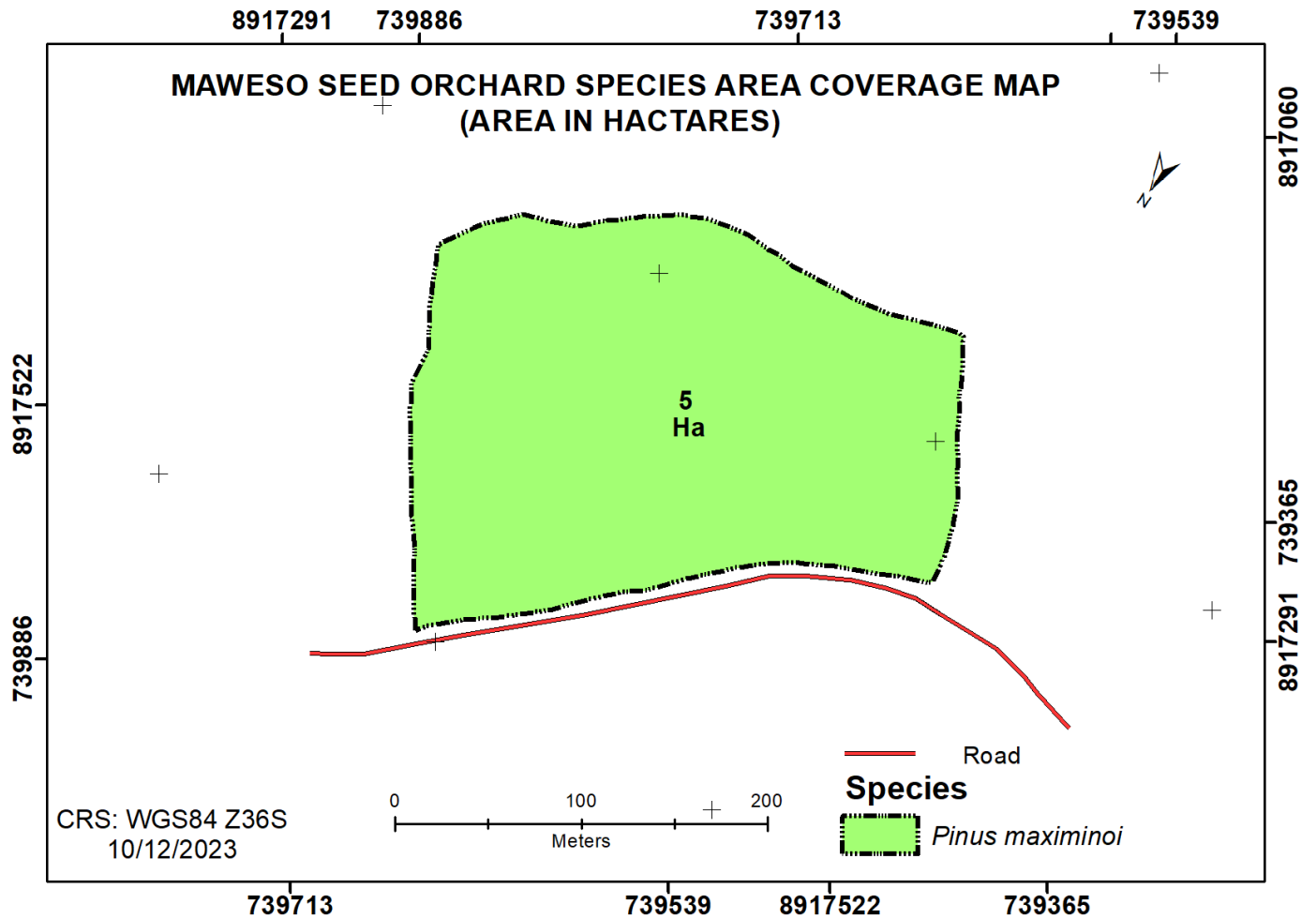






**Maweso seed orchard**

Seed source/ Origin: Zimbabwe  
Species name: *Pinus maximinoi*  
Planting year: 2018  
Area: 5 Ha  
Altitude: 1299 m  
Coordinates: -9.788095°, 35.184757°



