ANATOMICAL PROPERTIES OF THE *AEGILOPS TRIUNICALIS* L.

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ABSTRACT

Water carrier ducts situated within the stems are derived of initial tissues. Earings around stems are derived due to activeness of the meristematic marginal shared cells. Mechanical tissue in *Ae. Triunicalis* species have been weakly but parenxim complex strongly developed. Sxizogenic zones first in the spike slip of a stem have been ascertained. They play a physiological role in flower forming and generally spike forming. The mentioned properties can be used in selection of wheet culivars as a genetic complex.

Key words: *Aegilops, Poaceae,* sxizogena, floema, xilema, parenxima, epiderma, cuticul

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INTRODUCTION

The *Aegilops* L.Genus includes *Poaceae* Family. Need of people for food especially cereals positively resulted use of wild sereals in solving problems of increase of productivity and disease-resistance of crops by selection.

In every period and phases of human society evolution cereals took an important place according to their food and forage significance. According to their economical and practical significance cereals are specified into the following groups: food, forage, constructional, paper-cellulose, errosion-protection of sandy slopes, fiber, medicinal & decorative, essencial oils significance et.al.

The main wild ceareal of selection significance spread in Azerbaijan is *Aegilops* L. As valuable cereal species *Aegilops* L.is widely used on the food, forage and selection purposes in all over the world at present.

Comprehensive researches are of urgent problems in botanical systematic analyses and selection activities. Anatomic researches give opportunity to complete explanation of both genotypic and phenotypic properties of each plant. That is why the anatomic researches are comprehensive researches that create opportunity for dynamic development of Botany.

Increase of interest to the *Aegilops* L.Cenus in research field are existance of fungi-resistance, high qulitative gliodine protein and other tolerant properties in these species.

Elements in the anatomic structure of vegetative organs of Aegilops is connected with the structure pecquliareties achieved in the process of adaption of evolution.

Specification of cytogenetic features in the study of Aegilops evolution and their systematic state are very important. From this point of view the results obtained by N.Kh.Aminov (2006) indicates that DNA sequences of wheet phylogenesis is not completely equal with current diploids. The researcher has ascertained that Iranian ecotype of *A. speltoides* Tausch was a week supressor of Ph gene of 5B chromosome of wheet.

On the result of the research carried out by Z.I.Humbatov and N.V.Nasirova (2009, 2010, 2011) it was ascertained that valuable properties and features of the genus could be widely used as a potential source in selectional activities.

MATERIAL AND METHODS

The anatomic researches have been carried out in accordance with the general methods [Barykina et al., 2004].

Materials for the research (leaf, stem, root and spike) have been taken in every phases of morphological & physiological development. The investigated materials were processed in spirit of 70%. Cuttings were done for the research in the labs, they were coloured, permanent and temporary preparations were prepared then they were studied under the microscopes 'Biolam' MBU-3 and XSP91-06-DN.

Explanation of the structure features based on the terminologies of: C.Metcalfe (1960); V.Tutayug (1967, 1980); Z. Humbatov (2002).

RESULTS AND DISCUSSION

Cross-section cutting of the root is almost of typical monocotyledonous characteristics. It's notable that feature attracting attention from the first sight in the root of the *Aegilops* is: root elements have got a high xerophyte structure. At some species roots are surrounded by ectomycorisa from the outside. This mycorisa is originated in the initial (humid) phase. As a rule mycorise origination occurs at the same time with the flowering and leaf drying periods that we can consider as an extra physiological factor in adaptation to draught.

Strongly developed initial crust is observed in the cross section and the less sized central cylinder in a small enlarger of the microscope. As the cross section passes through sucking zone alive sucking strings being in the activity of the epyblem are observed in the outer coat of the root. The epyblem consists of double cell. The initial crust starts with exoderm cells that are of 4 coats strongly developed from the exterier. These cells streching towards the cross of the root are closely situated to each-other.

Resource parenxim cells being the initial crust are big and small and are located emptier. The intercell space between them is clearly observed. Apoplastic run of water towards the central cylinder are implemented just by these spaces. As a rule weak coated big parenxym cells are located in the central part.

Cells of the thickly located inner layer of the initial crust boundaried with the central cylinder are surrounding the endoderm like a circul. Radial və tangental inner wall of these cells are mainly layery and strongly thickened; give a positive reaction to woodening and corkening test. They look like a horseshoe in the cross section. Sometimes thin-layer (spiral) thickening of radial walls is also observed in the slit (longitudinal section). The wall of the exterier layer is a bit convexive and has got simple pores. Under a greater microscope dense cytoplasm and thin-coated releasing cells possessed a large-scale nuclear in the endoderm are observed too. They are usually located inclined towards the initial xilem. The core (inner part) of the root has been entirely surrounded by the central cylinder cells.

