

# Palaeolinguistics and ancient Eurasian pulse crops

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*Traditional pulse crops such as pea, lentil, field bean, bitter vetch and chickpea were a part of the human diet in hunter-gatherer communities and are one of the most ancient cultivated crops. It was found that the Proto-Indo-European language had the largest number of roots directly related to pulses, such as \*arnk(-) (a leguminous plant), \*bhabh- (field bean), \*erəgw[h]- (a kernel of leguminous plant; pea), \*ghArs- (a leguminous plant), \*kek-, \*k'ik'- (pea) and \*lent- (lentil), confirming their essential place in the nutrition of Proto-Indo-Europeans. Pea was most important among the Proto-Uralic people, while pea and lentil were most significant among the Proto-Altaiic people. Pea and field bean were common among Caucasians and Basques, and field bean and lentil among the Afro-Asiatic peoples. Palaeolinguistics may contribute to archaeobotany in understanding the role of traditional Eurasian pulse crops had in the everyday life of ancient Europeans together with plant scientists and archaeobotanists.*

**Keywords:** Archaeobotany, crop history, etymology, historical linguistics, pulse crops.

MOST of the traditional Eurasian pulse crops, such as pea (*Pisum sativum* L.), lentil (*Lens culinaris* Medik.), field bean (*Vicia faba* L.), chickpea (*Cicer arietinum* L.), bitter vetch (*Vicia ervilia* (L.) Willd.), common vetch (*Vicia sativa* L.) and grass pea (*Lathyrus sativus* L.) originate from the Near Eastern, Mediterranean and Central Asian centres of diversity<sup>1</sup>. They were a part of the diet of Palaeolithic hunter-gatherer communities<sup>2</sup>.

Pulses were also among the first domesticated plant species<sup>3</sup>. These annual legumes were one of the earliest cultivated plants in the world, together with several cereals. As commonly regarded and firmly supported by numerous archaeobotanical evidences, pea, lentil, chickpea and other pulses were domesticated in the Near East, from where they quickly spread into all directions<sup>4</sup>. One of them was towards post-glacial Europe, where they were one of the pioneers of the 'agricultural revolution' all over the continent (Figure 1). As may be seen, pea, lentil, bitter vetch and chickpea were found in the majority of the oldest archaeological sites from 7th and 6th millennia BC onwards, whereas faba bean came a bit later, most probably from 3rd millennium onwards. At the same time, all the pulse crops reached the more inaccessible and distant areas, such as Scandinavia or Baltics.

Several studies on the population genetics of the inhabitants of Europe, with an emphasis on using principal component analysis, revealed that the first farmers in

Europe definitely came from the Near East, starting to inhabit at least as early as 7th millennium BC in the Balkans and following up the Danube flow and bringing with them both agriculture and their language(s) and culture in general<sup>5</sup>. However, as confirmed by the same analyses, they were gradually overwhelmed and subsequently assimilated by several waves of migration of people of different origin<sup>4</sup>. It seems that the largest and most influential migration was that of the Indo-European tribes, starting from 5th millennium BC, covering nearly all the continent territory and bringing their own agricultural practices and related lexicology<sup>4</sup>. The visible outcome of this process is the fact that most of the modern European languages have their agricultural terms derived from the Proto-Indo-European, as shall be demonstrated in the following sections.

Europe has been home to at least 300 extinct and living languages<sup>6</sup>. Today, it is dominated by seven great families, namely Indo-European, Uralic, Altaic, Caucasian, Kartvelian, Basque and Afro-Asiatic. Despite a constant evolution and numerous interactions, the European language families retained common vocabularies related to many aspects of everyday life, such as agricultural plants<sup>7,8</sup>. Evidence on the early pulse history based upon the attested roots in diverse Eurasian proto-languages remains insufficient, whereas its potential for supporting archaeobotanical findings is still not assessed. This was the main goal of the present research, especially since it was recently demonstrated that integrating archaeobotany, palaeogenetics and historical linguistics is possible and rather needed<sup>9</sup>.