***Pinus maximinoi***

Planting year: 2018

Number of families: 182

Date of photo: 07.12.2023

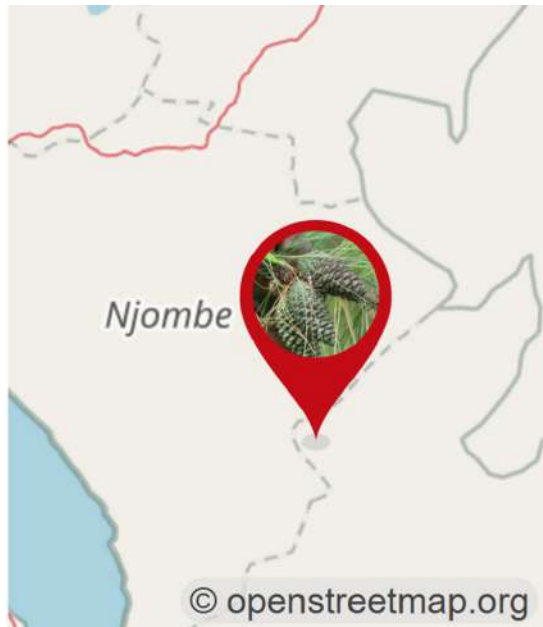
Area: 5 Ha

Altitude: 1299 m

Coordinate: -9.788095°,  
35.184757°

Management status::

Thinned



**Features:**

**Height:** Tree, medium to tall, height to 20-40 meters.

**Diameter at Breast Height:** It ranges from 70-90 (-100+) cm.

**Trunk:** The trunk is monopodial, straight, and slender, the lower half of the bole usually free of branches.

**Altitude:** The elevation is from 450 - 2,800 metres.

**Rainfall:** Mean annual precipitation ranges from around 900 - 2,500mm.

**Temperature:** Mean annual temperatures vary from 17 to 22 °C.





**Utli seed orchard**

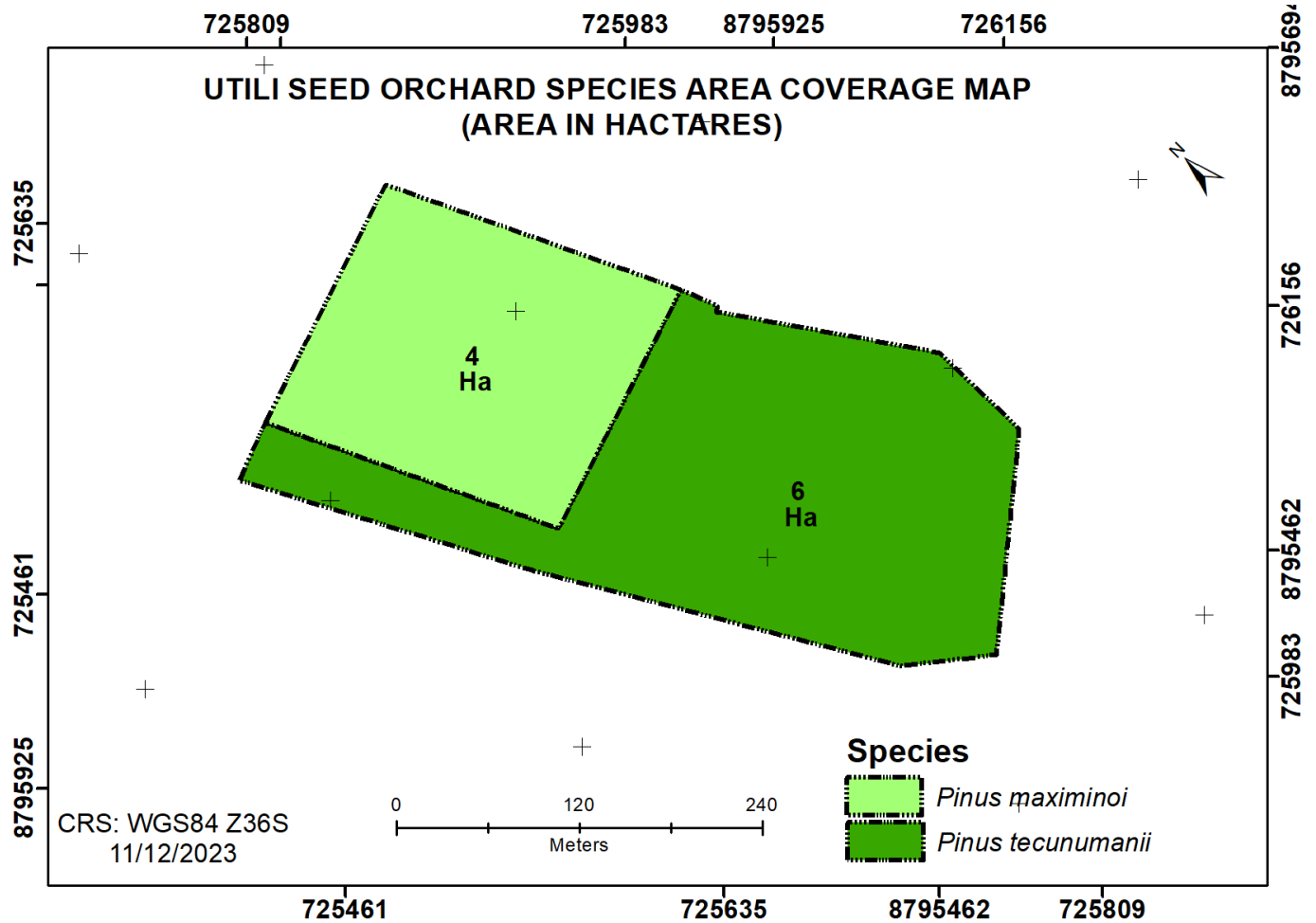
Seed source/ Origin: Zimbabwe  
Species name: *Pinus maximinoi*  
and

