

Institute of Christian Learning
Education Department of Seventh-day Adventists

**CONSERVATION OF BIODIVERSITY:
BIBLICAL CONCEPTS**

By
Noah Angwenyi
University of Eastern Africa, Baraton
Department of Agriculture
Eldoret, Kenya

**350-98 Institute for Christian Teaching
12501 Old Columbia Pike
Silver Spring, MD 20904 USA**

Prepared for the
International Faith and Learning Seminar
held at
The University of Eastern Africa, Baraton
Kenya
November 22 - December 4, 1998

INTRODUCTION

The interrelationships among man, other living organisms and the physical environment has been a relatively obscure religious and academic concern. Without referring to origin, ecologists claim that "an individual plant or animal cannot exist as an isolated entity but is dependent upon its environment." (Turk et al 1972). Starting from the point of view of the Creator God, biblical authority asserts that humans were made "to have dominion over...." what would be termed the other created ecological factors of the earth, (Psalm 8:6-8). White (1905, 20-21) simply states: "All created beings are interdependent."

The 1992 Rio de Janeiro Earth Summit on the Environment and Development (Rio Summit) globalized the issue of conservation of biodiversity and thus profoundly changed the perceptions and awareness concerning ecological interrelationships. Serageldin (1995) states that this summit created "a spirit of political commitment and international solidarity" concerning the stewardship of the earth's resources. Serageldin captures the spirit of the Rio summit by quoting a participant (Al Gore, US Vice President), who said "this conference enabled participants to share a deeper understanding, a recognition that we are all part of something larger than ourselves, a family related only distantly by blood but intimately by a commitment to each other's common future".

The conservation of biodiversity was discussed under Agenda No. 21 of the Rio Summit which led to drawing up of a convention on biodiversity. According to Cicin-Sain and Knecht (1995) the biodiversity convention addressed three aspects: conservation; sustainable use of components; and, equitable sharing of the

benefits arising from the utilization of genetic resources.

The thrust of this essay is to examine how sustainable conservation of biodiversity can be achieved from a biblical - christian world view. The essay is divided into several sections for discussion purposes. The sections include:

- The definition of biodiversity
- Biblical concepts of ownership
- Stewardship over biodiversity
- Benefits of conserving biodiversity
- Degradation of biodiversity
- Sustainable conservation
- Summary and conclusions

BIODIVERSITY

Biodiversity comprises all the living organisms which, together with the non-living components comprise the totality of the earth's environment. A more inclusive definition of biodiversity is that adopted by the Rio Summit and it implied "the variety and variability of genes, species, populations and ecosystems" (UNCED, 1992). Variability may be understood as the total heritable variation in the characteristics that exist in all living things that are found in a specific region or habitat.

It was recognized by UNCED (1992) that the biological resources that comprise biodiversity contribute to feeding, clothing, housing, healing and spiritually nourishing humans. It was also further noted that "the natural ecosystem of forests, savannahs, pastures and rangeland, deserts, tundras, rivers, lakes, seas and farmlands contain most of the earth's biodiversity"

(UNCED, 1992). Perhaps the most significant contribution of the Rio Summit on biodiversity is the statement on the stewardship of biodiversity. It was noted that "the current decline in biodiversity is largely the result of human activity and represents a serious threat to human development."

Biodiversity was further recognized as constituting a capital asset with great potential for yielding sustainable benefits to humans. According to Lesser and Kyle (1996) the ownership rights to biodiversity is a contentious factor to resolve for successful implementation of the convention on biodiversity. An important question to pose in regard to the sustainable conservation of biodiversity is: Who is the rightful owner of the earth's biodiversity?

BIBLICAL CONCEPTS OF OWNERSHIP

The conservation of biodiversity revolves around three principal factors. These are property ownership, stewardship of resources, and the nature of resources themselves. In his famous "Tragedy of the Commons", Hardin (1968) argues that "collectively owned property is the culprit for the degradation of communally owned resources." The author also claims that "privately owned property was necessary to sustain environmental resources." Yet other recent studies have presented evidence that sustaining environmental resources is not dependent on any particular property ownership regime. Hanna and Munasinghe (1996) suggest that a well - specified property rights regime and a congruency of that regime with its ecological, social, political, cultural, economic and even spiritual contexts determine resource management outcomes. The

