model HP-54 on the reduction of the resonant amplitude values is relatively lower (almost 12 ... 15%) than in the case of using tire 380 / R80-508, model HP-56.

The experimental and analytical research approaches and results presented in the article allow us to select tire with the best damper properties.

Based on the results of this study, the following conclusions can be made:

1. The results of studies using the experimental resonance curve method show that the values of the tire damping coefficient vary over a wide range and mainly depend on the values of the normal load on the wheel and internal pressure of tire. For example, when internal air pressure in tire is reduced by 2 times, the ratio of dampers increases by 30 ... 32%. Similarly, in the case of a 2-fold increase in the normal load on the pneumatic wheel, the tire damping coefficient increases by an average of 1.25 times;
2. Using the mathematical model of a dynamic system"pneumatic wheel-suspension-sprung weight" on the test-bench, it is possible to assess the impact of change in the magnitude of the tire damping coefficient on resonant oscillations of the wheel and the sprung weight;
3. The results of computational studies have established that the impact of change in the magnitude of the tire damping coefficient on the reduction of resonant oscillations of the sprung weight is significant. For example, when internal air pressure in tire decreases from $p_w = 0{,}5$ Mpa to $p_w = 0{,}3$ Mpa, the increase in the magnitude of damping coefficient by 30 ... 30% leads to a decrease in the amplitude of resonant oscillation of the sprung weight by an average of 18 ... 20%. It would therefore be a mistake to assume that the influence of the properties of the tire demerses is negligible in the suppression of resonant oscillations of the sprung weight;

Development of Tractor Traction Characteristics Using Experimental Methods and Their Application

DOI: https://doi.org/10.52340/agronews.2025.12.05

Emzari Kilasonia
Doctor of Agroengineering, Associate Professor, Akaki Tsereteli State University, Kutaisi, Georgia
Vazha Danelia
Student, Bachelor of Agroengineering, Akaki Tsereteli State University, Kutaisi, Georgia.
Goga Chumburidze, Bachelor of Agroengineering,
Akaki Tsereteli State University, Kutaisi, Georgia.

Tractor traction properties can be determined based on its traction characteristics. The traction characteristic is a graph showing how the tractor's operating parameters vary with drawbar loads, from idle running to full load. The theoretical traction characteristic of a tractor can be constructed based on the engine's load characteristic using graphical-analytical methods.

The development of tractor traction characteristics using experimental methods is carried out through dynamometer testing. Tractor dynamometry is performed on terrain that's representative of field conditions. Along the entire length of the test area, 3 to 5 test plots are designated. Each plot is 100 meters long and spaced no less than 30-50 meters apart from each other (see Fig. 1).

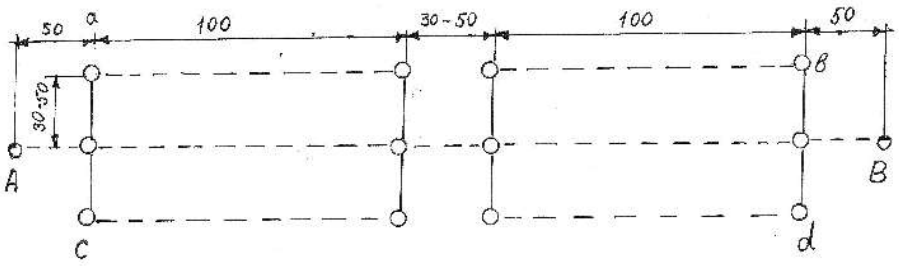


Fig. 1 Test Plot Layout Scheme

The test plot is marked with stakes along line AB, while on the opposite sides along lines ab and cd, stakes 0.5-1.0 meters high are installed. Between the stakes marking the plot, additional stakes are driven in every 10 meters. The tractor must be prepared for dynamometer testing - fueled, watered, and equipped with working implements. Before starting the test, the engine and transmission must be warmed up to normal operating condition. This requires running the engine for about half an hour beforehand. During tractor dynamometry on the test plot, each test consists of two half-tests obtained by moving the tractor forward and backward. The results obtained are averaged, which becomes the characteristic value for that particular test point.