*Pinus tecunumanii*  
Planting year: 2018

Area: 10 Ha

Altitude: 1410 m

Coordinates: -10.886379°,  
35.065671°



## *Pinus maximinoi*

Planting year: 2018

Number of families: 183

Date of photo: 08.12.2023

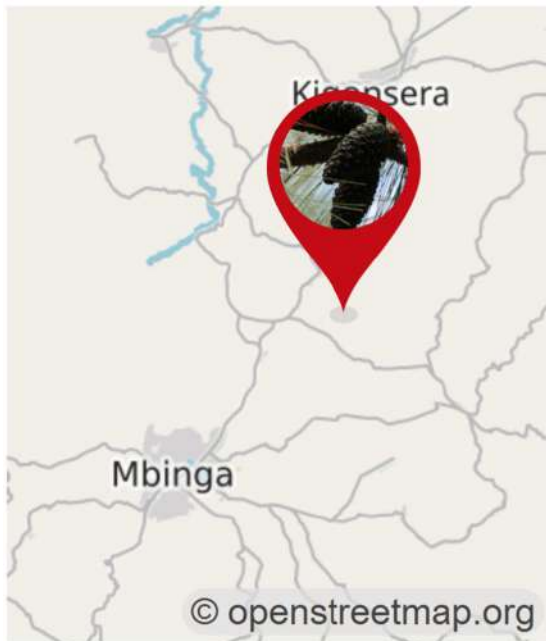
Area: 4 Ha

Altitude: 1410

Coordinate: -10.886379°,  
35.065671°

Management status:: Thinned

Start of harvesting: 2024



### Features:

**Height:** Tree, medium to tall, height to 20-40 meters.

**Diameter at Breast Height:** It ranges from 70-90 (-100+) cm.

**Trunk:** The trunk is monopodial, straight, and slender, the lower half of the bole usually free of branches.

**Altitude:** The elevation is from 450 - 2,800 metres.

**Rainfall:** Mean annual precipitation ranges from around 900 - 2,500mm.

**Temperature:** Mean annual temperatures vary from 17 to 22 °C.



## *Pinus tecunumanii*

Planting year: 2018

Number of families 196

Date of photo: 08.12.2023

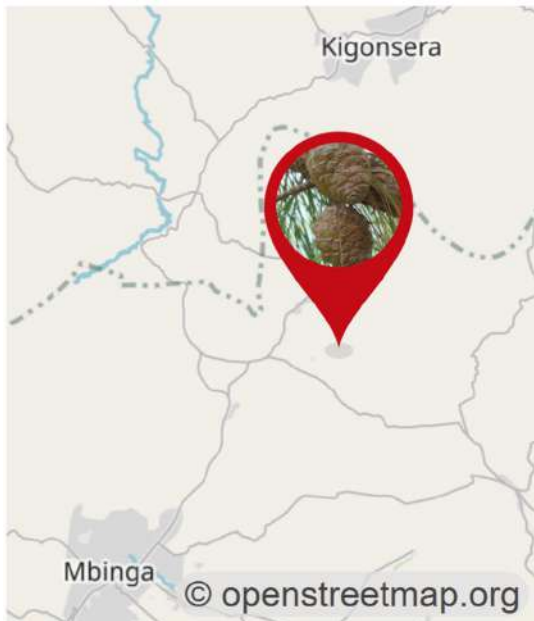
Area: 6 Ha

Altitude: 1410 m

Coordinate: -10.886379°,  
35.065671°

Management status::

Thinned



### Features:

**Height:** Large evergreen trees can reach 50 - 55 m tall.

**Diameter at Breast Height:** trunk to 1.2m – 1.4 m.

**Trunk:** monopodial, erect, straight, bole of large trees usually clear of branches. it can grow a straight bole with large dimensions.

**Altitude:** Growing in the tropical, montane forests, at elevations of 550 - 2,700 metres.

**Rainfall:** It grows in areas with a mean annual rainfall within the range of 1,000 - 3,000mm and a dry season of up to 6 months.

