ACCEPTANCE TEST RESULT ANALYSIS

PUSH TYPE MACHINE

6. ACCEPTANCE TEST RESULT ANALYSIS

6.1. CLEARANCE DURATION

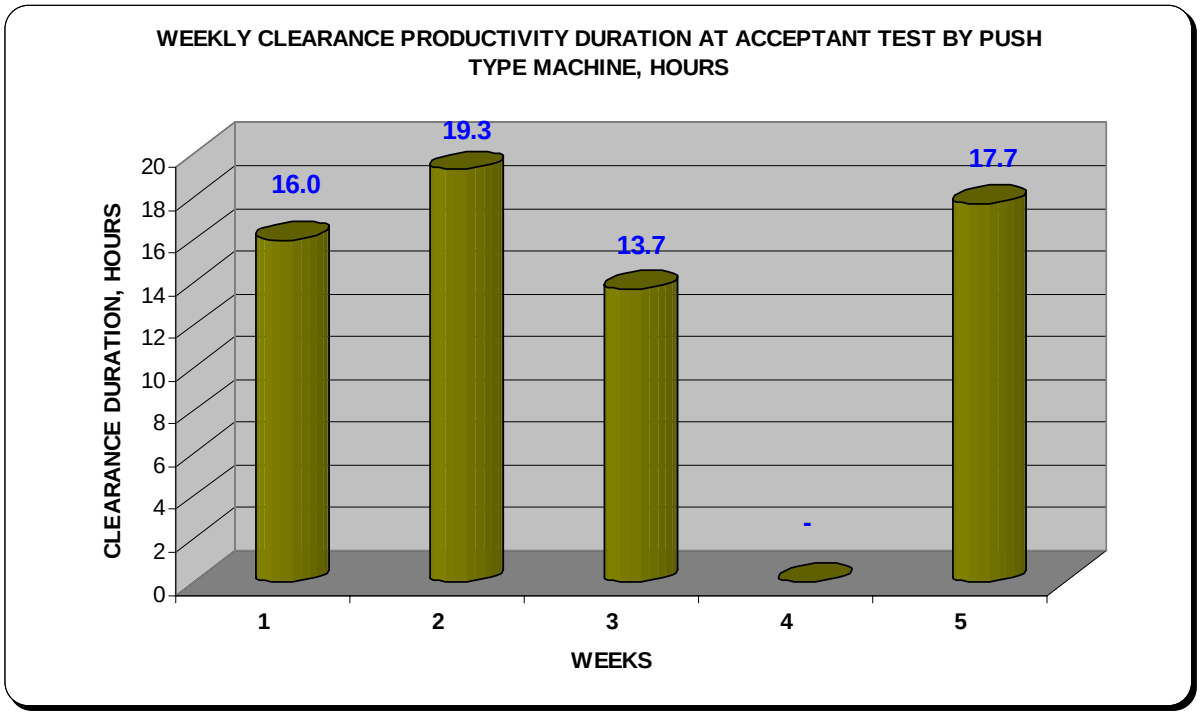


Figure 70: Clearance duration at acceptance test

Demining machine push type could perform long working hour as long as 19.3 hours per week. During its 23 days of participation (excluding Saturday and Sunday) at acceptance test, it spends 66.7 hours for mine clearance.