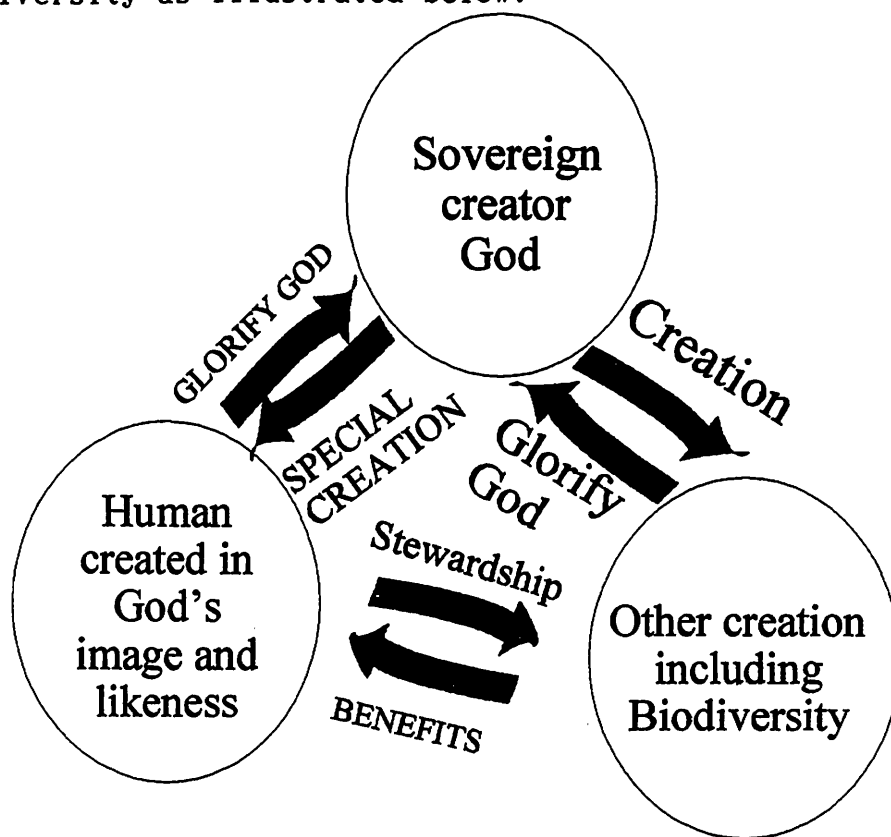
establishment of sophisticated legal mechanisms for property ownership rights including intellectual property ownership has not led to consensus on this subject. The biblical teaching of the Creator God Who is the Owner and humans being stewards of creation deserves consideration.

Young and McCay (1995) suggest that stewardship is "the intentions and behaviors of resource users with respect to maintaining the productivity and ecological characteristics of a resource or ecosystem." The same report further says that stewardship is "a measure of the degree to which resource users prefer potential long-term benefits to short-term opportunistic gains." This measure is in relationship to behavior and motivations of individuals towards stewardship . There is a paucity of scientific studies on ownership - stewardship relationship other than ownership in the temporary context. This could be explained by the inherent assumption by the scientific community that biodiversity came into existence by means other than through a Creator-Owner God.

The Biblical standpoint is quite explicit on the three-way relationship between ownership, stewardship and biodiversity. Scriptures attest clearly that God is the owner of the earth and its biodiversity by virtue of being their creator.

The Bible asserts that "The earth is the Lord's and its fullness, the world and those who dwell therein" (Psalms 24:1) The Bible also answers how this ownership came into being: "In the beginning God created heaven and earth" (Genesis 1:1). The means by which creation occurred are stated by the Bible: "By the word of the Lord were the heavens made; and all the host of them by the

breath of His mouth ... for He spake and it was done; He commanded and it stood fast (Psalms 33: 6-9). The purpose for which God created is given as "All things were created by Him for Him" (Colossians 1:16). Humans were a special creation among the created things: "And God said, let Us make man in our image, after our likeness" (Genesis 1:26). The Bible therefore leaves no doubt that the earth's biodiversity as well as the humans are the creation of a Sovereign God who is their rightful owner. That these things were created for God implies He created them for His glory. There texts show a relationship existing between the Creator God, the humans and biodiversity as illustrated below.



