

Indigenous knowledge and need for integration with modern science¹ Ali Badragheh, ² Mohammad Abedi^{1,2} Department of Environment, Damavand Branch, Islamic Azad University, Damavand, Iran

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Abstract: main reason for inattention for native knowledge in third world countries is that colonist countries don't pay any attention to the peoples' knowledge and information in these countries and always have reminded the people of these colonized countries as a stubborn, superstitious and retrogressive people. On the other hand, the colonist countries attention to industrial productions and agriculture policies has caused to promote industrial and single product agriculture which will influence the native farmer's knowledge about different productions and will make it inconspicuous. Also, colonized plans and imported extension programs have intensified the alienation of native knowledge. In the middle of 1980 decade, there was a new view "giving priority to farmer" that increased the attention to native knowledge.

[Ali Badragheh and Mohammad Abedi. **Indigenous knowledge and need for integration with modern science.**Journal of American Science 2011;7(4):103-108]. (ISSN: 1545-1003). <http://www.americanscience.org>.**Keywords:** indigenous knowledge, modern science**Introduction:**

By first of 21 century, world see some sings of great concerns about social, economic and environmental system sets. It is expected that world population reach to 8 billion people at 2025. Increased consumption and poverty have led to high pressure on environment. At so many areas, environment condition is more fragile than before. We have faced decay at environmental issues, especially at vast parts of developing areas of world, in spite of considerable improvement of rivers conditions and air quality at some area such as Europe and north of America. Increased consumption, rare sources and factors such as population growth and imbalanced growth, would endanger, development of different countries (Popzan, 2002). Obviously, economic development can follow unexpected social and environmental affections involving weather changes, using freshwater sources inordinately, decrease living diversity and increase inequality (Gigler, 2003). Sustainable development is outcome of development that follow multi dimensional economic activities with protect environment and its related social issues. So in current decade, presenting indigenous knowledge issue was reinforced in order to present modern approach of development, in which the issue of human-oriented of development would be insisted. In this modern attitude toward development process, environmental, social and cultural concerns were emphasized over economic interests. Indigenous knowledge is part of national capital of each nation

which encompasses their beliefs, values, practices, tools and local acknowledges. This is the same knowledge that, different nations had found their foods from nature, prepared their clothing, settled in

home, educated their children, organized their society and kept health of themselves and poultries, during the centuries thereby (Eshraghi, 2004).

Indigenous knowledge of each nation has enabled them to supply their needs from natural sources without reducing these sources. So, indigenous knowledge collection of world is valuable source of practices and time-tested tool that would be useful for sustainable development of all societies.

At third world countries, unconsidered triumph of world development policies has led to various social, economic, cultural and environmental issues (Agrawal, 2002).

Definition of indigenous (native) knowledge:

Different definitions were presented about indigenous knowledge by experts that each of them present their idea about this knowledge from their viewpoint. Each of them emphasis on a special aspect of indigenous knowledge according to their viewpoint. Oxford vocabulary define the word indigenous knowledge such this" it is created naturally in a region which is related to the people of that region. (Azkia and Imani, 2008). Indigenous knowledge is a knowledge that has been grown in a long time and has transferred from one generation to other generation in hereditary form (Karami and Moradi, 2003). Williams and Molina have defined indigenous knowledge such this: indigenous knowledge is the learning methods, understanding and attitude to the world which is the result of experience and solving problems according to test and error by the people who are active and have used their available resources on its suitable time. Chambers with emphasizing on people's role in development process, believed that the phrase rural people's knowledge is more sensible than the other

phrase such ethnic ecology, ethnographic knowledge, ethnic classification. He also believed that indigenous knowledge is a knowledge that is created naturally and is emanated from geographical circle. (Chambers, 2000).

Indigenous knowledge and sustainable rural development:

unlike development that is dependent on using maximum of natural sources in order to current generation's access to maximum economic growth and income, sustainable development insists on supplying current generation's needs without jeopardizing next generation's facilities for supplying their needs. Policy making is impossible and unacceptable with no program that leads to starvation, poverty, social inequality and environment pollution at cities and villages and finally to ecologic devastation. In contrast, kind of development is acceptable that leads to continues improvement of life quality for all global society and next generations. Accessing to this goal is possible just through protecting natural sources and sustainable use of these sources.