AVERAGE CLEARANCE DURATION: 2.9 HOURS/DAY

6.2. TRUE CLEARANCE PRODUCTIVITY RATE

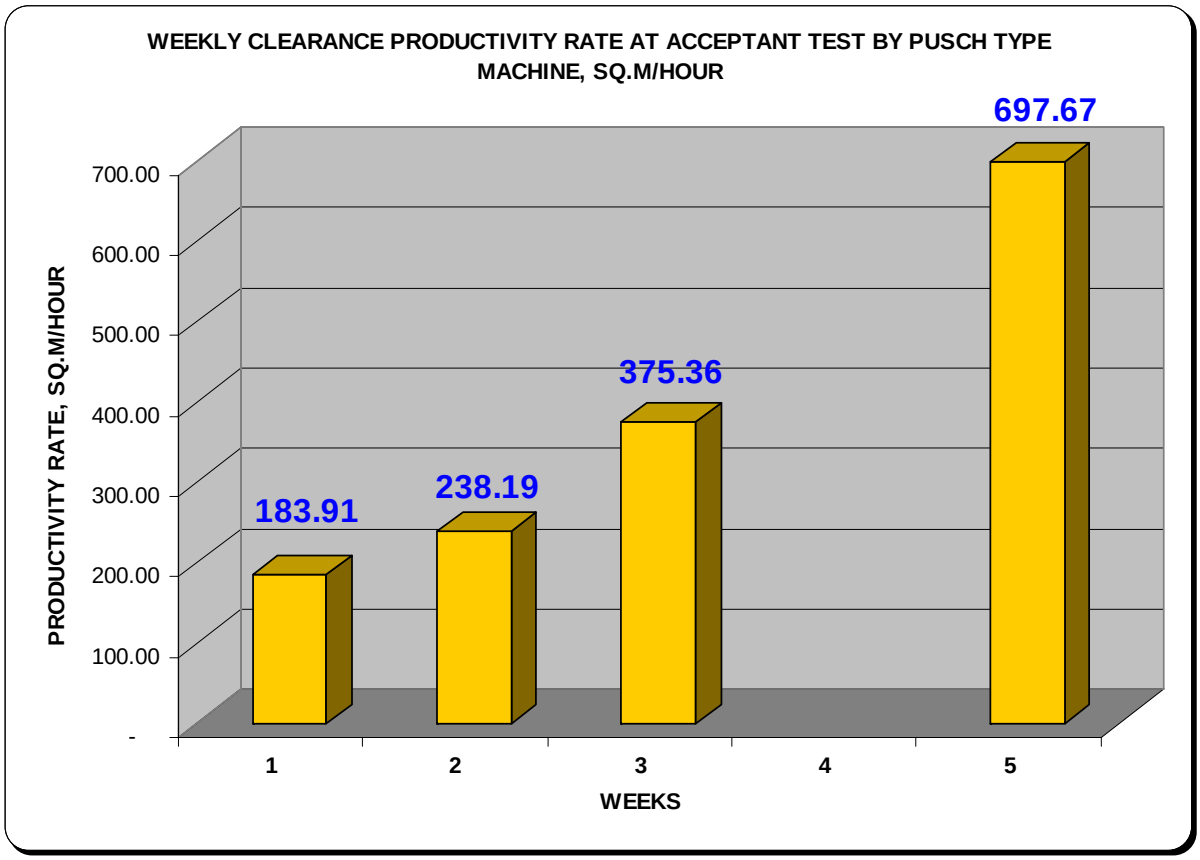


Figure 71: True productivity rate of the machine at acceptance test

The highest productivity rate of demining machine push type is 697.67 m^2/hour. During its 23 days or 66.7 hours of acceptance test, demining machine push type could produce 25,031 m^2 of true productivity. Therefore:

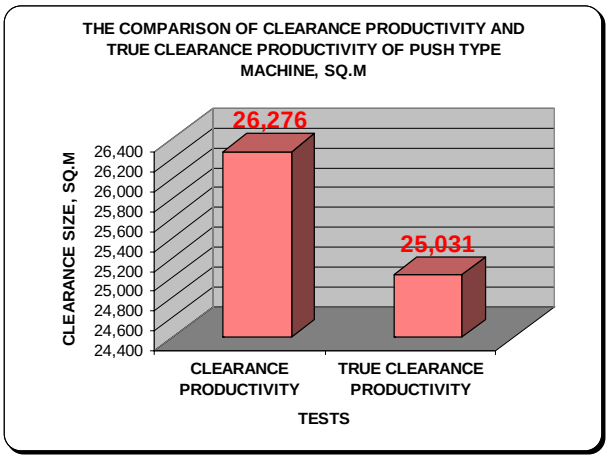
MAXIMUM PRODUCTIVITY RATE: 697.67 M^2/hour
AVERAGE PRODUCTIVITY RATE: 375.3 M^2/hour