INTERRELATIONSHIP BETWEEN GOD-HUMANS BIODIVERSITY

STEWARDSHIP OVER BIODIVERSITY

The book "Seventh-day Adventists Believe" defines a steward as a person "entrusted with the management of the household or estate of another" and adds that it is "the position, duties or service of a steward." Smith (1973) says that "stewardship involves the wise and unselfish use of life" and Wellman (1950) points out that "stewardship embraces every relationship between God and man and between men and their fellow men." Wellman further asserts that "Every human being, knowingly or unknowingly, is a steward upon whom God has bestowed His bounties and of whom He expects an acknowledgement of obligation through life, service and sacrifice. According to Mel Rees (1982) "stewards identify with the master and the master's interests become theirs."

In its fullest form and in biblical context, stewardship covers all life experiences including our bodies, our time, our influence, our service, our means and all our abilities. For all these life experience, the Bible says "... every one of us shall give account of himself to God (Romans 14:12). A faithful steward is the one who will confidently declare that " ... I delight to do thy will, Oh my God, Yea, Thy law is written in my heart" (Psalm 40: 7-8). Stewards believe that "... love the lord thy God with all thy heart, and with all thy soul, and with all thy strength, and with all thy mind ..." is their duty. Faithful stewards heed the admonition that "see that ye walk circumspectly, not as fools, but as wise, redeeming the time, because the days are evil," (Ephesians 5: 15-16). Those on earth with the above stewardship values and attitudes are best placed to conserve the earth's biodiversity. The acknowledgement of the Creator God's ownership of

all creation is basic to being faithful stewards.

It is clearly inferred from scripture that biodiversity management outcomes reflect the nature of relationship we maintain with God. It is not possible for us to maintain the correct relationship with God unless we acknowledge Him as the true origin and owner of all biodiversity through creation. Moreover, it is for God's own glory and praise that we carry out our stewardship privileges faithfully. The motivating factor for faithful stewardship is God's unmerited love as manifested in Jesus Christ. The Bible declares in I John 4:9 that "in this was manifested the love of God towards us, because that God sent his only begotten Son in the world, that we might live through Him". Our stewardship is therefore a privilege.

BENEFITS OF CONSERVING BIODIVERSITY

Conservation of biodiversity cannot be viewed as separate from human experience because their destinies are connected. Maurice F. Strong (1996) suggests that the behavior of individuals and the priorities of society depend on people's moral, ethical and spiritual values. Berry (1996) is of the view that "our behavior depends on the values we put on ourselves, our community, the future and nature itself. Hoyt (1996) also argues in the same vein that "it matters that we care, that we are concerned enough about the inequity and injustice, the exploitation and the degradation so prevalent about us that we resolve personally and individually to become involved, to make a difference." The simple inference from the above statements is that conservation of biodiversity takes individual effort and commitment and its benefits go beyond the

individual and into the future. Vietmeyer (1996) gives several striking examples where individual men have employed their stewardship abilities, service or influence to conserve biodiversity for the benefit of communities, nations and society.

These examples are:

- a) The blight that devastated Ireland's potato crop in the 1800's was overcome with resistant strains of wild potatoes in Mexico, the home of the fungus that causes the disease.
- b) A non-descript strain of Mexican maize saved the American maize crop in the 1970's when another blight struck 50% of the crop.
- c) Rice grown in Southeast Asia is protected from four main rice diseases by genes located providentially in a single species of wild rice from India.
- d) Tomatoes could not be grown commercially without genes from at least nine wild relatives from Peru.
- e) On the eve of World War II Central America's banana industry was rescued by genes from a banana plant collected in a botanic garden in Saigon that provided resistance to the devastating Panama disease.
- f) The US spinach crop is protected from blight and wilt by genes from Chinese large-leafed spinach, whose seeds an American plant explorer picked up early in this century.

The above examples illustrate the conservation of biodiversity for the blessings of many, around the world.

The stewardship of abilities, of influence, service, time or our means are attained through the gifts of the Holy Spirit. When and if these spiritual gifts are cultivated, they will contribute

tremendously to conservation of biodiversity. Indeed, the Bible presents this as an accountable duty for the human stewards. In 1 Corinthians 4:2 is stated "it is required of stewards, that a man be found faithful." The Rio Summit raised concerns about the future state of the environment and conservation of biodiversity. The summit reached the same conclusion as stated in the Bible: "For we know that the whole creation groaneth and travaileth in pain together until now" (Romans 8: 22). Much needs to be done to achieve conservation of biodiversity and this is only possible through faithful stewardship of all human individuals in the world.