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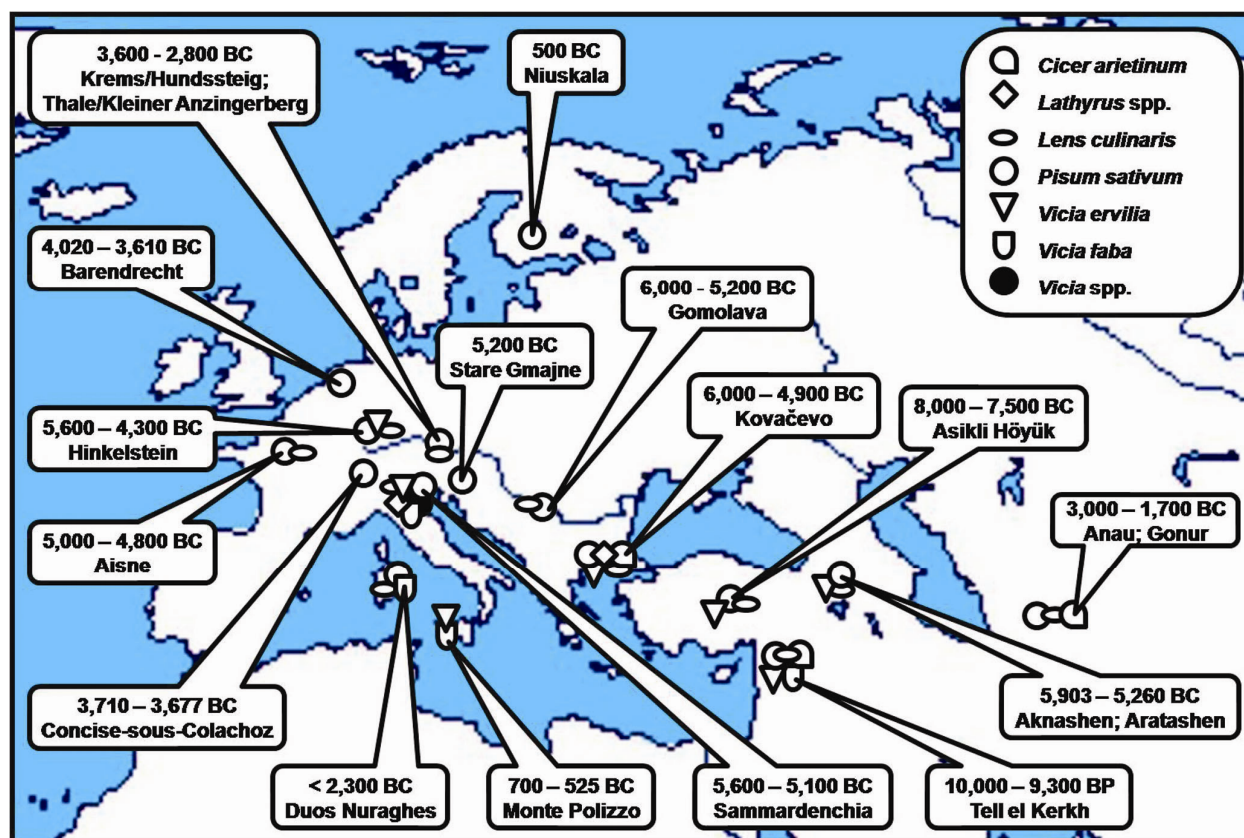


Figure 1. Some of the oldest archaeobotanical findings of ancient Eurasian pulse crops in Europe and its neighbouring regions.

## Materials and methods

This preliminary research was aimed at finding those root-words in various proto-languages whose primeval meaning was directly related to pulses and which, in most cases, begot the words denoting the same in modern European languages. In order to carry out this task, all available printed and electronic resources related to the etymology of the languages spoken in Europe were searched for root-words related to pulse crops and leguminous plants in general. Numerous printed and electronic dictionaries of modern European languages were used as an auxiliary tool, by compiling the words denoting 'pea', 'lentil', 'field bean' and other traditional and most ancient Eurasian pulse crops. The outcome of this lexicological screening of modern European languages is not presented in this article, as its sheer magnitude demands completely separate processing and presentation. The attested borrowings of words derived from these root-words, whether between languages belonging to different branches of the same family, or between languages of different families, were also recorded.