6.3. THE COMPARISON OF PRODUCTIVITY AND TRUE PRODUCTIVITY

Table 47: the comparison of clearance and true clearance productivity

DESCRIPTION	TOTAL CLEARANCE SIZE	COMPARISON
CLEARANCE PRODUCTIVITY	26,276	100%
TRUE CLEARANCE PRODUCTIVITY	25,031	95.26%

Normally demining machine could not clear all its clearance area because of obstacle such as trees, hill or hole. In the above table there are more than 1,245 m^2 out of 26,276 m^2 account for 4.74% of the total area that PUSH could not be able to clear. Meaning that PUSH machine could clear the minefield up to 95.26% of the total target area. Thus it requires additional man power to clear the remaining un-cleared spot.



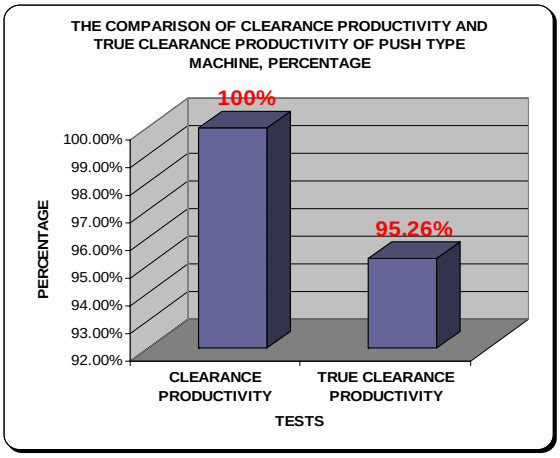


Figure 72: the comparison of true clearance productivity

TRUE CLEARED AREA: 95.26%
UN-CLEARED AREA OR AREA FOR ADDITIONAL CLEARANCE: 4.74%

6.4. FUEL CONSUMPTION

Table 48: fuel consumption used by demining PUSH machine at acceptance test

No.	Test duration, hour	Fuel Consumption, Liters	Fuel Consumption rate, Liters/hour
1	10.5	395	37.6
2	10.5	460	43.8
3	10.2	450	44.1
4	13.8	455	33.0
5	11.9	514	43.2
6	13	395	30.4
TOTAL	69.9	2669	38.2

Note: because of fuel consumption is used for mine clearance and transportation, therefore, total of test duration of 69.9 hours is being used for the calculation.