DEGRADATION OF BIODIVERSITY

According to Mel Rees (1982) the false concept of stewardship is one reason why many people realize no real satisfaction from their lives and thus leads to the degradation of all creation. While many humans believe that we are all part of God's global village and therefore should cooperate for the common good, at the same time we compete with one another for self-interest. We live in a world that suffers from chronic problems of violence, greed, poverty and materialism. At the center of all there is selfishness, the root cause of all evil. Schumacher (1973) categorizes humanness into three levels: "a spiritual being inescapably concerned with values; a social being inescapably concerned with people and also with other sentient creatures; and, an individual inescapably concerned with developing the self." Holistic and true stewards need to act as spiritual beings with moral values, with good neighbouriness and as individuals with a self that recognizes their

stewardship responsibilities. With selfishness, self takes the center stage and excludes the Creator and the other creation. Living for self, serving self by humans has led to the sufferings experienced by all creation through degradation and environmental pollution.

Selfishness is the root of all evil. The Bible points to Satan as the father of all evil that he had designed to destroy the sovereignty of the Creator God. For the devil said "... I will ascend into heaven, I will exalt my throne above the stars of God ... I will ascend above the heights of the clouds; I will be like the Most High" (Isaiah 14: 13-14). All biodiversity is under siege of degradation because the human stewards, whom the Creator God has charged to manage it are not doing this faithfully. Man has consistently worked towards selfish objectives in the management and utilization and conservation of biodiversity. In the process, faithful stewardship has been compromised. Humans have selfishly over-exploited important species or strains of biodiversity, habitats or the earth's biosphere for personal gain. Strivastava, et al. (1996) argued that if species and genetic variation are diminished by human activities, the options are closed for improving agriculture and other activities that are essential for human survival and economic growth. Man has contributed to the degradation of biodiversity in diverse ways as shown below:

1. Reducing biodiversity through genetic uniformity which raises the danger that plant and animal resources could succumb to diseases and pests. This problem is affecting plants like

wheat, rice, potatoes, cassava, citrus, banana, poplar, pine and rubber.

2. Agricultural intensification which requires more purchased inputs including fertilizers, pesticides, herbicides and machinery. These practices result in pollution of lakes, loss of soil microorganisms, acceleration of soil erosion and draining of wetlands (Vietmeyer, 1996).
3. Policy considerations often have adverse effects on biodiversity. These include Macroeconomic, Agricultural land use and trade policies which often favor the wealthy few in society at the expense of the poor majority.
4. Production systems influence how biodiversity is managed. Biodiversity uses genetic variance and the degree of genetic diversity vary across production systems. These production systems evolve under the influence of human socio-cultural, economic and environmental factors. These systems include grassland systems, mixed farming systems, landless systems, Agroforestry and pastoral systems (Blackburn et al., 1996).
5. Natural disasters and civil strife may have adverse effects on biodiversity. These include drought, floods, killer diseases such as AIDS and civil wars. These disasters incapacitate human populations and accelerate the degradation of biodiversity.

It is selfishness that breeds inequality, injustice, violence, envy, prejudice and other vices in families, communities, nations and human society. All creation including the earth's biodiversity

suffer degradation as a consequence of personal and corporate selfishness.

SUSTAINABLE CONSERVATION

The earth's biodiversity is in need of redemption for its sustainable utilization unto future generations. Sustainability has been defined as "meeting the needs of the present generation without jeopardizing the ability of future generations to meet their needs" (Hanna and Munasinghe, 1995) Philosophically, this definition may be acceptable but is not operationally useful. It is observed for instance that the needs of the disadvantaged billions who live in abject poverty are clearer than the needs of the materially endowed few who consume about 80% of the world's products annually.

Serageldin (1995) proposes that sustainability be viewed as opportunities currently available that we leave to future generations. Opportunity can be measured in terms of capital. Serageldin (1995) proposes that this capital be categorized into four types: physical, natural resources, human and social. According to the same author, when the World Bank tested this concept for 192 countries, it was discovered that most of the wealth is in human, natural and social capital. When humans are empowered and their social institutions are strengthened, then sustainable conservation of biodiversity would be achieved. However, judging from the low achievement of the Rio Summit expectations, it is evident that the causes of degradation of biodiversity have not been fully established.