## Results and discussion

The most significant language family in Europe today is Indo-European. From their homeland in Pontic-Caspian

steppe<sup>10</sup>, the speakers of the Proto-Indo-European language produced branches such as Albanian, Armenian, Baltic, Celtic, Germanic, Hellenic, Italic and Slavic<sup>11</sup>. There are several Proto-Indo-European roots directly related to traditional Eurasian pulse crops (Figure 2). The root *\*arnk(-)*, *arenko-* (a leguminous plant)<sup>12,13</sup> was preserved only in Old Greek with *ἀρακος*, denoting a leguminous plant (Figure 2), that gave the Modern Greek *αρακάς*, denoting pea (Table 1). The Proto-Indo-European roots *\*bhabh-*, *bhabhā* (field bean)<sup>12,13</sup> and *\*lent-*, *\*lent-s-* (lentil)<sup>12,13</sup> proved to be extremely conservative in both morphology and meaning, producing numerous proto-derivatives (Figure 2) and modern descendants, denoting the same in almost all cases (Table 1). The root *\*erag<sup>w</sup>[h]-*, *ereg<sup>w</sup>(h)o-*, *erog<sup>w</sup>(h)o-* (a kernel of leguminous plant; pea)<sup>12,13</sup> gave the words denoting pea in modern Germanic languages (Table 1), as well as the words for bitter vetch in Latin (Figure 2) and pea in some of its modern descendants (Table 1). The Proto-Indo-European *\*ghArs-*, *ghers-2* (a leguminous plant)<sup>10,11</sup> survived only in Proto-Slavic (Figure 2) and all modern Slavic languages, denoting pea<sup>14</sup> (Table 1). The Proto-Indo-European root *\*kek-*, *\*k'ik'-*, *kîkêr-* (pea)<sup>12,13</sup> lost its original meaning and began to denote mostly chickpea (Figure 2 and Table 1).

There are also Proto-Indo-European roots that subsequently began to be related to pulse crops (Table 1),

**Table 1.** A list of the direct and indirect modern descendants of the most ancient roots in European language families originally and subsequently related to some traditional Eurasian pulse crops