Accessing to indigenous knowledge would enforce primary foundation of sustainable development. On the one hand, indigenous knowledge is production of empirical learning process and at the other hand is test and error of few thousand years of one society in relation to its environment. It is obvious that this knowledge represents human's interaction with nature and displays features of climate and specifications of vegetarian and animal nature of one region and more important, it displays their interactions with human (Kolawole, 2001).

By possessing this valuable information it is possible to predict its component relations, and it is possible to use of its latent power intelligently so that both balance be preserved and also human's needs be supplied.

At the other hand furthermore valuable latent information in indigenous knowledge, villager's epistemology would enforce relation between experts and local men. This issue is possible through deep analyzing of indigenous knowledge and familiarizing with local people's attitudes and epistemology and through that raft between men and experts would be restored. Everything is inter-related at village and intelligent rural people by considering accessible things in nature or easily is obtainable, would supply their needs (Box, 1999).

Broaching indigenous knowledge issue in order to presenting new approaches was reinforced in current decade which insists on human-oriented developing and sustaining. In this attitude, development process, environmental, social and cultural considerations,

was considered important in addition to economic interests. Principle of sustainable development can be summarized so that development should be consistent with desired society from aspects of sustainable environment, fair social aspect, and from economic efficiency and cultural viewpoint. Considering people's indigenous knowledge was emphasized directly or indirectly as one of the development needs, at most of forty principles of sustainable development charter. Considering indigenous knowledge means accepting variation principle and describes that all people share and participate at variation and culture richness and they create common human's heritage. Sustainable development would not be able to be success without identifying people's indigenous knowledge, role and its position and also without protecting knowledge and indigenous people's rights, because indigenous knowledge has most consistency with principle of sustainable development (Karami and Moradi, 2003). Necessity of attention to indigenous knowledge was appeared more due to failure of common development samples, especially at rural development, and being attracted to it to help formal knowledge was identified very critical. At the context of cooperative approach as new approach that is base on paradigms which forms concepts of development, focus on new revolution is emergence of new proficiency that is called indigenous knowledge. Cooperative approach is seeking to systematic use of indigenous knowledge at related researches to technologic actions.

According to different definitions of indigenous knowledge, it is possible to count it as part of unique culture of each ecosystem or country and that is knowledge and findings which obtained through experience in order to be consistent with certain ecosystem conditions, and changed as part of social and productive culture of that society over time. This acknowledges, represent compatibility methods with nature and establishing reasonable relationship between human and his environment. And has complete harmony with principle of sustainable development, form this viewpoint (Burger, 1997).

comparison of native and modern knowledge

Native knowledge is different from modern knowledge in some cases that we will explain them as follow:

- Modern knowledge is reductionism (atomistic) but native knowledge is holist
- Native knowledge is reductionism (atomistic) and modern knowledge is holist
- By using native knowledge we can reach to a sustainable agriculture and modern knowledge doesn't have this feature.

- Government organizations have known native knowledge unreliable but modern knowledge is supported by scientific organization and institutions.
- Native knowledge is available for rural people but modern knowledge is not (Rajasekaran and et al, 1996).

compilation of native and modern knowledge:

Many experts believe that for making a sustainable development, native and modern knowledge should be combined. Nowadays, so much efforts have done to make use of native knowledge but main part of these efforts were done for derivation and making it scientific (Burger, 1997).

Amiri Ardakani and Shah vali (2003) believe that the undesirable outcomes of development on people and rural environment is the result of using new science by scientist, so by blending and making relation between modern and native knowledge we can solve this problem.

Millar believe that by combining native and modern knowledge we can make trust between researchers and rural people, because by using this way researchers and rural people know themselves as a partner that are responsible for a common process and product. Millar believe that the trust is the reason for future development (Penny, 2001).

