

CONCLUSION

1. Before the beginning of the XX century land fund of Central Asia was a bit more than 2,0, mln ha being located, mainly. In naturally well drained zones of springs, glooded plains, small and middle rivers deltas and was presented by fertile species, not being subjected to abrupt to abrupt change of its water-physical and water -chemical qualities under irrigation development. On these lands under agricultural production unfavorable ecological-meliorative processes were not observed. It was promoted by high culture of farming of small dekhkan (farmer) farms, which exclusively carefullu treated with water resources, PREVENTING water losses during irrigation. Efficiency of irrigation systems and especially, irrigation technique existing in last century was high and varied within 0,92-0,94. However, because of low agricultural crop yield capacity, which is explained by insufficient volume of fertilizers and cultivation high water expenses per product unit and low productivity of irrigation water were observed everywhere compared with similar ones, obtained under modern level of agricultural production.

2. Practically all land fund of Central Asia, being introduced in agricultural rotation in XX century, with regard to natural signs, is presented by more difficult hydrogeological - soil - meliorative conditions.

In that Russia and especially under Soviet Power, under irrigation of farming lands which were located in complex natural-economic conditions, that is within high, middle and low river terraces, flooded plains, removal cones, pre-mountain plains and inter-mountain bowls, as well as river deltas, was introduced. Development and irrigation of lands, presented by these geomorphological - landscape signs, were accompanied with abrupt change of ecological-meliorative processes tendency and lands productivity losses. On lands, being located on high and middle river terraces, removal cones and pre-mountain plains, possessing sufficiently high natural drainability and high slope gradients, erosion, washing up and intensive losses of irrigation water for deep and surface releases arose and on low river terraces, in flooded plains in waists of removal cones, as well as inter-mountain bowls and deltas with low natural drainability - water logging and secondary salinization. Before 1950 development and irrigation of lands were accompanied with big specific expenses of irrigation water per area unit, reaching 25-30 th. m³/ha, that is explained by imperfection of irrigation systems and water -land resources management on farm level (low efficiency of canals of all ranges, irrigation regime, irrigation technique, etc.). Undertaken in this period various organizational-technical measures on arrangement of water consumption norms and improvement of ecological-meliorative processes tendency (prevention of GWT rising and secondary salinization of soil) as fulfillment of strict plans of water use on base of optimal irrigation regimes of agricultural crops water -circulation between brigades and farms, selection of irrigation method and irrigation technique elements did not cause reduction of lands productivity and their withdrawal from agricultural rotation.

So almost in all large regions of irrigated farming of CA agricultural production was carried our under low land use efficiency (LUE=0,35-0,6) and agricultural crops yield capacity (on basic kind of agricultural crops cotton -15-25 c/ha). Non-sowed areas were used as dry drainage

3. Measures on prevention of water logging and secondary salinization were carried out in the region during 50-s and the beginning of 60-s years on base of construction of deep collectors (h=3,0-3,5 m) with length B=8-10 m/ha on big distance one from another and small on farm drains (h= to 2,5 m; 12-14 m/ha) stopped for some time aggravation of ecological-meliorative processes tendency, but did not give expected results on increase of irrigated

lands productivity. Reasons of similar results as, on the other hand, in discrepancy of drainage parameters, on depth and length, requirement for necessary drainability of lands, on the other hand, so in variation of open horizontal drainage in time at the expense of overgrowing and siltation of canals ed.

At the same time in this period in connection with area development of ecological-meliorative processes over area (erosion and soil washing up intensive water losses in all links of inter-farm and especially on-farm canals, water logging and irrigated lands salinization) further reduction of irrigated lands and irrigation water productive on observed everywhere. Therefore in scientific- research, design institutes and productive agricultural and water -related organizations investigations are conducted for solution of reclamation and increase of irrigated lands and irrigation water productivity problems.

4. 60-s were turning-point period for irrigated farming culture rising in CA, when development and irrigation of new and improvement of productivity of irrigation massives were carried out on base of scientifically grounded complex reclamation of lands and intensive methods of agrotechnics of agricultural crops growing. Complex reclamation of lands included wide use of water -saving technique and lands irrigation technology, providing irrigation water saving (Efficiency of system and fields) in all links of canal, as well as drainage perfect types with its optimal parameters and high level of operation.