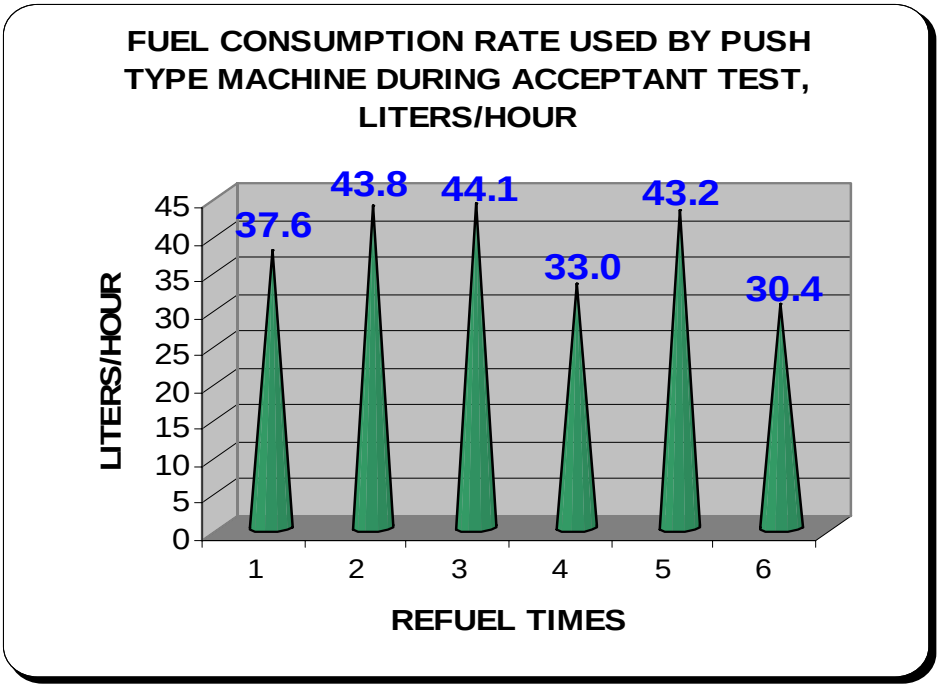


Figure 73: Fuel consumption rate

Demining machine push type, spend 69.9 hour to clear landmine and transportation. During this period, it consumes 2669 liters of fuel. Therefore:

FUEL CONSUMPTION RATE: 38.2 LITERS/hour

6.5. PRODUCTIVITY – FUEL RATIO

Demining machine push type machine refuel 6 times during its acceptance test. Fuel figure could be plotted as follows:

Table 49: Productivity of the machine and fuel consumption

No.	Fuel Consumption, litre	True Productivity, m^2	True Productivity - fuel ratio, m^2/litre
1	395	1,905	4.82
2	460	2,292	4.98
3	450	2,345	5.21
4	455	4,423	9.72
5	514	4,878	9.49
6	395	9,187	23.26
TOTAL	**2669**	**25,031**	**9.38**

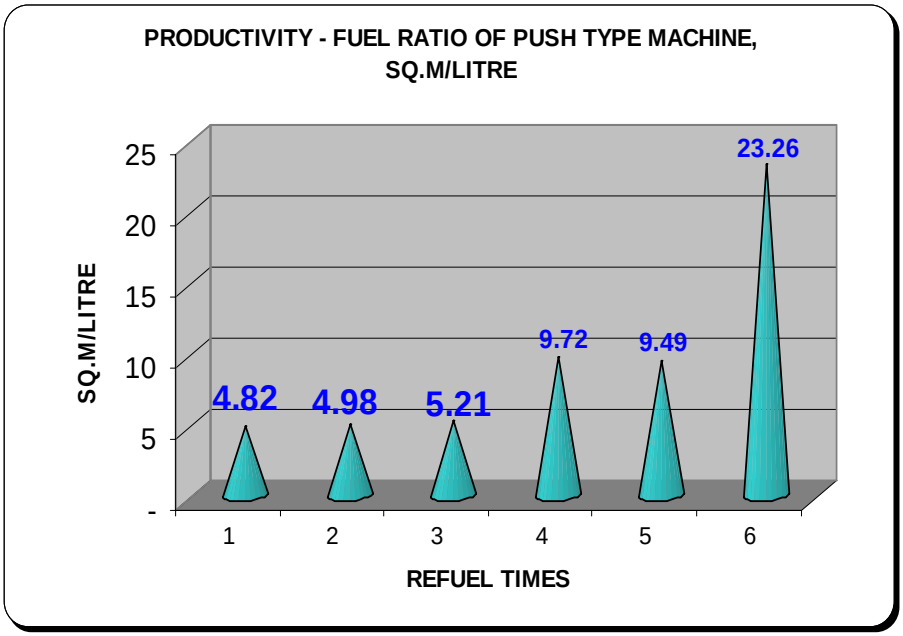


Figure 74: Productivity – fuel ratio

To clear 25,031 m^2 of landmine, demining machine push type consume 2669 liters of fuel, therefore average productivity – fuel ratio is:

PRODUCTIVITY – FUEL RATIO: 9.38 M^2/liter

6.6. THE REPAIR OF A DEMINING MACHINE PUSH TYPE DURING ACCEPTANCE TEST

Table 50: repair activities

Week	Weekly Repair, times	Weekly Repair, hour	Weekly True Productivity, m^2	Weekly Clearance duration, Hour
1	1	4.5	2,943	16
2	3	8.5	4,597	19.3
3	4	16	5,143	13.7
4	5	30	-	3.2
5	0	0	12,349	17.7
TOTAL	13	59	25,031	66.7

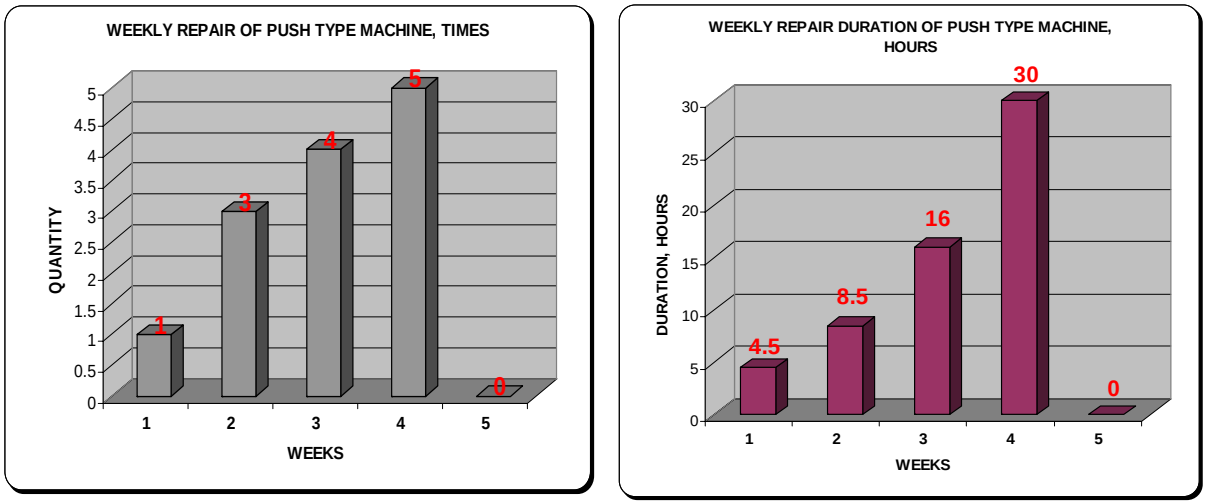


Figure 75: Repair activities of the machine

Demining machine PUSH type requires 13 repair times during 5 weeks of the acceptance test. During its peak of operation, it requires 5 times per week to repair. During week 4, it takes 30 hours to repair the machine. The total number of repair of demining machine push type during 5 working weeks is 13 times and it takes 59 hours to complete. Therefore, the average repair duration per week is 4.5 hours/week.

