ABSTRACT: The harvest management studies on an improved lemongrass strain Jor Lab L_2, were carried out at the farm of regional research Laboratory Jorhat during 1991-94. The crop was harvested at 60, 70, 80, 90 and 100 days interval. Maximum oil yield was obtained when harvested at 90 days interval. The citral content ranged from 88 to 90% irrespective of crop age and harvesting schedule. Harvesting time has an important bearing on oil yield in Jor Lab L_2.

INTRODUCTION

Lemongrass (Cymbopogon flexuosus) is an essential oil bearing commercially viable plant. The major constituent of lemongrass oil is citral, which is the starting material for α and β ionones. α ionone is used in flavours, cosmetics and perfumes, while β ionone is used for the manufacture of vitamin A (Thappa et al, 1981) Besides, the oil also has utility as bactericide and insect repellent. In essential oil bearing plants like lemongrass, yield and quality are mainly dependent on cultivation and management practices (Singh et al, 1978 and sarma et al 1993). Keeping this aspect in view the present investigation on harvest management of Jor Lab L-2 was carried out during 1991-94.

MATERIALS AND METHODS

Experiments on lemongrass strain Jor Lab L-2 was carried out at the experimental farm of the regional research Laboratory, Jorhat during 1991-94. The crop was planted by slips on 6 April, 1991 at a spacing of 60x70cm in plots of 4.5 x 3m size in randomized block design with four replications. The soil was sandy loam having pH 5.5. Nitrogen @ 40kg. per harvest per hectare was applied. P_2O_5 and K2) @ 50 Kg/ha were applied basally. Weeding and irrigation were done on the 1st year as and when required. Observations were recorded on herb yield, oil yield, oil content, citral yield and citral content. First harvest was done in May 1992 and after that harvesting was done as per treatment. There were six harvests for 60 days intervals, five harvests for 70, four harvests for 80 days intervals, four harvests for 90 and three harvests for 100 intervals respectively for two years.

Oil for citral analysis was extracted by Clevanger’s apparatus, whereas oil yield/ha was calculated on the basis of still (100 kg/batch) recovery. The citral content of a representative sample of essential oil at each harvest was determined following the method described by Guenther (1972).
tried with Jor Lab L-2 with a view to determine the optimum time of harvest for higher production of herb and oil. Results indicated that there was no significant differences between the treatment with respect to herb yield (Table 1). Similar results have been reported in palmarose by Kuriakose (1989). However, maximum herb yield (59.3 and 63.1 t/ha) was obtained under 100 days harvesting schedule for 1992 and 1993 respectively. The highest oil yield of 300.7 and 333.8 kg/ha were recorded under 90 days harvesting schedule which were significantly higher over the other harvesting schedule. The increase in herbage and oil yield by harvesting in optimum stage compared to early and delayed harvesting has also been reported by Chander et al (1983) and Gulati et al (1978) in Japanese mint and menthe piperita respectively.

It is interesting to note that maximum oil yield (300.7 and 333.8 kg/ha) was obtained under 90 days harvesting schedule although the fresh herbage (59.3 and 63.1 t/ha) was maximum in 100 days harvesting schedule showing that higher herbage only is not suffering to produce higher oil yield, emphasizing the need of proper harvest management, the present findings are in conformity with the earlier reports by Pal et al (1990). A perusal of the results showed that 90 days harvesting schedule had 38.0, 36.2, 24.1 and 3.3 percent higher oil yield per hectare over those harvested by 60, 70, 80 and 100 days harvesting schedule respectively. The higher oil yield in 90 days harvesting schedule may be attributed to the effects of various plant characters such as oil content and dry matter accumulation in leaves as also reported by Bhardwaj and Kaushal (1990) while working on menthe piperita. There was a slight variation in citral content due to difference in harvesting schedule which was in the range of 88.14 to 90.58 per cent. However, Maximum citral yield (272.5 and 302.5 Kg/ha) was found under 90 days harvesting schedule in 1992 and 1993 respectively. The higher citral yield in 90 days harvesting schedule was due to higher oil yield in that particular treatment. From this study it may be concluded that in case of Jor Lab L-2 a harvesting schedule of 90 obtain maximum essential oil. The production cost per kg of oil will be reduced by following this schedule minimizing the number of harvest thereby saving the cost of harvesting and distillation.

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### Table -1

**HERB YIELD, OIL YIELD, CITRAL YIELD, OIL CONTENT AND CITRAL CONTENT OF JOR LAB L-2 AT DIFFERENT HARVEST INTERVALS**

| Intervals of harvest (Days) | Fresh herb yield (tonne /ha) | Oil (%) still basis | Oil yield (KG/ha) still basis | Citral content (%) | Total citral (Kg / ha) |
|----------------------------|-------------------------------|---------------------|------------------------------|-------------------|------------------------|
|                            | 1992                          | 1993                | Pooled                       | 1992              | 1993                   | Pooled                 |
| 60                         | 51.4                          | 53.2                | 52.3                         | 0.442             | 225.5                  | 234.2                  | 229.8                  | 88.14              | 198.0                  | 206.5                  | 202.3                  |
| 70                         | 50.1                          | 53.5                | 51.8                         | 0.453             | 226.0                  | 239.7                  | 232.9                  | 89.16              | 89.16                  | 213.0                  | 207.2                  |
| 80                         | 53.8                          | 55.3                | 54.5                         | 0.476             | 251.0                  | 260.5                  | 255.7                  | 88.57              | 88.57                  | 231.0                  | 226.7                  |
| 60                         | 55.4                          | 61.2                | 58.3                         | 0.547             | 300.7                  | 333.8                  | 317.2                  | 90.58              | 90.58                  | 302.5                  | 287.5                  |
| 100                        | 59.3                          | 63.1                | 61.2                         | 0.503             | 297.0                  | 317.0                  | 307.0                  | 89.81              | 89.81                  | 285.5                  | 276.1                  |
| C.D at 5%                  | 1.560                         | 1.674               | 1.480                        | --                | 4.076                  | 7.815                  | 3.502                  | 8.781              | 8.787                  | 8.249                  | 4.768                  |
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