During the testing period, the tractor is loaded using a plow. The following data should be collected during testing:

1. Duration of half-test - T_{sec}. This is the time during which the tractor travels the test plot length - S in meters;
2. Magnitude of traction force at the drawbar - P_{draw} in kg. Determined using a dynamometer for each half-test;
3. Average number of revolutions of the drive wheel during unloaded tractor movement at idle - n_{idle};
4. Average number of revolutions of the drive wheel during loaded tractor movement - n_{work};
5. Volume of fuel consumed during half-test - Q and fuel temperature in the measuring cylinder - t°

Before conducting the test, the physical-mechanical properties of the soil, moisture content, air pressure, and temperature are determined.

After recording the above values, the characteristic indicators of tractor operation are determined.

1.Travel speed $V = 3{,}6\frac{S}{T} km/h$;

2. Drawbar power $N_{draw} = \frac{P_{draw} \cdot V}{270} h/p.p$;

3. Slippage percentage $\delta = \frac{n_{av} - i_{idle}}{n_{av}}$ %;

4. Crankshaft revolutions $n = 60\frac{n_{av} \cdot i_{tr}}{T} rev.per.min$;

Where i_{tr} _ is the total transmission ratio .

5. Fuel consumption during the test period $G_0 = \frac{Q \cdot \gamma}{1 + (t - 20)} kg$

Where γ- is the specific weight of fuel at 20°.

For diesel fuel, use 0,85 ÷0,88

α - is the volumetric expansion coefficient of fuel;

For diesel fuel, use 0.000699 ÷ 0.000660 0,000699÷0,000660

Based on the fuel consumption during the test, we can calculate the hourly fuel consumption;

6. Specific fuel consumption $g = \frac{G}{N_{draw}} g/kWh$

If we have the appropriate data from the tractor's operating period, we can construct traction characteristics for the given tractor model. We can draw a coordinate system on paper: The magnitude of traction force P_{draw} is measured along the abscissa axis in a convenient scale, while the corresponding values are plotted on the ordinate axis.: slippage - δ; specific fuel consumption - g; hourly fuel consumption - G; power - N_{draw}; travel speed - V; and crankshaft revolution number - n scales.

In our case, the Sintai-180 tractor was used.

The tractor's crankshaft revolution number is n=2200 rpm. Power N=18 hp.

Speed in first gear V_1=2.47 km/h; in second gear V_2=4.72 km/h.

In third gear V_3=7.21 km/h. In fourth gear V_4=9.37 km/h. On reverse $V_{rev} = 2{,}28\ g/kWh$. The engine's working displacement is 1.272 liters. The hourly fuel consumption is $G_h = 259\ g/kWh$.

The tractor traction characteristic diagrams are shown in Fig. 2.