Family	Root	Direct descendants	Indirect descendants <sup>a</sup>
Originally related			
Indo-European	* <i>arnk</i> ( <sup>w</sup> )-, <i>arenko</i> - (a leguminous plant)	1) Greek <i>απακάς</i> (pea)	–
	* <i>bhabh</i> -, <i>bhabhā</i> (bean)	1) Albanian <i>bathe</i> (bean) 2) Baltic: Lithuanian <i>pupa</i> (bean) 3) Germanic: Danish <i>bønne</i> , English <i>bean</i> , German <i>Bohne</i> (bean) 4) Greek <i>φακή</i> (lentil) 5) Italic: Italian <i>fava</i> , Sardinian <i>fa</i> , Spanish <i>haba</i> (bean) 6) Slavic: Polish <i>bób</i> , Serbian <i>bob</i> , Ukrainian <i>bib</i> (bean)	3) → Celtic Goidelic cf. Scottish Gaelic <i>pònaire</i> (bean) 5) → Celtic Brythonic cf. Breton <i>fav</i> (bean) 5) → Basque: <i>baba</i> (bean) 6) → Indo-Iranian: Romani <i>boba</i> (bean) and <i>boobi</i> (pea) 6) → Italic: Romanian <i>bob</i> (bean) 6) → Uralic: Finnish <i>papu</i> , Ingrian <i>papu</i> (bean) 6) → Altaic: Kalmyk <i>bob</i> (bean)
	* <i>erəg</i> <sup>w</sup> [ <i>h</i> ]-, <i>erəg</i> <sup>w</sup> ( <i>h</i> )o-, <i>erog</i> <sup>w</sup> ( <i>h</i> )o- (a kernel of leguminous plant; pea)	1) Germanic: Dutch <i>erwt</i> , Faroese <i>ertur</i> , Norwegian <i>ert</i> (bean) 2) Greek <i>ρεβιθιά</i> (chickpea) 3) Italic: Galician <i>ervelha</i> , Portuguese <i>ervilha</i> , Romansh <i>erviglia</i> (pea)	1) → Italic: Asturian and Leonese <i>arbeyu</i> , West Lombard <i>erbion</i> (pea) 1) → Uralic: Saami <i>earta</i> (pea) 2) → Slavic: Macedonian <i>urov</i> (bitter vetch)
	* <i>ghArs</i> -, <i>ghers</i> -2 (a leguminous plant)	1) Slavic cf. Bulgarian <i>grah</i> , Czech <i>hrách</i> , Russian <i>gorokh</i> (pea)	1) → Albanian <i>groshë</i> (common bean) 2) → Italic: Aromanian <i>grāshac</i> (pea)
	* <i>kek</i> -, * <i>k'ik'</i> -, <i>kikêr</i> (pea)	1) Armenian <i>siser</i> (chickpea) 2) Italic: cf. Catalan <i>cigró</i> , French <i>pois-chiche</i> , Ligurian <i>cêxe</i> (chickpea)	2) → Albanian <i>qiqër</i> (chickpea) 2) → Germanic: Swedish <i>kikärt</i> (chickpea) 2) → Slavic: Slovak <i>cícer</i> (chickpea) 2) → Uralic: Estonian <i>kikerhernes</i> (chickpea) 2) → Basque <i>txixirio</i> (chickpea) 2) → Afro-Asiatic: Maltese <i>cicra</i> (chickpea)
	* <i>lent</i> -, * <i>lent-s</i> - (lentil)	1) Baltic: Latvian <i>lēca</i> (lentil) 2) Germanic: Flemish <i>lins</i> , Icelandic <i>linsa</i> (lentil) 3) Italic: Corsican <i>lentichja</i> , Occitan <i>mendilh</i> , Walloon <i>lintile</i> (lentil) 4) Slavic: Croatian and Serbian <i>leća</i> , Slovenian <i>leča</i> (lentil)	3) → Celtic: Irish <i>lintile</i> (lentil) 4) → Uralic: Võro <i>lääts</i> (lentil)
Uralic	* <i>kača</i> (pea?)	1) Finno-Permic: Erzya <i>ksnav</i> , Komi <i>an'kytsh</i> , Moksha <i>snavnja</i> (pea) 2) Ugric: Khanty <i>an'kəš</i> , Mansi <i>an'kas</i> (pea)	–
Altaic	* <i>bükrV</i> (pea)	1) Mongolic: Kalmyk <i>bürceğ</i> (pea) 2) Turkic: Chuvash <i>pärça</i> (pea), Gagauz <i>borchaq</i> (pea), Turkish <i>burçak</i> (bitter vetch)	2) → Uralic: Hungarian <i>borsó</i> (pea)
	* <i>zjābsa</i> (lentil)	1) Turkic: Bashkir <i>jasmyq</i> , Kazakh <i>jasimiq</i> , Tatar <i>jasmyq</i> (lentil)	1) → Uralic: Udmurt <i>jasnyk</i> (lentil)
Caucasian	* <i>hōwl(ā)</i> (bean; lentil)	1) Avar-Andi-Dido: Andi <i>holi</i> (bean), Avar <i>holó</i> (bean), Tsez <i>hil</i> (pea)	–
	* <i>qōr'ā</i> (pea)	4) Circassian: Abkhaz <i>k'yrk'yrra</i> (pea), Adyghe <i>ceshā</i> (bean), Kabardian <i>cesh</i> (pea) 2) Lak-Dargwa: Dargi <i>qara</i> , Lak <i>qulru</i> (pea) 3) Lezgi: Lezgi <i>xaru</i> (bean) 4) Nakh: Chechen <i>qō</i> , Ingush <i>qe</i> (bean)	4) → Indo-Iranian: Ossetic <i>qædur</i> (bean; lentil) 4) → Altaic: Karachay-Balkar <i>hans qudor</i> (bean)
Basque	* <i>ilha-r</i> (pea; vetch; bean)	1) Basque <i>ilar</i> (pea)	–
Afro-Asiatic (Semitic)	* <i>adaš</i> - (lentil) * <i>pūl</i> - (bean)	1) Maltese <i>ghads</i> (lentil) 1) Maltese <i>fula</i> (bean)	– (Arabic) → Indo-Iranian: Kurdish <i>polik</i> (bean)

(Contd)

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Table 1. (Contd)

