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Rosemary (*Rosmarinus officinalis* L.) variety verification trial at Wondogenet, south Ethiopia

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Title: 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 (Begum *et al*, 2013). 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 (Negi *et al*, 2009). 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 county 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.

Method

Three candidate varieties were proposed by names WG-rosemary-I, WG-rosemary-II, and WG-rosemary-III. Preliminary performance of the candidate varieties sent to national variety release committee. 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 10metre *10metre 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. No chemical fertilizer and pesticide was used. After six month of transplanting all trial sites were evaluated by national variety release committee.

Result 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.

Table1. Morphological characteristics of rosemary varieties

| Variety Character | Growth habit | Leaf color | Leaf width | Flower color | Recommended for |
|-------------------|--------------|-------------|--------------|--------------|---------------------|
| WG-rosemary-I | Creeper | 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 |

Table2. Detail information of the 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 X 90 | 60 X 60 | 60 X 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) | 0.87 | 0.86 | 0.69 |
| Essential Oil yield(kg/ha) | 210.57 | 196.89 | 152.96 |

Pictorial representation of the varieties

WG-rosemary-I



WG-rosemary-II





WG- rosemary-III

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To: OMICS publishing groups

Dear Editors,

I am writing to submit our manuscript entitled "**Rosemary (*Rosmarinus officinalis L.*) variety verification trial at Wondogenet, south Ethiopia** " short communication consideration for publication.

Plants have always been used extensively by humans for food, fuel, construction, clothing, medicine, decoration, cleaning, perfuming, lubricating and for aromatic purpose. Of these aromatic and medicinal plants are of high importance as they play a valuable and important role in economic, social, cultural and ecological aspects of local communities. Rosemary is largely produced by both small scale and large scale farms in Ethiopia. It is strongly demand driven plant as it growth in many parts of the country. However, best variety selection and enhancement was planned in aromatic and medicinal plants research project at Wondogenet agricultural research center. So that, after evaluating rosemary varieties being produced in the country three were evaluated and released as variety by national variety verification committee. Detail of the varieties is given and we ask for publishing the work so as to provide the information for uses. Hence, readers can get this information from journal.

Thank you for receiving our manuscript of original work. We appreciate your effort and look forward to your response.

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