(:)

(/ / : / / :)

.

/ .

.

:

" "

/ / .

. /

. .

:

E-mail: dr_moamini@yahoo.com : : : *

Metzeger .(   )

(   ) Metzeger

.

.

.( )

(Site index)

.

$$Y = K\sqrt{X^R}$$

R

x   .

ab

.

:   .(   )

.( )

.

:   .( )

)   :

((   )   (   )

(form class) "   "

.   (   )

" "   (   )   .

( )   Trunk

.

.

.(   )   (*Fagus orientalis* Lipsky)

.( )

.

.

.

(   )

.

( )

.

.

.

.

.

.

.

(   )   .

(   )   .( )

(   )

.( )

.

.( )   .

:

/

/ .

.

.

Excel Spss win12

. 2003 . ( )

( )

: .

.

:( ) (drf) .

$$drf = \frac{d_{1.3} - d_m}{(H/2) - 1.3}$$ ( )

(d_l)

(d_m) : .

. $(H/2)$

( )

.

) ( ) .

.( ) (

.

.

) / (:

(… / /

(

.( ) . / , / , / , / , /

)

_____ . .

.

( )   .( )   (
( )

                                                              .

                        .

                                                      .

                                      /   .(   )

                                                          .

:   .
                (/   (
(/   /   /   /   )   (   )
                                                  .   (   )

          .
                                                      .( )
.

                                              "   "
                                      (   )"   "
                                  »
                                  » «
                                  .   «
                                  "   "
                              "   "   .
        .( )

                          .( )   "   "

                                  .   "   "

                              .   (   )
  .   /   (   )

                      .
      /   .
                                      .   (   )

.

(Cd_m)

     C_2 C_1 (   )

:   "

$$Cd_m = \sqrt{C_١ \times C_٢}$$
                                                ( )

            (   )   .

»   (Hd)

                » «

     .(   )   «   .

                                  "   "

.

                .( )   .

)

.

                                            .   (

            (H_R)

                            :( )   .

$$H_R = \frac{h}{h_t} \times ١٠$$
                              ( )   .

)   (h)   .

   (h_t) (   )

             .   .   (

                                          .

             .

(   )

(   )   /   ( )

(   )   .

Cv   .   .

"   "   .   /

)

.   (.

(Cv%)

.

/   )

(

.

.

.

(   )

.(   )‾   )

(

.

(/)

(   )

.

.

)

(

.

R²   )

.(SD   (   )

R²

.   R²   SD   R²

.

.

( )

" "	(m)	( )						cm (cm)	(m)	(cm)	
				/	/	/	/	/			
	/			/	/	/	/	/			
				/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/					*
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
				/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			

（   ）

" " "	(m)	（　）						cm (cm)	(m)	（ cm)	
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/					
	/			/	/	/	/	/			
	/			/	/	/	/	/			
				/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
				/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			
	/			/	/	/	/	/			*
	/			/	/	/	/	/			
	/			/	/	/	/	/			
/				/							Cv%

（   ）   *

CV%	( )		
/	/	/	
/	/	/	
/	/	/	
	/	/	
	/	/	
/	/		
/	/	/	
	/		
/	/	/	
/			
	/	/	(/)
/	/	/	
/	/	/	
/	/	/	

.

.   .

.

.

.

:

)

(

.

.

(r)	(R^2)			
/	/	$Hd = 1.309 - (0.006*d) - \dfrac{34.411}{d} + \dfrac{726.82}{d^2}$	(Hd)	(d)
/	/	$\log CDm = 0.185 + (0.013* d) - (0.0001*d^2) + (0.040*\log d)$	(CDm)	(d)
/	/	$H = -20.693 - (0.034* d) + (31.089*\log d)$	(H)	(d)
/	/	$H = 16.13 + (0.32*d) + (-0.0005*d^2) + (-0.0000034*d^3)$	(H)	(d)
/	/	$Hd = 61.599 - (0.242*d) + \dfrac{26237.49}{d^2}$	(Hd)	) $:$ (
/	/	$CDm = 1.38 + (0.187*d) - (0.001*dia)^2 - (0.116*H) + (0.066*dis_a)$	(H) (d) (CDm) (dis_a)	
/	/	$AHd = -49.894 + (0.968*Hd) + \dfrac{96.999}{dis_a} + \dfrac{1739.506}{Hd}$	(AHd) (dis_a)	$:$ (Hd)
/	/	$Hd = 72.073 + \dfrac{1.627*h_a^2}{d_a * \sqrt{dis_a}} - (0.424*d)$	(dis_a) (h_a) (d_a) (d)	
/	/	$Hd = 53.905 + \dfrac{1.597*h_a^2}{d_a * \sqrt{dis_a}} - (0.576*d) + (0.875*H)$	(h_a) (d_a) (H) (d) (dis_a)	

–

				) (
				/) (
		/		) / / /
		/		(/

/) /

.(Cv =%) / /

/ /

. /

.(R= /)

" " ( ) /

( ) . (

. ( ) /

( ) /) /

.( ) (/

.( ) / / .