Alive cells of pericycle being selected of the adjacent ones according to their configuration possess full cytoplasm and a large-scale nuclear entirely cover the water carriers ducts. They can be called as embracing cells too.

The very central layer of the cylinder consists of equally thickened and woodened mechanical tissue cells. Sach a structure creates a complete opportunity for growing and development of *Aegilops* in heavy content soils.

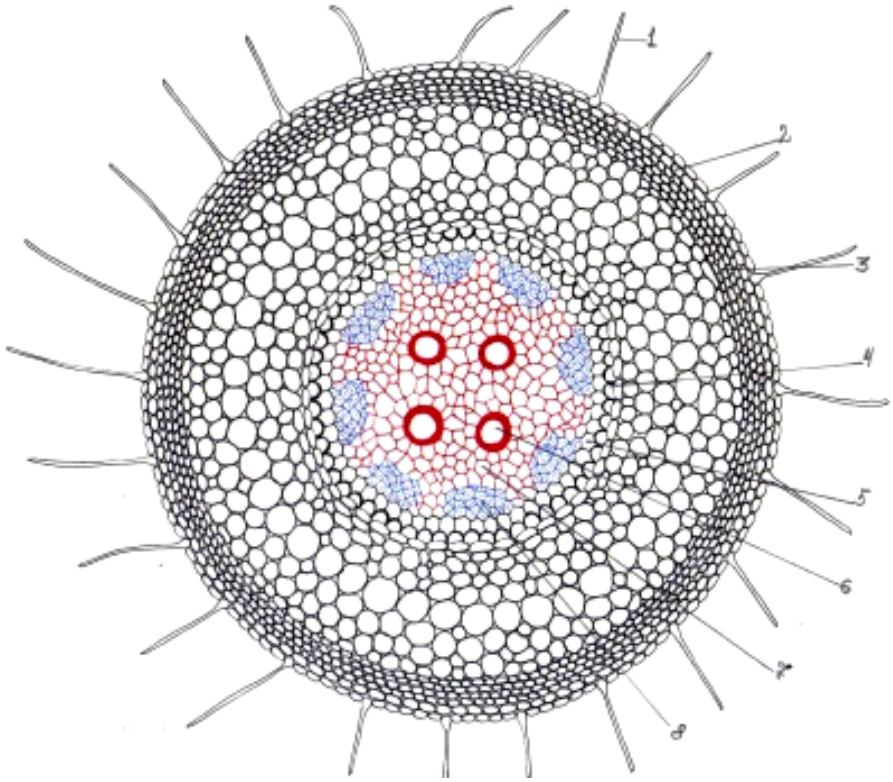

Fig.1. Structure of the cross section in *Ae. Triunicalis* species.
1.Sucking strings; 2.The second layer of the epiblem; 3.Four-layered exoderm; Endoderm; 5.Pericycle; 6.Xilem; 7.Protoxilem; 8.Floem

Stem of *Aegilops* species in accordance with anatomic characteristics of cereals family consist of epidermis, initial coat and central cylinder. Close collectoral water carriers (ducts) are located in two circuls. Sklerenxim − the mechanical tissue strongly developed in periphery is located in the circule. Sklerenxim is of pericyclic origin. The small water carriers (ducts) have been spread within the exterior circule and the larger-scale ones within the inner circule.

The larger-scale water carriers (ducts) in the inner circule are located within a parenxim tissue. The strong mechanical tissue developed under the epiderm and the small water carriers (ducts) belt give the stem mechanical strength and flexibility.

A changing chlorenxim and fiber belts are observed between epidermis and small water carriers (ducts). Some little mouths are observed in the epiderm covering chlorenxim part (fig2).