**Temperature:** It requires a sunny position.





**Ifinga seed orchard**

Seed source/ Origin: Zimbabwe

Species name: *Eucalyptus saligna*

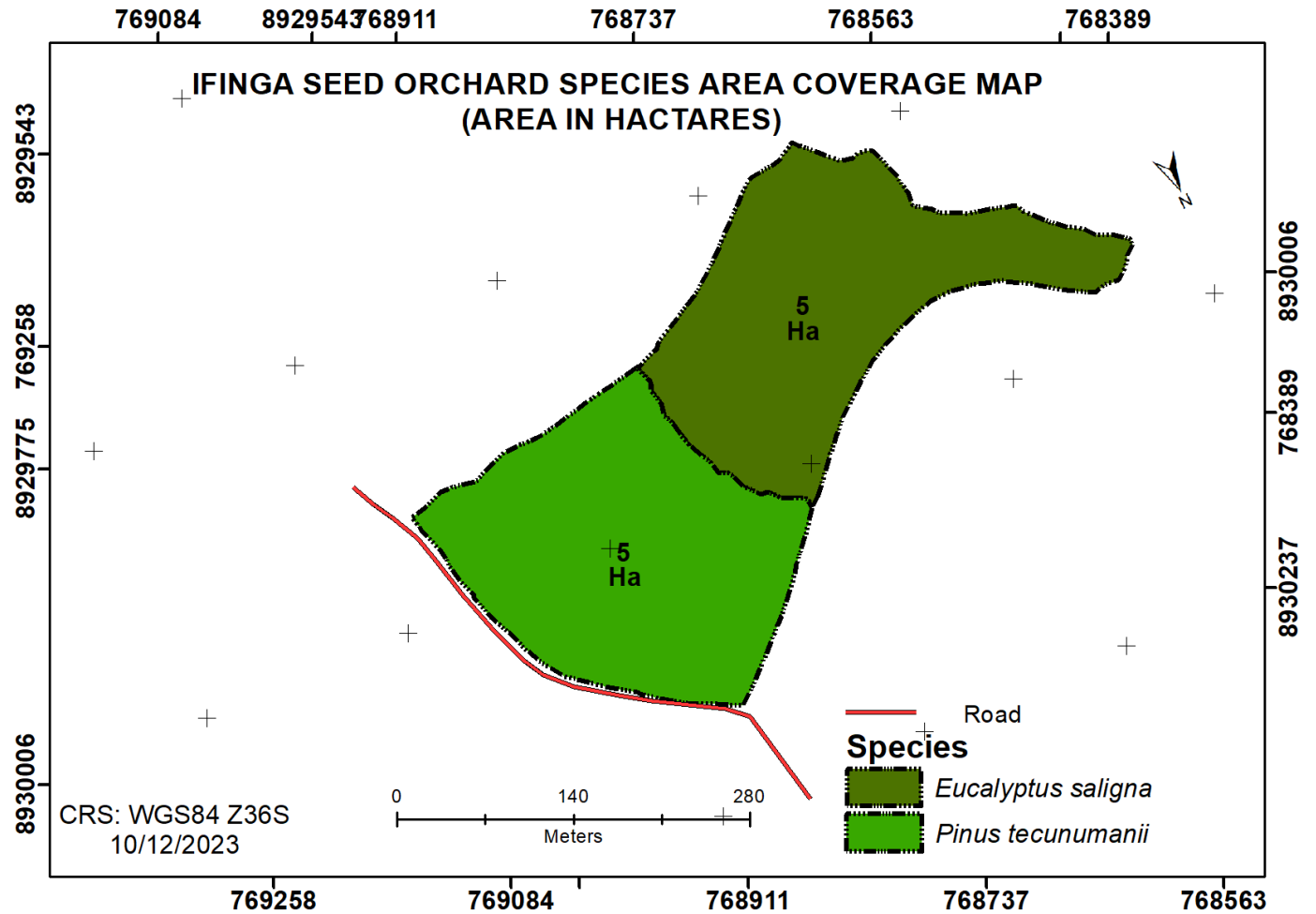
and *Pinus tecunumanii*

Planting year: 2018

Area: 10 Ha

Altitude: 1277 m

Coordinates: -9.672191°, 35.450483°



## ***Eucalyptus saligna***

Planting year: 2018

Number of families: 196

Date of photo: 05.12.2023

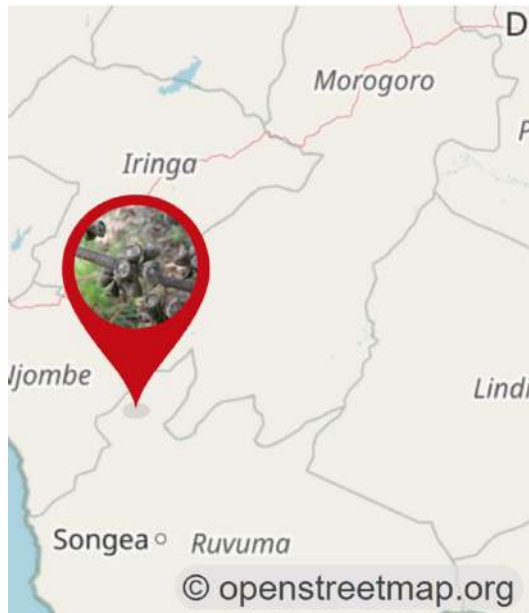
Area: 5 Ha

Altitude: 1277 m

Coordinate: -9.672191°,  
35.450483°

Management status: Thinned

Start of harvesting: 2023



### **Features:**

**Height:** It grows 30 - 50 metres tall.

**Diameter at the Breast Height:** A diameter at breast height of up to 2 metres.

**Trunk:** The bole is generally straight and clear of branches for half to two-thirds of the total tree height.

**Altitude:** It grows at an elevation of up to 300 metres and 1,980 metres above sea level.

**Rainfall:** Mean annual rainfall in its native range varies from 800 - 1,270 mm. The tree achieves its best growth on sites with about 2,540 mm annual rainfall, rather than on wetter sites.

**Temperature:** It has also proved to be highly suited for short-rotation plantations in tropical montane regions.

## ***Pinus tecunumanii***

Planting year: 2018

Number of families: 204

Date of photo: 05.12.2023

Area: 5 Ha

Altitude: 1277 m

Coordinate: -9.672191°,  
35.450483°

Management status: Thinned

Start of harvesting: 2024



### **Features:**

**Height:** Large evergreen trees can reach 50 - 55 m tall.

**Diameter at Breast Height:** trunk to 1.2m – 1.4 m.

**Trunk:** monopodial, erect, straight, bole of large trees usually clear of branches. it can grow a straight bole with large dimensions.

**Altitude:** Growing in the tropical, montane forests, at elevations of 550 - 2,700 metres.

**Rainfall:** It grows in areas with a mean annual rainfall within the range of 1,000 - 3,000mm and a dry season of up to 6 months.