( )

/

. ( ) . ( )

( ) ( )

.

/ / /

.( ) / .( )

" "

.(Cv=% / /) /

.

.

)

(

. ./ /) /
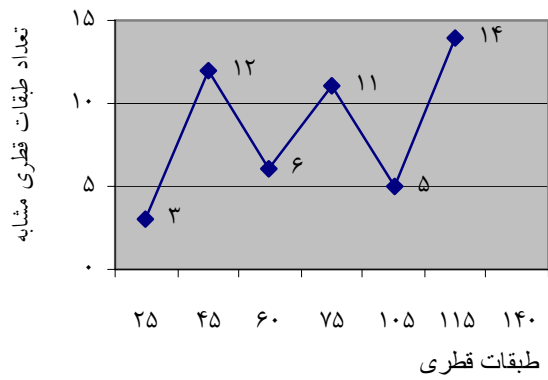
.(Cv=%

= /)

.(r

.

.

ضریب شکل حجمی به دو صورت بـرای درخـت کامـل و
ساقه درخت بهطور جداگانه محاسبه شده است.

.

" "

" "

" "

. .(Cv = % / / /) /

. (r= /)

.   (r = /)   (r= /)

(r= /)

.(____ r= /   _)

.

(r= /)   (r= /)

(   )   .   (r)

.(   )   r= /   r= /

.(   )

.(Cv=%)   .   (r)

.(r= /   R²=/)

.   /

.   /   /

( )   .   /

.

.

( )   (Burshel & huss 1987)

)

(

/

.

.

/

.

.   /

.   /

21- Loetsch ,F. & F,Zohrer & K.E.Haller,1973, forest inventory. VOL 2, BLV pub, 469p.

Trunk morphology of beech trees (*Fagus orientalis* Lipsky) on biometrical and silvicultural criteria (Case study: Haftkhal forest, Sari, north of Iran)

M. Amini*[1], M. Namiranian[2], Kh. Sagheb Talebi[3], D. Parsapajouh[4] and R. Amini[5]
[1] Ph.D. Scholar of Forestry, Faculty of Natural Resources, University of Tehran, I. R. Iran
[2] Associate Professor, Faculty of Natural Resources, University of Tehran, I. R. Iran
[3] Associate Professor, Research Institute of Forest and Rangelands, I. R. Iran
[4] Professor, Faculty of Natural Resources, University of Tehran, I. R. Iran
[5] M. Sc. Student of forestry, I. R. Iran

Abstract

Trunk (stem) specifications of the beech trees (*Fagus orientalis* Lipsky) vary in different sites of Hyrcanian forests. To study the morphology of the trunk of these trees in natural unmanaged Haftkhal forest, 30 sample beech trees in three diameter classes of <50, 51-75 and >75cm were surveyed. For the sample trees, diameter at different levels of stem measured in two ways: *a*) constant distances from the ground level with 2.5 m intervals, *b*) relative height levels with coefficients of 0.1 tree height. Criteria used for this research are: diameter at breast height (dbh), tree total height (H), mean of the two crossed crown diameters (C), tree thinness factor (H/dbh), form class, equation of dbh and H, equation of dbh and C, diameter reduction factor (drf), tree form factor (Ft) and trunk form factor (Fs) with volume base and diameter base, ratio of trunk length (h) to H, ratio of volume in different levels of stem (Vs) to tree total volume (Vt), geometric form of the different length of trunk (logs), form similarity of the different trees trunk, effect of the distances mean of adjacent trees on the beech stem specifications and finally, correlation and mathematical equations between the above-mentioned factors. Some of the results are: mean of (H/dbh) is 0.52, (Ft) factor is 0.48, the ratio of (h) to (H) is 0.64. Furthermore, it is found that about 74 percent of the Vt is located in lower half of the (H), the rate of stem similarity vary with the growing stages, and finally, (C) has a high correlation with diameter at breast, mean height and the tree's distance from adjacent trees and (dbh) and (H).

Key words: *Fagus orientalis*, form factor, stem, geometric form, taper, height, diameter, crown

---

* Corresponding author: Tel: 0151-3132820   , Fax: 0151-3132971   E-mail: dr_moamini@yahoo.com