It is therefore significant to note that Maurice Strong (1995) has brought to the fore a very important dimension to conservation of biodiversity. He has observed that: "Actions that do not flow from our deepest spiritual, ethical and moral values cannot succeed in building the kind of secure, sustainable and hopeful future to which the Rio Summit pointed and to which we aspire." What this implies is that focus must be on personal attitudes toward management of biodiversity. The aspects of equity, as they influence use of biodiversity are important. Hardin's (1968) suggestion that "freedom in the commons brings ruin to all" would perfectly apply to man's attitude towards the existing genes, populations, habitats, ecosystems, or indeed the earth's biosphere. The absence of rules governing the use of the earth's biodiversity will bring ruin to all. The Rio summit attempted to devise suitable rules that could apply to all. These have been subject to dispute at all levels, from international to individual. The cost of compliance enforcement would also be limiting even if there was consensus on these rules. The only viable option for sustainable conservation of biodiversity is that of individual choice. This individual choice has to do with individual behavior and this is linked to our stewardship responsibilities.

According to Rasi (1998) behavior is influenced by institutions, laws and principles which also arise from values and beliefs held by an individual. One's World view shapes one's values and world view is formed by faith.

From scripture, we see a set of rules that could influence

individual behavior on biodiversity. Belief in the origin of the earth's biodiversity is critical in shaping the world view which accepts the Creator-God as the owner of all biodiversity including humans. This in turn will help individuals to properly contextualize their role as stewards for God's creation. Instead of being hell-bent on exploiting existing biodiversity for selfish ends, humans will have to understand what God's will is for their present and future good.

Humans require a reformation from within self so that they can put God first in their service and demonstrate love and concern for neighbors. This will be possible if humans faithfully comprehend God's own motive as illustrated by the verse "For God so loved the world that He gave His only begotten Son" (John 3: 16).

Sustainable conservation is possible if the good news of redemption through Jesus Christ were preached and faithfully accepted by all on earth. The gospel promises a new earth to be inherited by the redeemed of the earth where truly sustainable conservation of biodiversity will be achieved for eternity. The Creator admonished us: "But seek ye first the kingdom of God, and His righteousness; and all these things shall be added unto you" (Matthew 6: 33). God is willing to redeem us and through us, all biodiversity. Ellen White (1905) sums up the immense value of those that heed the gospel call for faithful stewardship and says "There is no limit to the usefulness of one who, by putting self aside, makes room for the working of the Holy Spirit upon his heart, and lives a life wholly consecrated to God" (The Desire of Ages, pp.

250-251). This is the secret to sustainable conservation.

SUMMARY AND CONCLUSION

The 1992 Rio de Janeiro Earth Summit on the Environment and Development (UNCED, 1992) is in full agreement with Christian-biblical teaching and the scientific community that biodiversity is important to the humans existence and welfare. There is consensus from all that the current degradation in biodiversity is largely the result of human activity and this represents a serious threat to human development and future survival. Whenever the earth's wealth of biodiversity is sustainably managed and its benefits equitably shared is dependent on individual attitudes, motivation and behavior. The biblical teaching of stewardship are critical to shaping a positive world view that is beneficial to sustainable conservation of biodiversity. On the other hand, selfishness is the root cause of the degradation of biodiversity that has been evidenced in the world today. This selfishness is traced back to its origin with satan when he revolted in heaven and so became the author of sin. Through this sin, the earth's biodiversity faces the prospect of ecological ruin and self-inflicted destruction by the humans' failure to manage and conserve it according to biblical teachings.

According to Wirth (1996) the world is desperately in need of a new set of shared global values "common purposes grounded in ethical principles of justice and stewardship." From the Bible, this fundamental change is possible if we recognize the sovereignty of God and of His ownership of all the earth's creation. This

recognition which must take place on personal level and collectively in our attitudes towards use of our bodies, our time, our influence, our means, our service and our abilities comprises true stewardship. The study of Environmental Education (Kizito, 1994), and the study of science in biblical context will lead us to faithful stewardship.

It is clearly evident that biodiversity, humanity and all creation in our planet earth are all in need of divine redemption from total degradation. They are in need of re-creation. Humans need recreation from perceiving biodiversity as materials to be exploited for the gratification of self and instead view it as part of God's creation under human stewardship. This re-creation is possible through the receiving through faith the gospel news as presented by the Bible. The good news of the gospel is our recognition of God's creatorship. The call to all humans in Rev. 14:6-7 is "... and worship Him that made heaven and earth, and the sea, and the foundations of waters." The Bible is full of examples which show that whenever humans heeded the call to true worship of the Creator God, they were rewarded with prosperity in body and their material possessions.