**Temperature:** It requires a sunny position



**Ifinga seed stand**

Seed source/ Origin: Zimbabwe

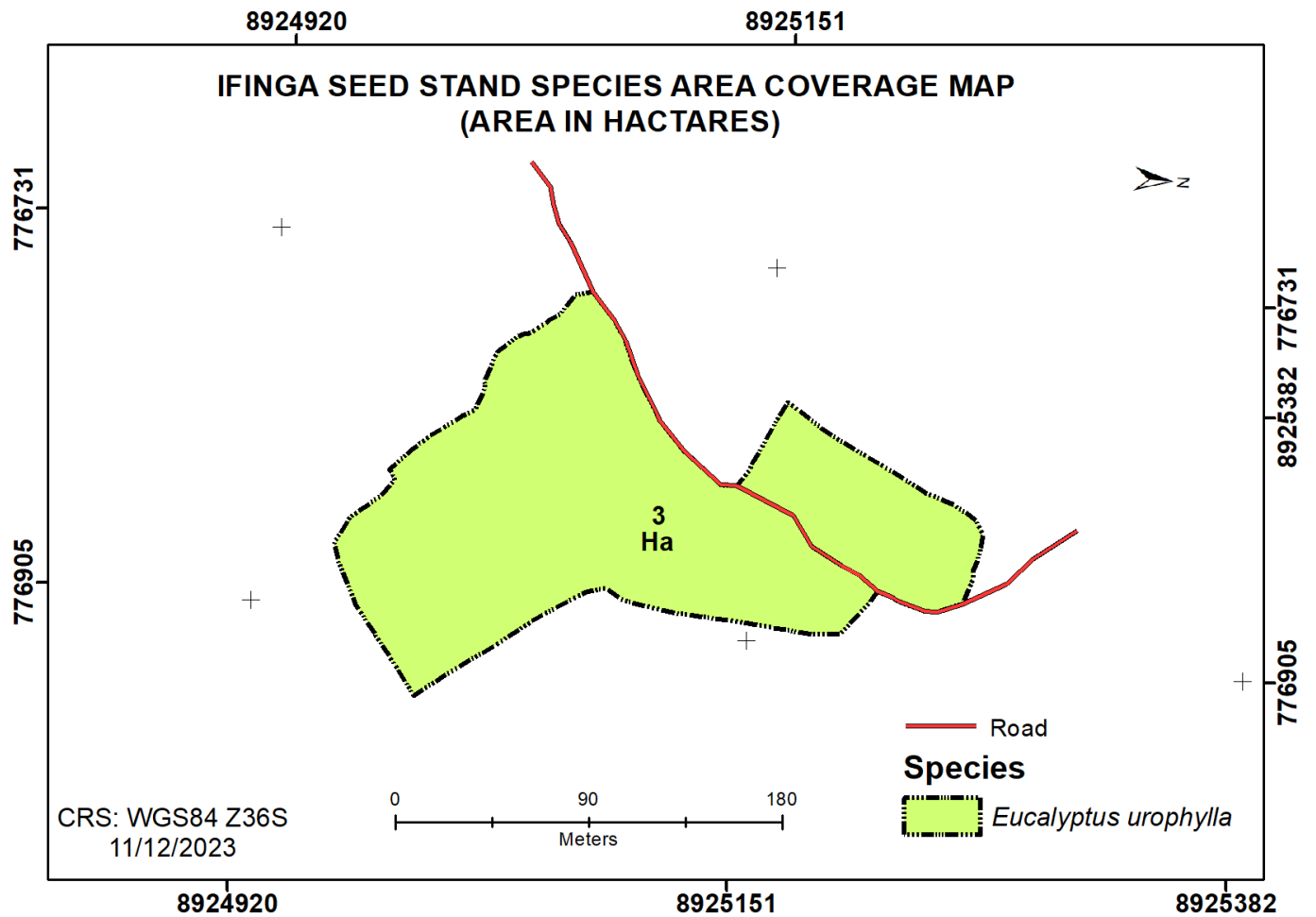
Species name: *Eucalyptus urophylla*

Planting year: 2019

Area: 3 Ha

Altitude: 1294 m

Coordinates: -9.716155°, 35.523102°



## *Eucalyptus urophylla*

Planting year: 2019

Date of photo: 05.12.2023

Area: 3 Ha

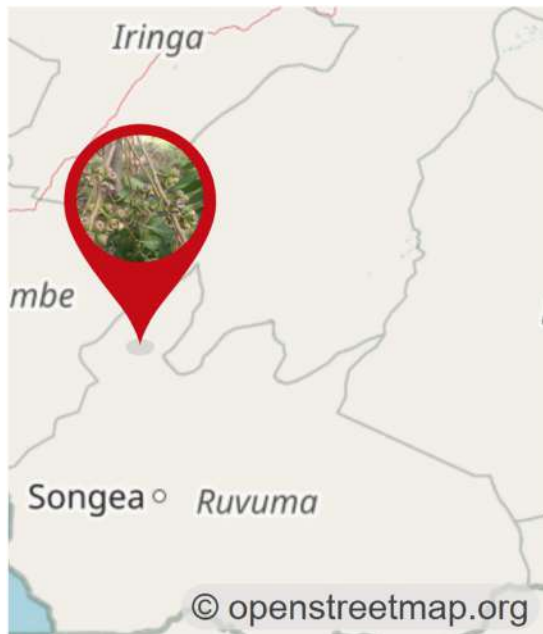
Altitude: 1294 m

Coordinate: -9.716155°,

35.523102°

Management status:: Not thinned

Start of harvesting: Mature



### Features:

**Height:** Tree up to 35 - 45 m tall, or, in unfavourable conditions, a shrub.

**Diameter at the Breast Height:** up to 2 m in diameter

**Trunk:** Bole is straight and branchless for up to 30 m. Bark variable depending on moisture and altitude, usually persistent and subfibrous, smooth to shallow, close longitudinal fissures, red-brown to brown; sometimes rough, especially at the base of the trunk.