Experts believe that there is no way to reach sustainable development except to combine native and modern knowledge.

Native and modern knowledge will complicate when:

- 1- We solve structural barriers such as political, economical, cultural and social difficulties.
- 2- We correct the thoughts on educational systems by emphasizing on learning and thought process and also correct the thoughts on research systems by emphasizing on audience and beneficiaries needs.
- 3- We solve communication barriers that cause inactivity on relation process and steady and dynamic flow of knowledge between peasants, experts and scholars. (Emadi and Amiri Ardakani. 2004).

Nowadays, making scientific native knowledge in agriculture had devoted important part of native knowledge researches to itself. Creation forestry cultivation system which is taken from indigenous exploitation pattern in forested region is the result of making scientific native knowledge. Stimulus cultivation of fruit trees with other production was usual by farmers in developing countries from one hundred years before (Louise, 2000).

Environmental problems because of forest destruction, made scientist interested to use of forestry's methods and ways and forced them to make these ways scientific. Scientist had specified the physical and biological compatibility between different species and it is output according to laboratory studies and has identified compatible trees and productions. Then they supplied package sets by new title such as forestry cultivation, multi-cultivation and ecological agriculture systems and give them to farmers in commercial and formulated packages. Making native knowledge scientific is meaning to find its efficiency scientific reasons. In the process of making native knowledge scientific, most of the experts and researchers are not aware of cultural aspects of ways and native methods. If derivation of native knowledge and making it scientific was without attention to cultural aspects and governing values on indigenous society, it couldn't be acceptable among native people.

Experiences show that native people would not accept methods which are not compatible with their belief and needs even if it had had scientific bank roll (Emadi and Abbasi, 2001).

reaching to sustainable development through native knowledge:

Dictated pattern's failure through western development countries to third world countries show that native knowledge is necessary to reach development.

Untrop believe that usage of local knowledge is efficient and useful in development and native knowledge's researchers believe that they achieved to an important source for innovation in agriculture methods and a good farming production to improve the rural people's life. On his idea, some of researchers call native knowledge as a good supplement and replacement for modern knowledge and they have tried to spread the usage of this knowledge all around the world. These plans as a "communion research with farmers" or "first is the first" are introduced. In this research method, private organs and local groups have the main role and unlink the current research plans, the tests are done with the farmers attendance in their farms and not in research centers and far from environment condition. The ways that farmers and rural people use for management of their living environment are the most scientific ways, although we couldn't understand it at the first sight (Chambers, 2000).

Eshraghi (2000) explained that by introducing sustainable development model or development environmental model and according to world food organization (FAO), sustainable development will create when applied technologies in rural

development are in proportion with rural people's knowledge and also are acceptable by them. Also he says that one the main ways to reach sustainable development in society is that to have enough and necessary attention to the rural's native or local knowledge (Merrewij, 1998). It is also explained that attention to this knowledge needs a complete recognition of rural people and their knowledge that through assembling of this knowledge we can find a correct way to reach a sustainable development and we should know that the movement toward sustainable development is not possible without correct using of native knowledge. Many development experts believe that the Sustainability of this concept is at the studying of this knowledge and in becoming popular in development. Indeed, native knowledge with its holist features had known the relation between nature's components better and had smoothed the way to Sustainability of development (Gigler, 2003).

We can summarize the usage of native knowledge in development as fallow:

- 1- Protection and maintenance of natural sources. Native methods in management of natural sources are suitable pattern for managing natural sources in sustainable development.
- 2- The success of sustainable development plans is depended to rural people's communion at designing, schematization, performance and assessment. Use of native knowledge is necessary for rural people's communion.
- 3- Native and modern knowledge should be combined because according to our needs and vulnerability of remained natural sources, none of them are able to remove our needs a lonely.
- 4- For recognizing development needs, trouble shooting problems should be polestar from rural people's view and recognizing problems and making efficient relation with rural people are possible through native knowledge.
- 5- In industrial countries, native methods are forgotten completely because of using modern knowledge in production process. As native methods are the most suitable way for achieving sustainable development goals so, many efforts were done to make this knowledge alive.