The secret to successful fulfillment of the Rio Summit resolutions or any ecological or scientific principles aimed at conservation of biodiversity for sustainable use is by heeding and embracing biblical teachings including the gospel call to true worship of the Creator God. The Creator God is coming soon to redeem and recreate His Own.

REFERENCES

- Blackburn, H.C. de Haan and H. Steinfeld. 1996. Livestock Production Systems and the Management of Domestic Animal Biodiversity in: Biodiversity and agricultural intensification: Partners for development and conservation/ Strivastava, J.P. N.J.H. Smith and D.A. Forno, Editors. pp. 95-106.
- Cicin - Sain, B. and R. Knecht. 1995. Analysis of Earth Summit Prescriptions on incorporating traditional knowledge in Natural Resources Management. In: property Rights and the Environment: Social Ecological Issues The Beijer inter. Inst. of Ecological Economics and The World Bank pp. 105
- Ellen G. White. 1940. The Desire of Ages. Pacific Press Publishing Association.
- Hanna, S. 1995. Efficiencies of User Participation in Natural Resources Management. In Property Rights and The Environment: Social and Ecological Issues. The Beijer Inter. inst of Ecological Economics and the World Bank pp. 59.
- Hanna, S. and M. Munasinghe. 1995. An Introduction to Property Rights in a Social and Ecological Context. In: Property Rights in a Social and Ecological Context: Case Studies and design applications/ Hanna, S. and M. Namasinghe, Editors. pp. 3-11.
- Hardin, G. 1968. The Tragedy of the Commons. Science. 162: 1243-1248.
- Hoyt, J. A. 1996. A New Discipline. in Proc. Ethics and Spiritual Values: Promoting Environmentally Sustainable Development. Serageldin, I and R. Barrett, Editors. pp. 2-3
- Kizito, J. 1994. Environmental Education: Caring for God's Creatures. In: Christ in the Classroom: Adventist Approaches to the Integration of Faith and Learning. Vol. 12: 121-141.
- Berry, R.J. 1996. Values in Agriculture and Energy. in Proc. Ethics and Spiritual Values: Promoting Environmentally Sustainable Development. Serageldin, I and R. Barrett, Editors. pp. 12-13.
- Lesser, W and S. Kyle. 1996. Policy Considerations along the interface between Biodiversity and Agriculture. pp. 31 in: Biodiversity and Agricultural intensification: Partners for development and conservation. Strivastava, J,N. Smith, and D. Forno, Editors. ESD and monographs No.11.
- Mel Rees. 1982. God and Man Unlimited. Review and Herald Publishing Association. Washington D.C. 20012.

Rasi, H.M. 1998. World Views, Contemporary Culture and Adventist Education. Discussion Paper Presented at the 23rd Faith and Learning Seminar, UEAB, Kenya. Nov. 22 - Dec. 4, 1998.

Schumacher, E. 1973. Small is Beautiful. Harper and Row. New York.

Serageldin, I. 1995. Effective Financing of Environmentally Sustainable Development.

Smith, P.G. 1973. Managing God's goods. Southern publ. Assoc. Nashville, Tennessee.

Strong, M.F. 1996. New Challenges in Proc. Ethics and Spiritual values: Promoting Environmentally Sustainable Development. Serageldin, I and R. Barrett, Editors. pp. 1-5.

The Holy Bible (KJV)

The Seventh - Day Adventist Believes: A Biblical Exposition of 27 Fundamental Doctrines. pp 269

Turk, A, J. Tuck and J. Wittes. 1972. Ecology, Pollution, Environment. W. B. Saunders company.

UNCED. 1992. AGENDA 21, CHAP. 15: Conservation of Biodiversity.

Vietmeyer, N. 1996. Harmonizing Biodiversity Conservation and Agricultural Development in: Biodiversity and Agricultural Intensification: Partners for development and conservation/ Strivastava, J.P. N.J.H. Smith and D.A. Forno, Editors. pp. 11-30.

Wellman, S.A. 1950. Your Stewardship and Mine. Review and Herald Publishing Association, Washington D.C. 20012.

Wirth, T.E. 1996. Values and Political Will. in Proc. Ethics and Spiritual Values: Promoting Environmentally Sustainable Development. Serageldin, I and R. Barrett, Editors. pp. 29-31.

Young, M.D. and McCay. 1995. Building Equity, Stewardship, and Resilience into Market-Based Property Rights Systems. In: Property Rights and the Environment: Social and Ecological Issues/ Hanna, S. and M. Munasinghe. Editors pp. 87-102.