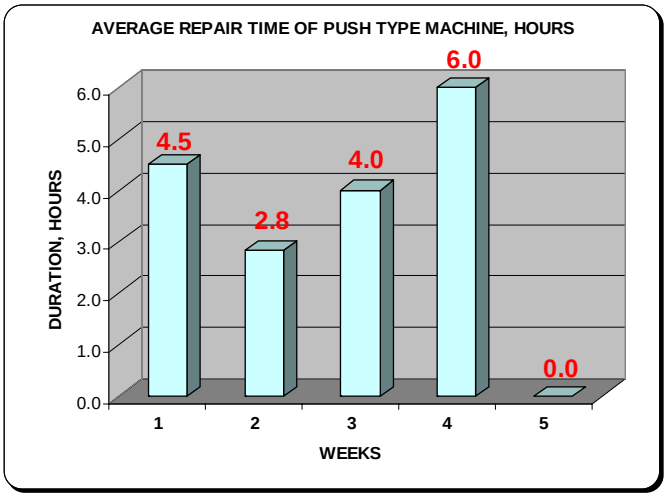


Figure 76: Average repair time of the machine

MAXIMUM REPAIR: 5 TIMES/WEEK
MAXIMUM REPAIR DURATION: 30 HOURS/WEEK
AVERAGE REPAIR DURATION: 4.5 HOURS/WEEK

6.7. AVERAGE PRODUCTIVITY FOR ONE HOUR REPAIR OF PUSH TYPE MACHINE

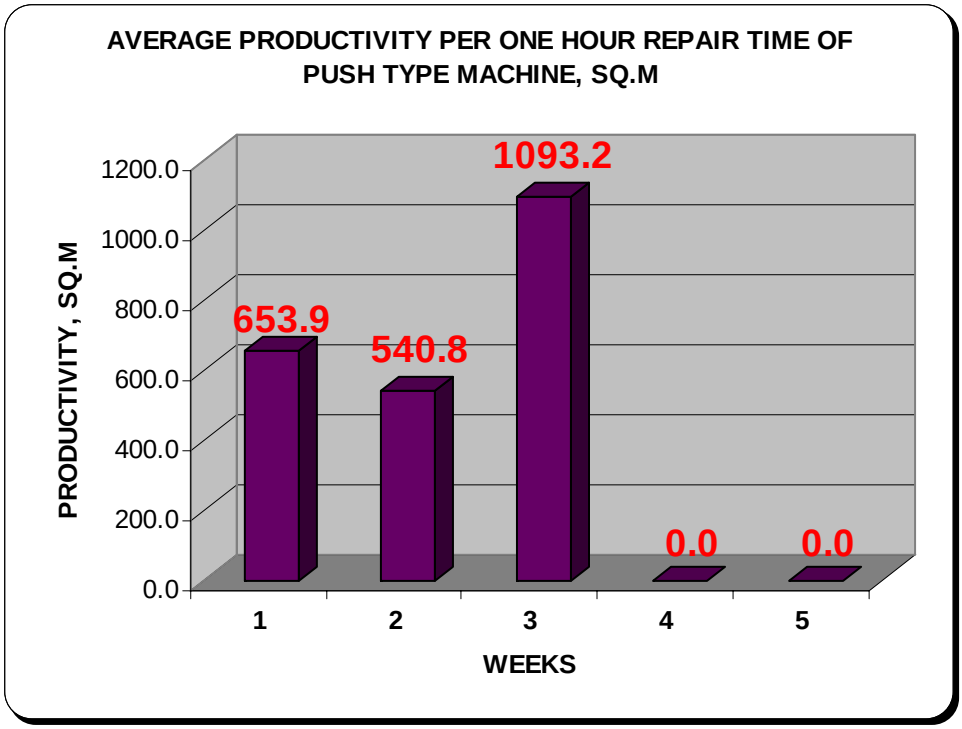


Figure 77: The relationship between productivity and repair

Total productivity for a demining machine push type is 25,031 m^2 and to achieve this clearance productivity, it takes 59 hours to repair the machine. Therefore:

AVERAGE PRODUCTIVITY/REPAIR: 424 m^2/repair hour

6.8. AVERAGE CLEARANCE DURATION FOR ONE HOUR REPAIR

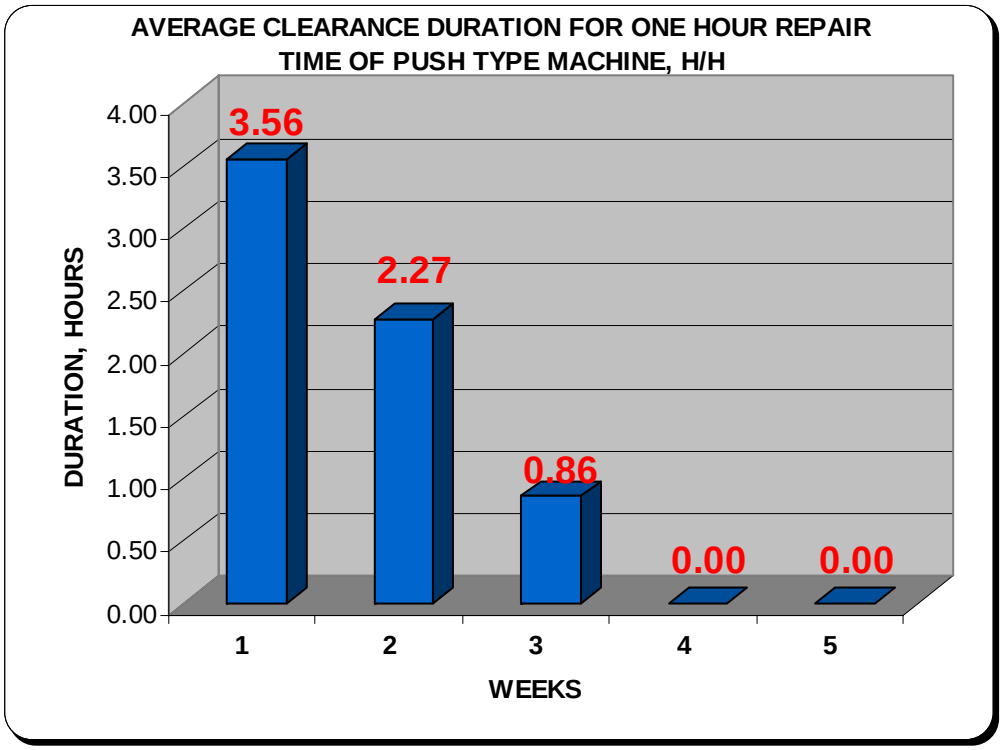


Figure 78: Average clearance duration

Total clearance duration of demining machine push type is 66.7 hours. Within this period, it takes 59 hours to repair.

AVERAGE WORK/REPAIR: 1.13 work hour/repair hour

7. COMPARISON BETWEEN PERFORMANCE AND ACCEPTANCE TEST

7.1. A COMPARISON OF TRUE PRODUCTIVITY RATE, M^2/HOUR

Table 51: True productivity rate at performance & acceptance tests

Test	True Productivity rate, m^2 /hour	Comparison
PERFORMANCE TEST	567.45	100%
ACCEPTANCE TEST	375.28	66%

According to the above table, demining machine PUSH type is having difficulty to clear landmine at acceptance test area where vegetation is fully grown. It lost 34% of its productivity rate in comparison with its productivity rate at performance test area (dry, wet and light bush test area).

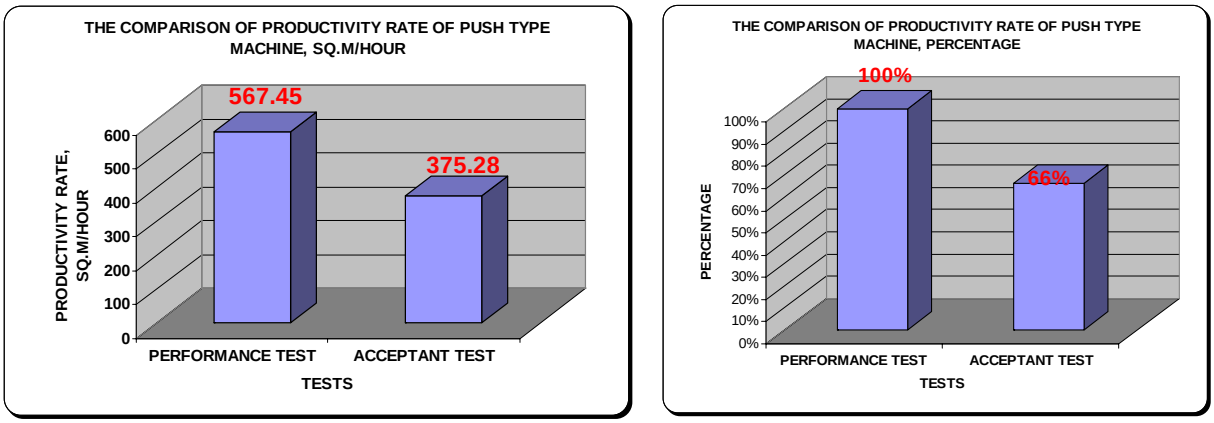


Figure 79: the comparison of productivity rate

During performance test at Siem Reap province, within one hour, demining machine push type could clear landmine 567.45 m^2. Within the same period of time, it could clear only 375.28 m^2 during acceptance test at Battambang province. This represent the lost of 34% of its clearance capacity.