As a result not only we shouldn't forget the native knowledge but also we should use of this knowledge in developmental plans. Using native knowledge in developmental projects will help to have sustainable

development in villages. So developing and not developing that were using of western development patterns for many year, should use of their native and local knowledge which is the result of many years experience and by helping these plans they can reach to a sustainable development(Brouwer, 1998).

Conclusion and discussion:

also , necessity of considering indigenous knowledge at developing extension programs is emanated from where that is considered as principal components and sustainable human development items is emanated from same sources. At sustainable human development, people are considered as "goal" of social and economic policies that their range of their selections would be extended in order to actively participate at decision making. Therefore, people's participation is one of tools of sustainable agriculture development. But active rural people's participation at extension programs as a form of sustainable would not be possible unless by believing role of rural people's knowledge, vision and skills. Necessity and importance of indigenous knowledge and sustainable human development prepared field for establishing "united nation conference, about nature and development" at 1992.

this conference was established due to complaints against damaging environment in order to prepare basis for active indigenous people's participation at legislation and policy making , how to manage sources and related activities to development ; and also if people presented some suggestions about recent subjects , so find way to practice them. Failure of moved technology to rural societies also manifested necessity of considering indigenous people and their knowledge. At the other hand, considering indigenous knowledge is essential to help formal knowledge; because indigenous expert's attendance beside other experts has very critical importance. For example, indigenous peoples know condition of their regional epistemology, very well. Thus, their attendance is very affective for extending incompatible technologies with condition of region and at least, it conceives propagators to test these innovations at small scales and under natural condition and helps to extend them at larger scales, after being ensured of their appropriateness.

Finally native knowledge as a constant structure, with many years experience could attain a deep understanding and insight of the environment and ecologic exchanges. This knowledge is conveyed to next generation and the next conveyed it to their children. Native knowledge is on the verge of destruction like a curative prescription that has hidden a constant glamour on it. By dying each native person, the great treasury of knowledge will

lay underground and these knowledge sources are destroying very speedily.

On the research which was done by Bozarjomhari (2004) with this title "analyzing native knowledge position on rural sustainable development". It was specified that although there are many differences between native and modern knowledge but they are not in contrast with each other, because they are each other's supplement and we can't be success when we use them separately. According to new parameters in rural development, for solving rural problems, at the first we should use of native solutions and if it was not efficient, we can use and test external solutions.

Research findings which was done by Emadi and Amiri (2004) with this title " compilation of native and modern knowledge is necessary for reaching agriculture sustainable development" signify that The believe of educated people to native people and their knowledge " precondition for making them close" is called combination and compilation. Making evolution in modern system for attention to tentative knowledge is the main necessity for this compilation. Another necessity for this evolution is the researcher's attention to experimental accumulated wisdom and historical exploit by using qualitative and communion methods. Also applying compilation methods and making evolution among government, educational centers, farmers and peasant is the necessity and pre condition for combination of modern and native knowledge.

Research findings that was done by Karimi with this title " native knowledge in development process" signify that native knowledge was a essential element and important source for realization of sustainable development, poverty reduction, making local people capable and motivate them to participate in activities for agriculture and rural development, developing and product suitable technology, rural society's self-reliance and self sufficiency. For this reason all side's try, partnership and protection for record and registration, compatibility, distribution and promotion , exchange of this resources and also suitable and scientific guidelines for compilation of this knowledge with new knowledge and rural and agricultural development plans are needed.