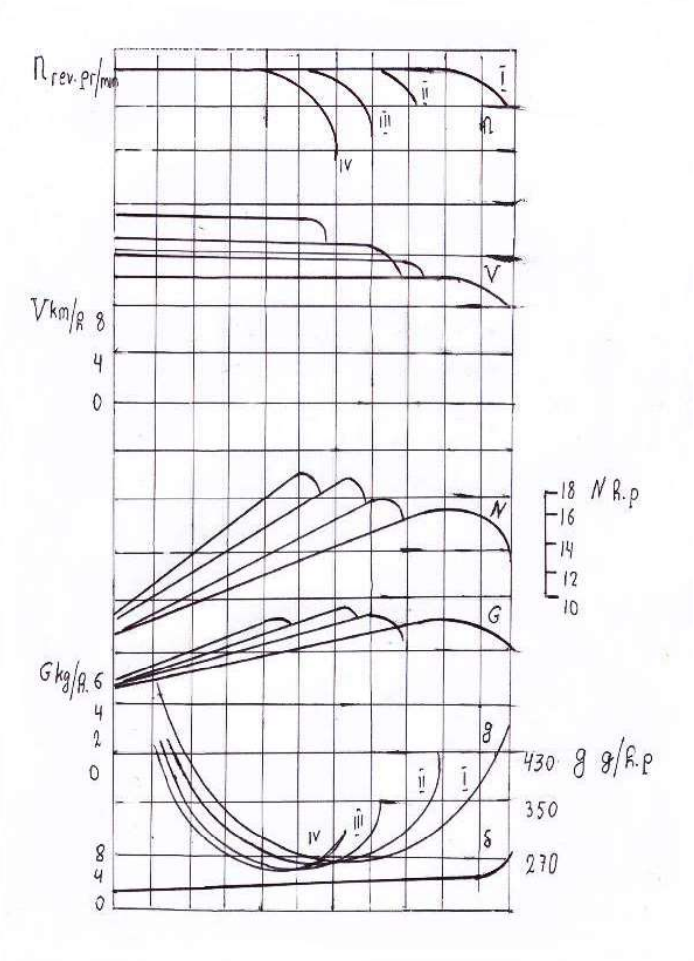


Fig. 2. Tractor traction characteristic

It's advisable to mark on the graph all points of any one indicator corresponding to all values of traction force and construct a curve based on these points; then construct the second, third, and so on curves for the other parameters. Using traction characteristics constructed in this manner, we can always easily determine the characteristic operating parameters of the tractor based on the magnitude of traction force P_{draw}.

References:

1. Dvali R.R. "Tractor Theory", Publishing House "Ganatleba", Tbilisi, 1970, 220 pp.
2. Semionov V.M. "Tractors and Automobiles" Laboratory-Practical Studies. Publishing House "Ganatleba", Tbilisi, 1971, 390 pp.
3. Budko V.V. "Tractor", "Graduation Project Design". Publishing House "Higher School", Minsk, 1985, 155 pp.
4. Meshankina A.B. "Traction Characteristics of Agricultural Tractors" Publishing House, "Rosselkhozizdat", Moscow, 1989, Reference Album, 240 pp.

ქართულ ბაზარზე არსებული ზოგიერთი ადგილობრივი ჩაის ხარისხობრივი მაჩვენებლების გამოკვლევა

DOI: https://doi.org/10.52340/agronews.2025.12.07

მაყვალა ფრუიძე
ტექნიკის მეცნიერებათა კანდიდატი, ტექნოლოგიების აკადემიური დოქტორი, პროფესორი, აკაკი წერეთლის სახელმწიფო უნივერსიტეტი, ქუთაისი, საქართველო.
შორენა ჩაკვეტაძე
აგრარულ მეცნიერებათა დოქტორი სასურსათო ტექნოლოგიებში, ასისტენტ პროფესორი, აკაკი წერეთლის სახელმწიფო უნივერსიტეტი, ქუთაისი, საქართველო.
ეკატერინე ბენდელიანი
ბიოლოგიის მეცნიერებათა კანდიდატი, ტექნოლოგიების აკადემიური დოქტორი ასოცირებული პროფესორი, აკაკი წერეთლის სახელმწიფო უნივერსიტეტი, ქუთაისი, საქართველო.

ნაშრომში განხილულია, საქართველოს სხვადასხვა რეგიონიდან აღებული ნედლეულისგან დამზადებული მზა ჩაის ნაწარმის გამოკვლევა, შესწავლილი იქნა, სამეგრელოს, გურიისა და იმერეთის ზონების მეწარმეთა მიერ დამზადებული ჩაის პროდუქტების ფიზიკურ - ქიმიური და ორგანოლეპტიკური მაჩვენებლები. განსაზღვრული იქნა მზა ჩაის ტენშემცველობა, ფენოლური ნაერთების ჯამური რაოდენობა, ნაცრის საერთო რაოდენობა, ექსტრაქტული ნივთიერებები და ორგანოლეპტიკური მაჩვენებლები (ჩაის ფერი, არომატი, გამონახარში ფოთოლი და გარეგანი სახე).

საკვანძო სიტყვები: ჩაი, ჩაის ბაზარი, ხარისხობრივი და ორგანოლეპტიკური მაჩვენებლები.

ჩაის მსოფლიო წარმოებისა და მოხმარების ზრდა განპირობებულია, სხვა მონაცემებთან ერთად, ჩაის ქიმიური შედგენილობითა და თვისებებით. ჩაი არის ფიზიოლოგიუ-