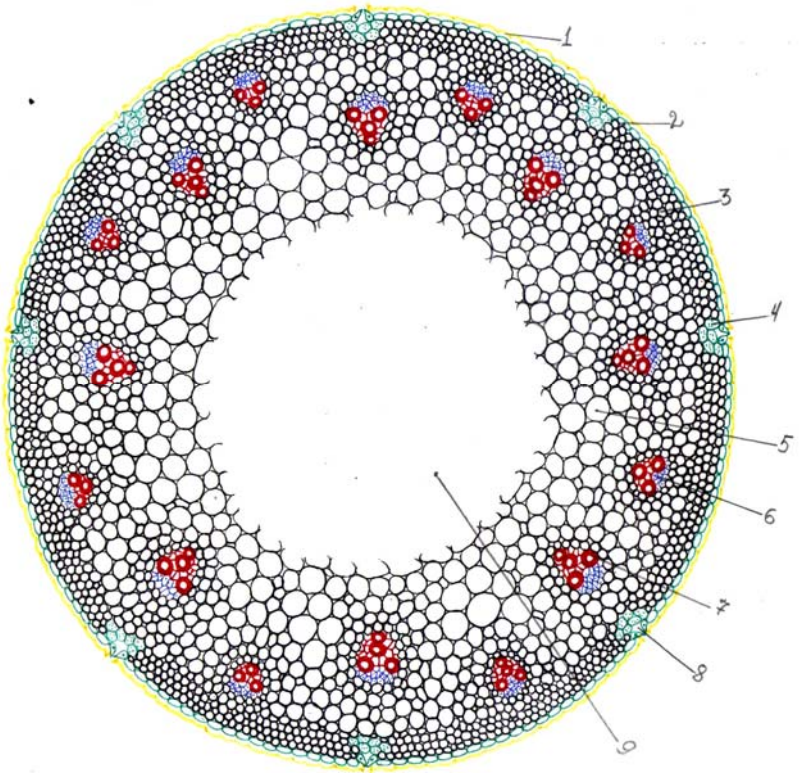

Fig.2. View of the cross section of the stem of *Ae. Triunicalis* species.
1.Cuticul; 2.Epidermis; 3.Sclerenxim Circul; 4.Asimilation tissue; 5.The main parenchyma; 6.Floem; 7.Xilem; 8.Little moth; 9.Core cavity.

The little mouth cells in the epiderm are relatively buried and are distinctive from ordinary epiderm cells according to their structure and size.

Subepidermal and some parenxim zones located in deeper layers got sklereided. Structure of the water carrier ducts consists of identically initial tissues only.

Absence of thickening of Cambi origin and a lot of water carrier ducts origined on the base of strong growing of one of the connecting part of leavs have been spread along the stem. It is realized from the cross section that these water carrier ducts have been located in a right row in the stem. Stem has usually got a larger cavity in the bottom but a small cavity and a lot of water carrier ducts in the upper part.

Spike carrying generative scion is much defferent with the stem according to its structure characteristics. First of all big and dense parenchyma cells but not straw are observed in the center of this part of the stem. Chlorenxima islets of unequal size are happened in the coat of the stem. Adjacent or a bit inclined to inner part points are observed in the center of each islet. The points are of schizogenic origin and they form general anastomoses in spike stalk. Water carrier ducts with fiber and pipe are small-sized and located among chlorenxima islets. Stem is surrounded by sclerenxima islets starting fron the coat part (fig.3).