Family	Root	Direct descendants	Indirect descendants <sup>a</sup>
Subsequently related			
Indo-European	*g <sup>er</sup> [a]n-, *grān- (grain, corn) *leb- (blade)	1) Baltic: Latvian <i>zirņi</i> , Lithuanian <i>žirnis</i> (pea)	1) → Uralic: Karelian <i>herneh</i> , Livonian <i>jernōd</i> , Veps <i>herneh</i> (pea)
		1) Old Greek <i>λοβός</i> (pod)	1) → Armenian <i>lobi</i> (bean)
			1) → Slavic: Russian <i>lobiya</i> (lablab bean)
			1) → Altaic: Azeri <i>lobya</i> (bean)
			1) → Kartvelian: Georgian <i>lobio</i> (bean)
	*pis- (to thresh)	1) Italic: Friulian <i>bīsi</i> , Italian <i>pisello</i> , Picard <i>pos</i> (pea)	1) → Albanian <i>bizele</i> (pea)
			1) → Celtic: Irish <i>pis</i> , Welsh <i>pysen</i> (pea)
			1) → Germanic: <i>pea</i> (pea)
			1) → Hellenic: Greek <i>μπιζέλι</i> (pea)
	*s)ter(ə)p- (end, edge)	1) Hellenic: Greek <i>θέρμος</i> (white lupin)	1) → Altaic: Turkish <i>bezelye</i> (pea)
			1) → Italic: Portuguese <i>tremoceiro</i> , Spanish <i>altramuz</i> (white lupin)
	*weik- (to avoid)	1) Italic: French <i>vesce</i> , Italian <i>veccia</i> , Spanish <i>veza</i> (vetch)	1) → Armenian <i>vik</i> (vetch)
			1) → Baltic: Lithuanian <i>vikis</i> (vetch)
			1) → Celtic: Welsh <i>gwŷg</i> (vetch)
			1) → Germanic: German <i>wicke</i> (vetch)
			1) → Slavic: Polish <i>wyka</i> (vetch)
			1) → Altaic: Turkish <i>fiğ</i> (vetch)

<sup>a</sup>Numbers before the indirect descendants denote the direct descendants from which the word was derived.