Systems of water -saving technique and technologies included application of, it was possible, untifiltration coating on large inter-farm and on-farm canals, flumes, closed water tubes and on irrigated fields-flexible and rigid irrigation tubes of various modification and optimal methods of irrigation and parameters of irrigation technique, providing regular mellowing of irrigated plot and minimization of releases from irrigation fields. Prevention of over mellowing and secondary soil salinization was conducted in the majority of regions on base of introduction of drainage perfect types (closed horizontal, vertical, combined and open horizontal with keeping its parameters by means of cleaning of bed), leaching and irrigation leaching regime (on saline lands). Wide-scale application of such complex approach of reclamation and development of lands gave positive results in many large regions of CA, where conditions of optimal management of water -land resources, increase of lands productivity under minimal expenses of irrigation water were created.

5. On irrigated massives by means of constructed engineering irrigation -drainage system there were created:

- favorable moderately, moderately intensive area drainability with ground water disposal over rayons from 3000 to 6000 m³/ha and more;
- negative water -salt balance with salt removal over separate regime from 10 to 50 t/ha per year;
- slowly progressing from year to year desalinization of aeration zone soils and salt removal from top layer of ground water, as well as drainage, flow. Since 1965 till 1985 almost everywhere area of medium and strongly saline soils was reduced with increase of category of non-saline and slightly saline lands.

At the same time important achievement of irrigated regime farming of CA is gradual acceleration of irrigated lands productivity growth and reduction of specific water consumption as per 1 ha, so per crop yield unit. So in 70-s, beginning of 80-s crop yield capacity of cotton over republics of CA varied from 28 to 30-32 c/ha, and over concrete regions (oblasts) such as Andijan, Khorezm, Tashkent, Surkhandarya oblast of the Uzbekistan, Kazakh part of Hungry steppe, Leninabad oblast of the Tadjikistan, Tashous oblast of Turkmenistan it reached (32-37 c/ha). In period of introduction of complex approach to reclamation annual water consumption over CA was reduced from 18-20 in 1960-65 to

14,0-14,5 th m³/ha in 1980-1985, and over certain regions, where perfect system of irrigation and drainage were introduced, such as Hungry steppe, it varied within 9,5-12,0 th. m³/ha.

6. Character feature of complex approach to development of new and reclamation of old-irrigated unforable lands is principle of pilot projects creation (according to local concept experimental-production plots (PP), which forestall main projects implementation, where in field conditions detailed investigations of correctness of design decisions, as well as so new ideas on solution of reclamation problems was conducted. With regard to results of field researches corrections were brought in lands reclamation projects, construction process, if project. Such principle of lands reclamation and development turned out highly effective measure, permitting in many cases to escape rough mistakes in solution of water -related construction and reclamation problems.

7. Further development of agricultural production after 1985-1990 showed scientific and economical in expediency of basic principles of complex development of new and reclamation of saline lands, being concluded in obtaining maximum capacity of machines, mechanisms and labor under organization of agricultural production by means of formation of large irrigated plots and in prevention of lands salinization - accelerated desalinization of aeration zone and salt removal from top horizon of ground water on the background of drainage, leaching and irrigation leaching regime in conditions of water resources shortage. Such approach to creation of irrigation - drainage system of water-land management at on-farm level is expensive.

Design of on-farm irrigation canal, with respect to provision of maximum capacity of machines and mechanisms by means of formation of large irrigated plots with area 40-120 ha and more, with length of run 350-500 m does not provide regularity of soil mellowing on area and increases water losses on fields, as well as is not coordinated with modern requirement of organization of farms, agricultural production. The same situation is with solution of problem on prevention of irrigated lands salinization on the background of drainage, leaching and irrigation leaching regime with big irrigation water expenses, though similar principle of soil desalinization has certain scientific base. However, in this principle fulfillment complex of organizational-technical measures and reduction of requirement of irrigation leaching regime and leading on drainage should be applied.

8. In prospective under perfection of irrigation -drainage systems of CA selection of their design and parameters should be based on solution of optimization tasks of water saving, increase of irrigated lands and water productivity with respect to demands of labor organization in agricultural production in conditions of market (farms and dekhkan farms, etc.). Fulfillment of projects of perfection over large massives should be carried out after research of their parameters on pilot projects, made with regard to demand of representativeness for certain natural region.