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References:

1. Azkia, M and Imani A, Sustainable Rural Development - Publications Information, Tehran, 2008.
2. Eshraghi, G , Indigenous Knowledge and Development Planning, Journal of Forest and Rangeland, No. 40, Forest, Rangeland and Watershed country, 2000.
3. Amiri Ardekani, M. and Shahvali, M. Principles, concepts and indigenous knowledge Agriculture "series of publications and development of villages No. 34, Second Edition 2003.
4. Bouzarjmehri, Kh. indigenous farming knowledge of gender and its role in Rural Development and Research, Centre of Quarterly Tehran University Women (Women's Research), 2004.
5. Popzan, A. Design and compilation of indigenous knowledge, modern media in order to achieve a partnership approach in Kermanshah province - end of period letter PhD Tehran University Faculty of Agriculture to help Azkia and Seyed Mahmoud Hosseini. 2002.
6. Chambers, Robert - rural development, priority part to the poor (supporting vulnerable groups), translated by Mustafa Azkia, Tehran University Press, 2000.
7. Farrokhi, S and Yaghoubi, J. technology development through indigenous knowledge systems with agricultural research - Journal of Jihad, No. 224-225, 2002.
8. Zare, H and Yaghoubi, J. attitude to the indigenous knowledge - Journal of jihad, No. 231-230, 2003.
9. Razavi, M. Agriculture and natural resources, indigenous knowledge and combining it with modern knowledge, Jihad magazine, twenty-five years, No. 269, 1999.
10. Emadi, M and Amiri Ardekani, M. - combining indigenous knowledge and formal knowledge, necessary to achieve sustainable development of Agriculture - Rural Development Publication No. 54, 2004.
11. Emadi, M and Abbasi, E. indigenous knowledge and sustainable development of villages, the old view of a new zone, and development of village's No. 33, 2001.
12. Karami, R and Moradi, Kh. The place of research, training and promoting the preservation of indigenous knowledge, Journal of Jihad, No. 255, 2003.

13. Nowroozi, A and Alagha, E. a new category of indigenous knowledge in rural development research - Journal of jihad, No. 223-222, 2000.
14. Brouwer, Jan. (1998). IK, IKS and ITK. Indigenous knowledge and Development Monitor. Vol.6, Issue 3, p, 13.
15. Giger, S, et al. (2003). ICT for Indigenous Development. Available at: [http:// topics.Developmentgateway.org/ ict/ sdm/ preview Document](http://topics.Developmentgateway.org/ict/sdm/previewDocument). Do ~ active Document Id 2003.
16. Merrewij , A. v. (1998). Three definitions of indigenous knowledge. Indigenous knowledge and Development Monitor. Vol.6, Issue 3, p, 13.
17. Box, L. (1999), for the fun of it, Guest Column, Indigenous knowledge and Development Monitor 792; 36.
18. Kolawople, D. (2001), Local Knowledge Utilization and Sustainable rural development in the 21 St. Centuries, IK Monitor Article (9-1).
19. Dewes, w. (1998), Introduction, p. 3in traditional knowledge and sustainable in S. H. Davis and K. Ebbe (Eds) Proceedings of a conference held at the World Bank Washington, D.C, sept. 27-28. Environmentally Sustainable proceeding series No. 4.
20. Louise, G (2000), Working with indigenous knowledge (A guide for researchers), published by the International Development research Centre, po Box 8500 Ottawa. On, Canada K1G 3H9.
21. Penny R. A (2001), Gender and Indigenous Knowledge, IK&D M, Article (9-1).
22. Rajasekaran, B.D.D. M. Warren and S.C. Babu (1996), Indigenous natural-resource management system for sustainable agricultural development- a global perspective Journal of International Development 3 (4).
23. Warren, D. M. (1999) The role of indigenous Knowledge and biotechnology in sustainable agricultural development A Keynote Address presented at Southwestern Nigerian Regional Workshop on indigenous knowledge and Biotechnology, Obafemi Awolowo university, Ie- Ife, OsunState, Nigeria 30 July.
24. Agrawal. A ,(१००१) "Dismantling the Drivide between Indigenous and scientific knowledge "Development and change vol 26.No3.
25. Ahmed, M. 2000 .Indigenous Knowledge for Sustainable Development in the Sudan . Khartoum, Sudan. Khartoum University Press.
26. Appleton, H., Jeans, and A. 1995 "Technology from the People: Technology Transfer and Indigenous Knowledge ." Science, Technology and Development.
27. Burger, J. (1997)The Gaia Atlas of First Peoples: A Future for the Indigenous World, Penguin Books, and Ringwood.

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