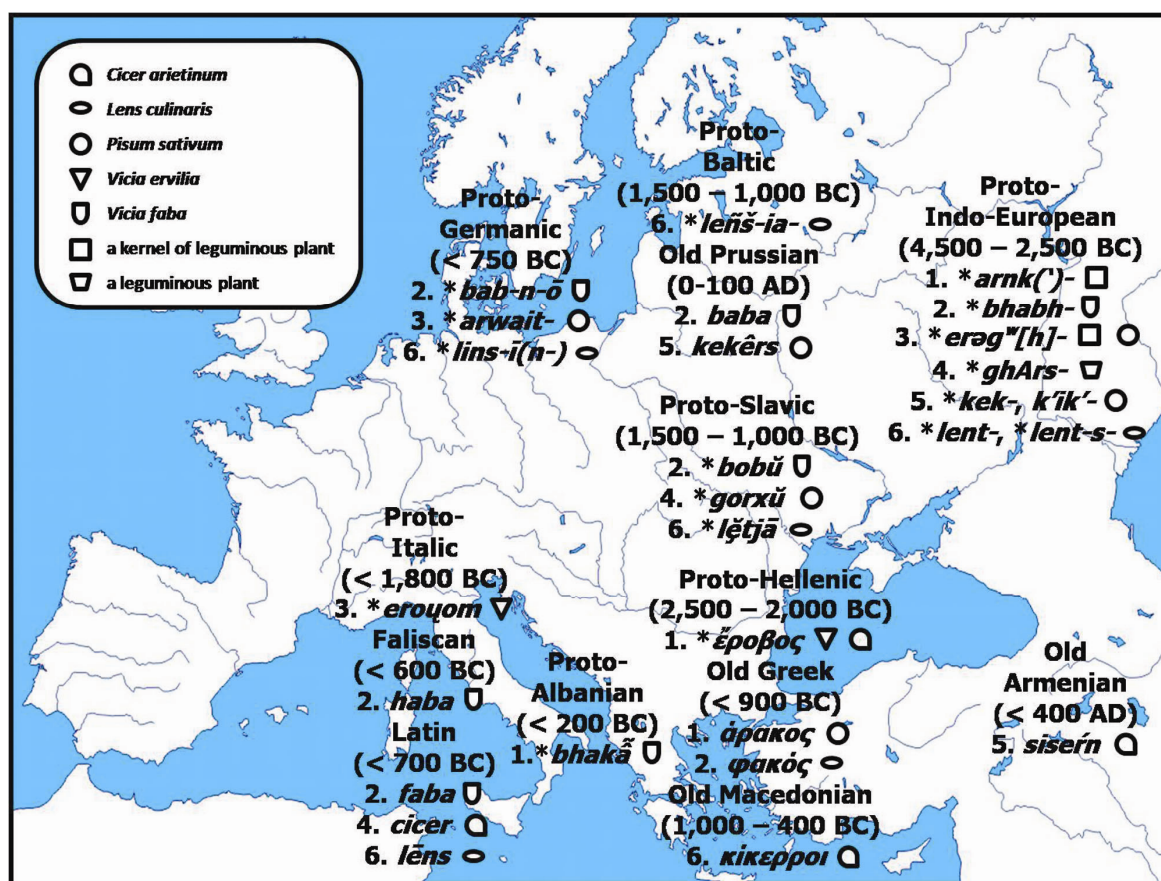
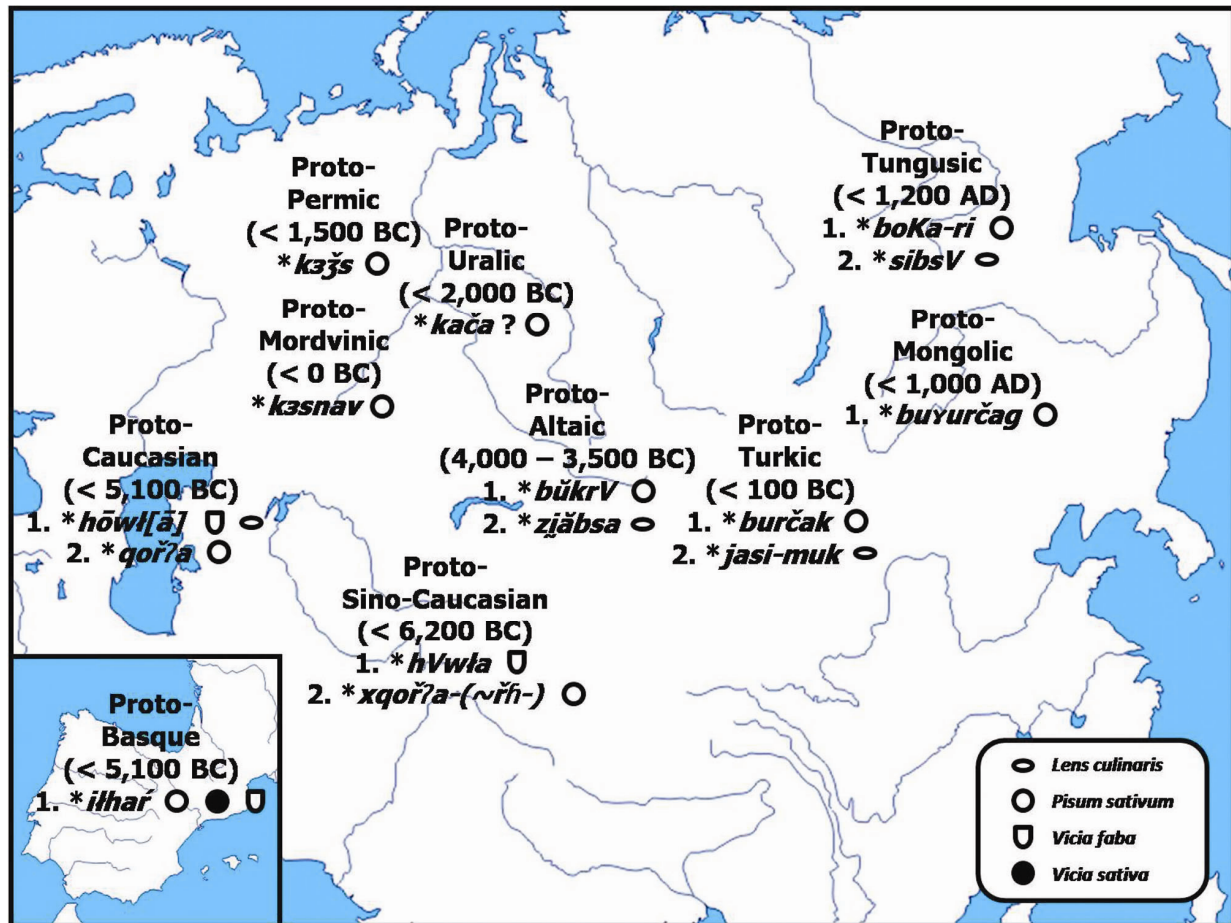


Figure 2. Linguistic and geographical evolution of the Proto-Indo-European roots directly related to ancient Eurasian pulse crops.