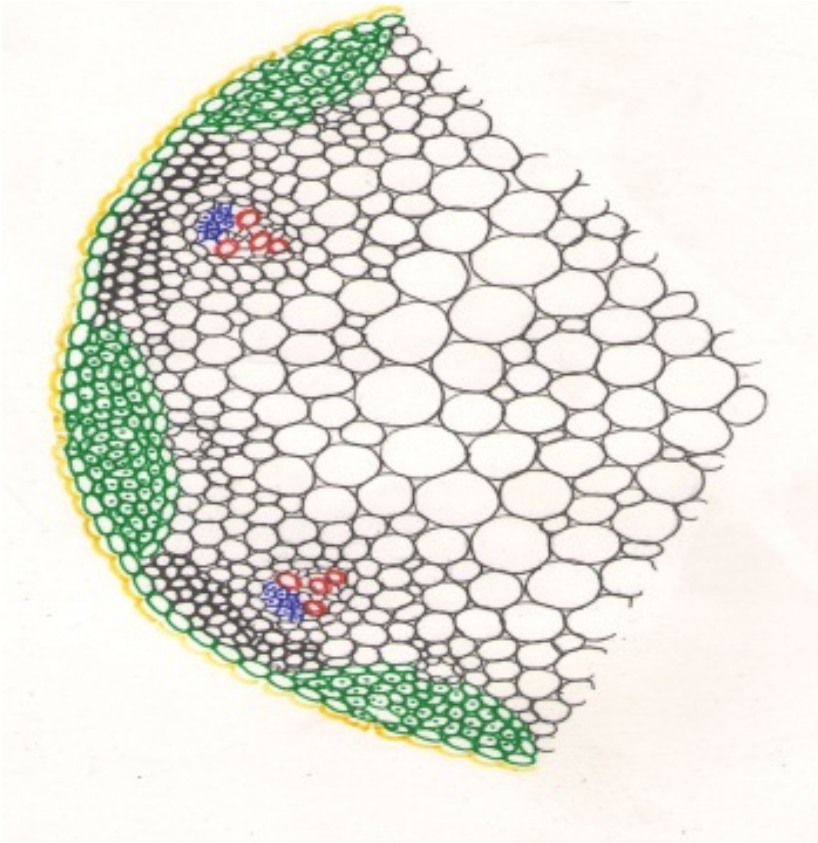

Fig.3. View of the cross section of the spike carrying stem at *Ae.triunicalis* species.
1.Cuticul; 2.Epidermis; 3.Chlorenxim islets; 4.Sixizogenic points; 5.Floema; 6.Xilema.

Aegilops leaf is surrounded by strongly developed mechanical tissue – sklerenxim in its different parts. These mechanical fiber usually spread in different parts of a leaf (lateral parts, around water carrier ducts et.al) in longish stripe shape gives it strengthen and flexibility.

Aegilops leaf is narrow longuish with parallel veins and leaflet covered the stem. Its leaf is amphistomatic. Its upper part is rough and the lower part is smooth. Among the hollows

'motor' cells are observed in the upper layer at some species. The water carrier duct of the middle vein keenly differs of the rest ones. It is usually round-shaped and surrounded by sklerenxima and parenxima tissue. Floem is clearly observed in the water carrier duct. The floem consists of sieveshaped pipes and varyies by small and full sytoplasmatic satellite cells and floem parenxima.

Metaxilem is connected with the floem. 2-3 protoxilem is located within a wave-shaped parenxim cell. Some water carrier ducts are surrounded by mechanical tissue joined to epidermis from upstairs and downstairs. The central water carrier duct varyies by 2-3 smal water carrier ducts by sides. The small water carrier ducts distingushed to the main water carrier duct are tied to the epidermis by means of the mechanical tissue from both sides. Sach state creates a morphophysiological opportunity for free location of greater water carrier ducts in chlorenxim as well as to imlement the methabolic process.

Small water carrier ducts are surrounded by dense cells. The xilem usually consists of 2-3 woodened elements in the small transmitting water carrier ducts (fig.4).

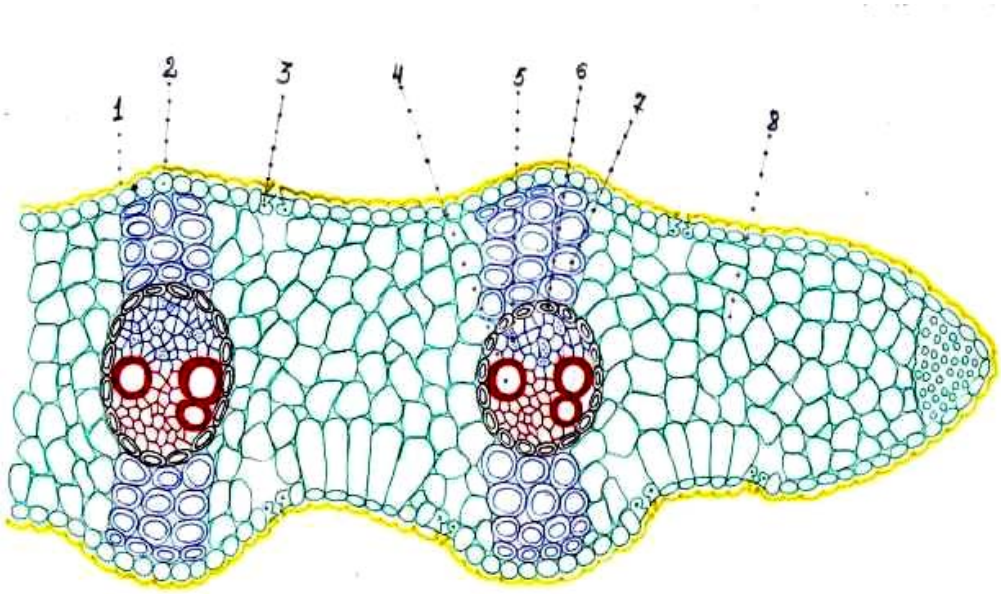

Fig.4. View of cross section of a leaf at *Ae.triunicalis* species.
1.Cuticul; 2.Epidermis; 3.Little mouth; 4.Xilema; 5.Floema; 6.Surrounding cells; 7.Sclerenxima.

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