

Rosemary (*Rosmarinus officinalis* L.) Variety Verification Trial at Wondogenet, South Ethiopia

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Introduction

Rosemary (*Rosmarinus officinalis* L.) is an evergreen, shrubby herb that belongs to mint family, *Lamiaceae*. Rosemary is a perennial crop and will remain in the site for 5 years or more, depending on crop performance. One harvest is made per year, with first harvest made in the year after planting. Well drained sandy loam soil with pH of 4.5 to 8.7 is ideal for rosemary production. Rosemary grows for its leaves and essential oil obtained from stems, leaves, and flower twigs. Rosemary leaves have many traditional uses based on their antibacterial and spasmolytic actions. The leaves are crushed into meats, fish, potato salads to prevent food poisoning and flowers are laid in clothes and cupboards to destroy moths [1-4]. Rosemary oil is colorless to pale yellow with characteristic flavor and camphoraceous taste. It is largely used for food, flavor and fragrance industries. Rosemary oil is used for all variety respiratory problems colds, sinusitis, lung congestion and asthma. The oil is used as perfume in ointments, shampoos and soaps. The leading countries in production of essential oil of rosemary are Morocco, Spain, USA, and Tunisia [5]. Different types of rosemary grown worldwide. In Ethiopia different rosemary varieties are produced for different purposes like fresh leaf, dry leaf, and/or essential oil yield. It is well distributed and grown by the community and investors in many parts of the country. However, no rosemary variety registered in the country while there is large production and marketing opportunities. Thus, in order to fulfill variety gap, identification, evaluation and registration of promising rosemary varieties research was proposed together with the activities of aromatic and medicinal plants research projects at WondoGenet Agricultural Research Center, south Ethiopia. Different accessions were collected and evaluated from different parts of the country. Based on their leaf yield and essential oil yield, three candidate varieties were selected and promoted for verification in the country which is the first to be released. Thus, the objective of the trial was to verify and register rosemary as variety in Ethiopia.

Methods

Three candidate varieties were proposed by names WG-rosemary-I, WG-rosemary-II, and WG-rosemary-III (Figure 1). Preliminary performance of the candidate varieties sent to national variety release committee (Tables 1 and 2). Verification trial was conducted at eight locations namely Wondogenet, Entaye, Hawassa, Green mark herbs, koka, DebreZeit, Holeta, and Menagesha during 2014-2015 cropping season on plot area of 10 metre × 10 metre at each site. Seedlings prepared on polyethylene tube transplanted on appropriately prepared field and adequate agronomic practices were conducted during evaluation period. Supplementary irrigation was given during growing season. Essential oil extraction was done using hydro-distillation method in a Clevenger apparatus according to Guenther. No chemical fertilizer and pesticide was used. After six month of transplanting all trial sites were evaluated by national variety release committee.

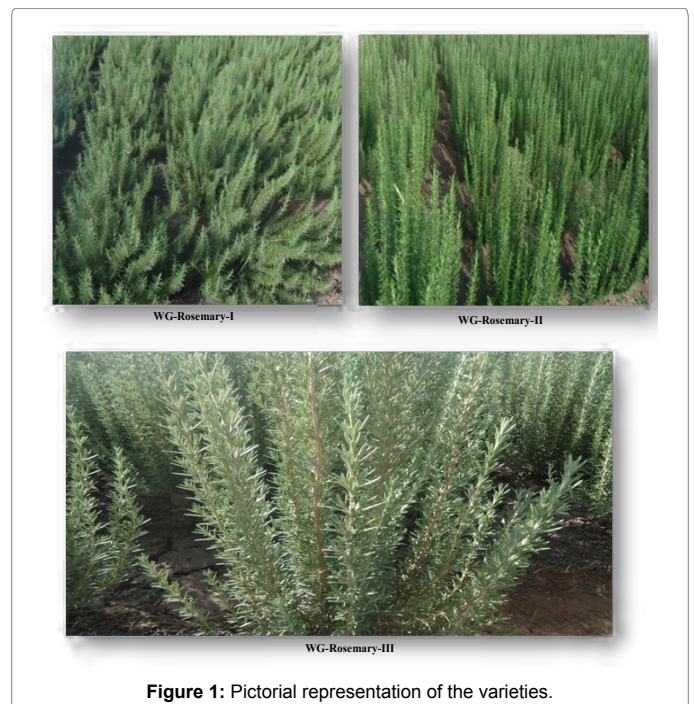


Figure 1: Pictorial representation of the varieties.

Results and Recommendation

The three candidates were evaluated by national variety release committee on all testing locations and registered and released as the first variety in the country. These can be used as recognized starting material for local producers, national and international investor for further production purposes.

Conclusion

The three rosemary varieties can easily cultivated in Ethiopia; so that, local producers, investors, research organizations, universities can use them for production and further research purposes.

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Variety character	Growth habit	Leaf color	Leaf width	Flower color	Recommended for
WG-rosemary-I	Creepers	Gray green	Narrower	-	Essential oil Yield
WG-rosemary-II	Upright	Dark green	Broader	Dark blue	Dried Leaf yield
WG-rosemary-III	Intermediate	Light green	Intermediate	Pale blue	Fresh leaf yield

Table 1: Morphological characteristics of rosemary varieties.

Item/Character	Variety Name		
	WG-rosemary-I	WG-rosemary-II	WG-rosemary-III
Year of registration	2015	2015	2015
Altitude (masl)	1500-3000	1500-3000	1500-3000
Rainfall (mm)	>500	>500	>500
Soil type	Having fertile, not water logging soil	Having fertile, not water logging soil	Having fertile, not water logging soil
Spacing (cm)	60 × 90	60 × 60	60 × 60
Harvesting time	Six month	Six month	Six month
Crop pest reaction	Powdery mildew	Powdery mildew	Powdery mildew
Leaf yield (ton/ha)	2.57	2.84	2.42
Essential Oil content (% w/w)	0.74-1.05	0.64-1.01	0.53-0.82
Essential Oil yield (kg/ha)	123.79-293.58	110.96-275.93	82.41-207.23

Highest and lowest essential oil yield (kg/ha) was recorded at wondogenet and Holleta for all the three varieties respectively.

Table 2: Detail information of the varieties.

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References

- Begum A, Sandhya S, Ali S, Vinod K, Reddy S, et al. (2013) An in-depth review on the medicinal flora *rosmarinus officinalis* (lamiaceae). Acta Sci Pol Technol Aliment 12: 61-73.
- Getinet A, Girma T, Eyasu A (2013) Registration of Crop Varieties A Unique Purple Castor (*Racinnus communis* L.) Variety: Hiruy. Ethiop J Agric Sci 24: 163-164.
- Jalal K, Rahmat M, Mohammad F, Himan N (2009) Influence of Drying Methods, Extraction Time, and Organ Type on Essential Oil Content of Rosemary (*Rosmarinus officinalis* L.). Nature and Science 7: 11.
- Leithy S, Meseiry T, Abdallah E (2006) Effect of Biofertilizer, Cell Stabilizer and Irrigation Regime on Rosemary Herbage Oil Yield and Quality. Journal of Applied Sciences Research 2: 773-779.
- Negi KS, Mishra AC, Shukla HY, Sharma AK (2009) Effect of spacing on the performance of rosemary (*rosemarinus officinaris* L.) blue flowered genotype (NIC-23416) in mid hills of Uttarakhand under rainfed conditions. Natural Product Radiance 8: 528-531.