mostly having a descriptive nature<sup>15</sup>, such as \*g<sup>er</sup>[a]n-, \*grān- (grain, corn), \*leb- (blade), \*pis- (to thresh), \*(s)ter(ə)p- (end, edge) and \*weik- (to avoid)<sup>16</sup>. The evolution of the Proto-Indo-European roots directly and sub-

sequently related to pulse crops is characterized by a rather rich exchange among individual branches<sup>17</sup> and by other neighbouring language families (Table 1). The wealth and diversity of the results of this lexicological





**Figure 3.** Linguistic and geographical evolution of the Proto-Uralic, Proto-Altaic and Proto-Sino-Caucasian roots directly related to ancient Eurasian pulse crops.

and etymological analysis confirm that the Proto-Indo-European society, unlike certain viewpoints<sup>18</sup>, was highly agricultural with pulse crops playing a prominent role<sup>19,20</sup>.

A study on the pulse crops in Uralic language reveals a high degree of borrowings from neighbouring families, especially by those branches whose speakers migrated far from their original homeland in westernmost Siberia<sup>21</sup>, such as Finnic and Hungarian. Those who remained, namely Permic and Mordvinic, share the features of the initial word denoting pea<sup>22</sup> (Table 1), with a possibility that it resembles the Proto-Uralic \*kača, primarily denoting cavity and hollow<sup>23</sup> (Figure 3).

The Proto-Altaic roots \*būkrV (pea) and \*zjābsa (lentil)<sup>24</sup> proved highly conservative among their direct derivatives (Figure 3) and their modern descendants<sup>25</sup> (Table 1). This may support the grounds that these two crops were the most important pulses both for the Proto-Altaic people and the modern Altaic, especially Turkic nations, despite rapid migrations from one homeland to another.

The Caucasian roots \*hōwl(ā) (bean; lentil) and \*qorʔa (pea)<sup>26</sup> are also considered rather well-preserved, with

rich evolution within its own family and borrowings by its closest neighbours<sup>27</sup>, especially Kartvelian<sup>28</sup> (Table 1). The former root is connected with the Proto-Basque root \*ilha-r (pea; vetch; bean)<sup>29</sup> by the supporters of the hypothesis of the Dené-Caucasian language super-family<sup>30</sup>, where the two roots have a common origin (Figure 3) and where the ancestors of both Caucasian and Basque peoples are considered the descendants of the Palaeolithic hunter-gatherers retreating into the mountains when the Last Ice Age ended and new peoples inhabited Europe<sup>31</sup>.

The rich Afro-Asiatic language family in Europe is represented only by Maltese, where the words denoting pulses were derived from the Proto-Semitic roots \*'adaš- (lentil) and \*pūl- (bean)<sup>32</sup>.

## Conclusion

The results presented here demonstrate that the Eurasian pulse crops such as pea, lentil or field bean, usually regarded as traditional, were indeed ordinary among the ancestors of European nations. Also, historical linguistics with its lexicological and etymological analysis may be

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useful in better understanding the earliest days of their cultivation. It is to be anticipated that the outcome of this preliminary research could be a solid basis for advanced multidisciplinary approaches in studying the pulse crop domestication, involving plant scientists, archaeobotanists and linguists, as well as for reconstructing even earlier periods of common history of pulse species.