**Altitude:** It grows between 350 - 3000 meters above sea level.

**Rainfall:** Mean annual rainfall is between 1000 - 1500 mm.

**Temperature:** Mean annual temperature is between 80C - 290C.





**Mkongotema seed stand**

Seed source/ Origin: Zimbabwe

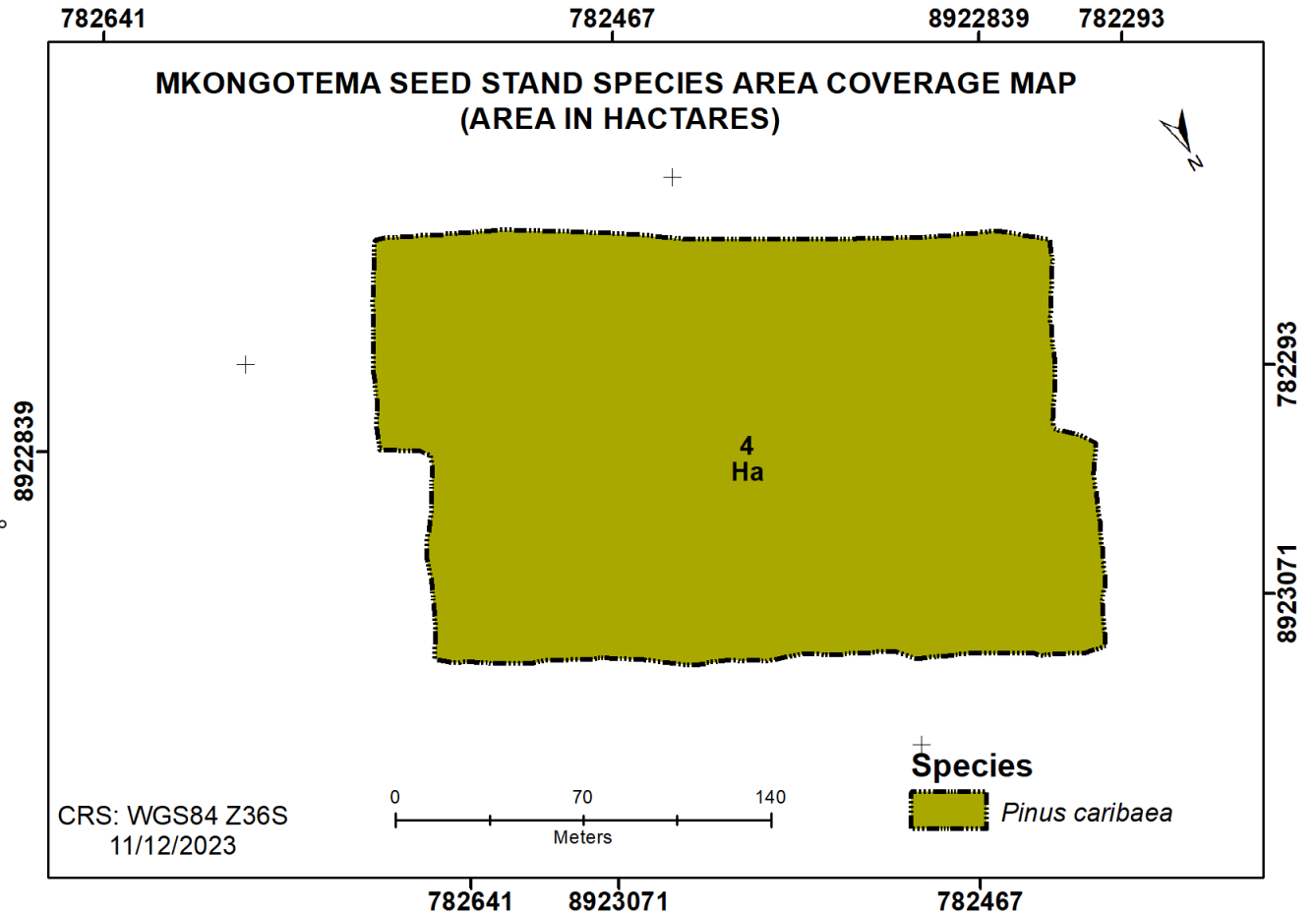
Species name: *Pinus caribaea*

Planting year: 2019

Area: 4 Ha

Altitude: 1075 m

Coordinates: -9.734654°, 35.574575°



## ***Pinus caribaea***

Planting year: 2019

Date of photo: 05.12.2023

Area: 4 Ha

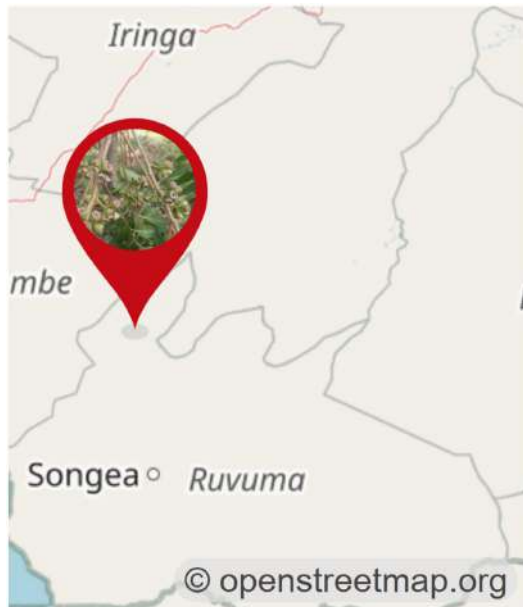
Altitude: 1075 m

Coordinate: -9.734654°,

35.574575°

Management status:: Not  
thinned

Start of harvesting: Mature



### **Features:**

**Height:** The tree grows from 20 - 35 m tall, but it is usually smaller when grown in plantations.

**Diameter at the Breast Height:** Trunk to 0.5m - 1 m diameter.

**Trunk:** The bole is generally straight and well-formed. The lower branches are large, horizontal and drooping; the upper branches often ascend to form an open, rounded pyramidal crown, whilst young trees have a dense, pyramidal crown. Plantation-grown trees can be free of branches for up to 21 metres.

**Altitude:** Hillsides and plains at low elevations from sea level to 1500 metres.

**Rainfall:** It grows in areas where the mean annual rainfall is 1,000 - 3,000mm.

**Temperature:** It grows best in a sunny position. The mean annual temperature is in the range 22 - 37°C.





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