TRUE PRODUCTIVITY RATE IS REDUCED BY 34%

7.2. A COMPARISON OF FUEL CONSUMPTION RATE

Table 52: A comparison of fuel consumption rate at performance & acceptance tests

Test	Fuel consumption rate, litre/hour	Comparison
PERFORMANCE TEST	38.19	100%
ACCEPTANCE TEST	38.18	100%

Even it lose productivity rate during acceptance test, but fuel consumption of the machine remain unchanged.

FUEL CONSUMPTION IS REMAIN THE SAME (NO CHANGE)
AVERAGE FUEL CONSUMPTION RATE: 38.185 LITER/hour

7.3. A COMPARISON OF PRODUCTIVITY – FUEL RATIO

Table 53: A comparison of productivity-fuel ratio at performance & acceptance tests

Test	Productivity - fuel ratio, m^2 /litre	Comparison
PERFORMANCE TEST	14.86	100%
ACCEPTANCE TEST	9.38	63%

The figure in the table indicates that during performance test at Siem Reap province, demining machine PUSH type could clear up to 14.86 m^2 before it consume 1 liter of fuel. However, during acceptance test at Battambang province, the machine could clear only 9.38 m^2 before it consumes 1 liter of fuel. This represents a decrease by 37% of clearance area for the consumption of 1 liter of fuel.

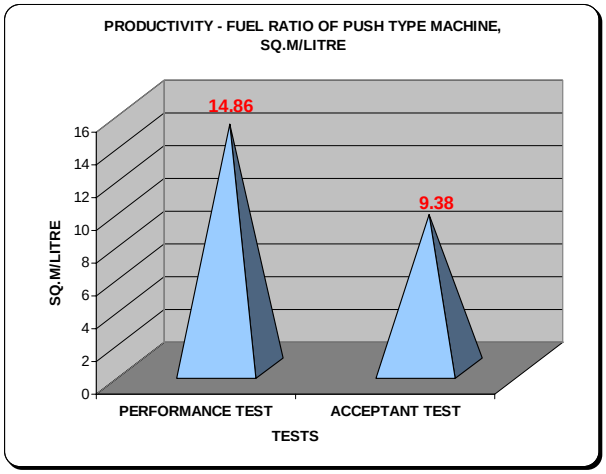


Figure 80: A comparison of productivity – fuel ratio at performance & acceptance tests (sq.m/l)

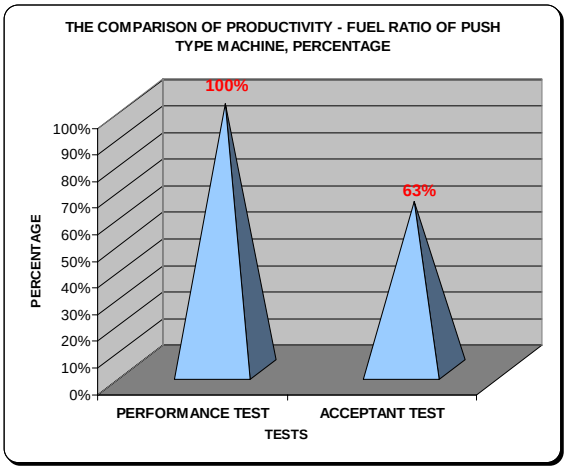


Figure 81: A comparison of productivity – fuel ratio at performance & acceptance tests (%)

PRODUCTIVITY – FUEL RATIO IS DECREASED BY 37%