1. Zeven, A. C. and Zhukovsky, P. M., *Dictionary of Cultivated Plants and their Centres of Diversity*, Centre for Agricultural Publishing and Documentation, Wageningen, 1975.
2. Farrand, W. R., *Depositional History of Franchthi Cave*, Indiana University Press, Bloomington, 1999.
3. Zohary, D. and Hopf, M., *Domestication of Plants in the Old World: The Origin and Spread of Cultivated Plants in West Asia, Europe and the Nile Valley*, Oxford University Press, Oxford, 2000.
4. Mikić, A., Origin of the words denoting some of the most ancient Old World pulse crops and their diversity in modern European languages. *PLoS One*, 2012, **7**, e44512
5. Ljuština, M. and Mikić, A., A brief review on the early distribution of pea (*Pisum sativum* L.) in Europe. *Ratar. Povrt.*, 2010, **47**, 457–460.
6. Price, G., *An Encyclopedia of the Languages of Europe*, Blackwell, Oxford, 1998.
7. Lockwood, W. B., *Indo-European Philology, Historical and Comparative*, Hutchinson, London, 1977.
8. Mikić-Vragolić, M., Mikić, A., Čupina, B., Mihailović, V., Vasiljević, S., Krstić, Đ. and Vasić, M., Words related to some annual legumes in Slavic and other Indo-European languages. *Ratar. Povrt.*, 2007, **44**(II), 91–96.
9. Mikić, A., Medović, A., Jovanović, Ž. and Stanisavljević, N., Integrating archaeobotany, paleogenetics and historical linguistics may cast more light onto crop domestication – the case of pea (*Pisum sativum*). *Genet. Resour. Crop Evol.*, 2014, **61**, 887–892.
10. Mallory, J. P., *In Search of the Indo-Europeans*, Thames and Hudson, London, 1989.
11. Anthony, D. W., *The Horse, the Wheel, and Language: How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World*, Princeton University Press, New Jersey, 2007.
12. Pokorny, J., *Indogermanisches etymologisches Wörterbuch*, Francke, Bern, 1959.
13. Nikolayev, S. L., Indo-European etymology. The Tower of Babel, an International Etymological Database Project, 2007; <http://starling.rinet.ru>
14. Vasmer, M., *Russisches etymologisches Wörterbuch*, 1 (A–K). Carl Winters Universitätsverlag, Heidelberg, 1953.
15. Mikić, A. and Stoddard, F. L., Legumes in the work of J. R. R. Tolkien. *Grain Legum.*, 2009, **51**, 34.
16. Mikić, A., A note on some Proto-Indo-European roots related to grain legumes. *Indoger. Forsch.*, 2011, **116**, 60–71.
17. Macbain, A., *Etymological Dictionary of the Gaelic Language*, Eneas Mackay, Inverness, Scotland, 1911.
18. Gimbutas, M., Dexter, M. R. and Jones-Bley, K., *The Kurgan Culture and the Indo-Europeanization of Europe: Selected Articles from 1952 to 1993*, Institute for the Study of Man, Washington, 1997.
19. Krell, K., Gimbutas' Kurgans-PIE homeland hypothesis: a linguistic critique. In *Archaeology and Language, II* (eds Blench, R. and Spriggs, M.), Routledge, London, 1998.
20. Mikić, A., Mikić-Vragolić, M., Čupina, B., Mihailović, V., Vasić, M. and Vasiljević, S., Primitive Indo-European words related to grain legumes. In Book of Abstracts, 6th European Conference on Grain Legumes, Lisbon, Portugal, 12–16 November 2007, p. 122.
21. Janhunen, J., Proto-Uralic – what, where, and when? *Mém. Soc. Finn-Ougr.*, 2009, **258**, 57–78.
22. Lytkin, V. I. and Gulyaev, E. S., *Kratkii etimologicheskii slovar' komi yazyka*, Nauka, Moscow, 1970.
23. Starostin, S., Uralic etymology. The Tower of Babel, an International Etymological Database Project, 2005; <http://starling.rinet.ru>
24. Starostin, S., Dybo, A. and Mudrak, O., *Etymological Dictionary of the Altaic Languages*, Brill, Leiden, 2003.
25. Mikić, A., Words denoting lentil (*Lens culinaris*) in European languages. *J. Lentil Res.*, 2010, **4**, 15–19.
26. Nikolaev, S. L. and Starostin, S. A., *A North Caucasian Etymological Dictionary*, Asterisk, Moscow, 1994.
27. Mikić, A., Words denoting faba bean (*Vicia faba*) in European languages. *Ratar. Povrt.*, 2011, **48**, 233–238.
28. Mikić, A., Words denoting pea (*Pisum sativum*) in European languages. *Pisum Genet.*, 2009, **41**, 29–33.
29. Bengtson, J., Basque etymology. The Tower of Babel, an International Etymological Database Project, 2007; <http://starling.rinet.ru>
30. Ruhlen, M., Dene-Caucasian: a new linguistic family. In *The Origins and Past of Modern Humans – Towards Reconciliation*, World Scientific, Singapore, 1998.
31. Cavalli-Sforza, L. L. and Seielstad, M., *Genes, Peoples and Languages*, Penguin Press, London, 2001.
32. Militarev, A., Semitic etymology. The Tower of Babel, an International Etymological Database Project, 2006; <http://starling.rinet.ru>

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