Research on the Culture of Innovation in Agricultural Research Institutes

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Abstract This paper depicts the definition, elements and connotation of the culture of innovation in agricultural research institutes, and points out that the culture of innovation consists of conceptual culture, institutional culture, behaviour culture, and park culture. Through analysing the characteristics of the culture of innovation in agricultural research institutes, it has the following characteristics: stability, openness, systematicness, self-awareness, uniqueness. According to the general law of cultural development, we divide the development of the culture of innovation into cultural diagnosis of institutes, publicity and guidance, content building of the culture of innovation, solidifying and deepening of the culture of innovation, and points out the building path of the culture of innovation in agricultural research institutes. Finally this paper proposes the countermeasures and suggestions as follows; the building of the culture of innovation in agricultural research institutes should be combined with long-term development strategy; the building of the culture of innovation in agricultural research institutes should be combined with service and technology innovation; the building of the culture of innovation in agricultural research institutes should be combined with implementation of various kinds of specific work.

Key words Agricultural research institutes, The culture of innovation, China

Technology innovation is profound understanding based on development situation and law of contemporary technology and economy; culture innovation is profound grasp on the basis of strategic position and strategic role of culture in contemporary technology innovation. There is mutually interdependent and mutually reinforcing relationship between the two. To comprehensively enhance technological innovation ability, agricultural research institutes should not only promote "hard power" (equipment, funding, team, achievements, etc.), but also put more emphasis on "soft power" (ideals, values, spirit, culture, etc.), namely the building of culture of innovation. In the process of "hard power" making great strides, it is required to better give play to the role of "soft power", continue to get rid of scattered and "peasant-style" research methods, eliminate academic barriers, break the planning system, establish scientific spirit, and provide favorable environment for China’s agricultural science and technology innovation.

1 Definition of the culture of innovation in agricultural research institutes

What kind of culture is the culture of innovation in agricultural research institutes? On the basis of summarizing the concept of culture of innovation proposed by Chinese Academy of Sciences in 1998 and a lot of researches, as far as we are concerned, the culture of innovation in agricultural research institutes is a general term of advanced concepts related to the overall value and guidelines formed in technological innovation activities of agricultural research institutes, and the expression form. It is a kind of culture conducive to "innovation", stimulating a culture of innovation, the nature of which is shaping of advanced concepts.

2 Constitution elements and connotation of the culture of innovation in agricultural research institutes

Usually the culture of innovation consists of conceptual culture, system culture, behaviour culture and park culture.

Fig.1 Structure of the culture of innovation

2.1 Conceptual culture The conceptual culture is the cultural concept and spiritual achievements of agricultural research institutes formed in long-term scientific research. It is a kind of deep-seated cultural phenomenon, which is at the core of the whole cultural system.

The conceptual culture is the most important thing influencing innovation activities, which is the internal driving force of innovation. The development and change of beliefs, rationality value and other aspects included in the conceptual culture, de-
termine whether human activities are able to "innovate", which shows the attitude of people towards innovation activities. A kind of conceptual culture suitable for innovation, invests people with broad perspective of thinking and broad-mindedness, so that people are versatile and have superb skill. Thus, in itself, it is also bound to be a kind of innovation.

The conceptual culture usually includes mission of institutes, vision of institutes, spirit of institutes, values of institutes, scientific ethics of institutes, style of institutes etc., which are the sum of ideology of agricultural research institutes. The spirit of institutes is a kind of group sense, which is often generalized through concise language with connotation, and vividly demonstrated in the form of precept of institutes, song of institutes and so on. In general, the spirit of institutes is science and technology workers' consistent mentality, will and ideological level, with mutual sympathetic responses.

2.2 Behaviour culture The behaviour culture is a kind of culture generated in scientific research, study and life of institute personnel. It includes cultural phenomena stemming from scientific research, publicity and education, interpersonal relationship, mass recreational and sports activities and other activities. It reflects style of scientific research of institutes, mental outlook, dynamic interpersonal relationship, and idea of institutes.

To distinguish from different personnel, behaviours of institutes may include conduct of leadership, behaviour of excellent role models, staff behaviour and so on. The decision-making behaviour of agricultural research institutes is from leadership, and leadership is the core of institute management. In most agricultural research institutes, the excellent role models that reflect values of institutes deserve more attention, and they set good example to the vast majority of workers. Technology staff is the subject of agricultural research institutes, whose group behaviour determines holistic spirit and civilization of one institute.

2.3 System culture The system culture is explicit culture, recognized by the majority of scientific personnel, comprising leadership of institutes, organization form and management form. The scientific personnel consciously abide by it, and it is a kind of normative culture restricting personnel behaviours. It is backbone and bridge of the culture of innovation, integrating park culture and conceptual culture in the culture of innovation organically into a whole. Therefore, whether the system culture of research institutes adapts to innovation, determines whether the region can become greenhouse for innovation activities. The system culture appropriate for innovation is a kind of attractive system culture, audacious to accept new things, new concepts, with features of tolerance and looseness.

System of institutes interacts with ideas of institutes, and they mutually reinforce each other. Rational system is bound to promote the cultivation of right scientific research attitude and values of workers, while right scientific research attitude and values of workers will promote the proper implementation of the system, so that workers form good habits.

2.4 Park culture The park culture, as a part of the culture of innovation, appears in the form of external expression. What it contains is visible and tangible, and its main elements are as follows. First, they are name of institutes, emblem of institutes, flag of institutes, standard word, standard color etc., which are the most concentrated external expression of park culture. Second, appearance of institutes, architectural design, office environment, experimental platform, monuments, etc., which not only affect the emotion and psychology of personnel, but also to a certain extent inspire a sense of pride and cohesion of workers. Third, they are features, style, appearance and packaging of products and results. Fourth, they are facilities of culture, sports, and living. Scientific workers, as advanced intellectuals, have increasingly intensive demand for spirit with incessant improvement of standard of living and material. Establishing and improving cultural and sports facilities for the staff and actively carrying out healthy and beneficial cultural and sports activities, is an important part of spark culture in agricultural research institute. Fifth, they are the cultural transmission network, such as newspaper, magazines, network, closed-circuit television (CCTV), and billboards of agricultural research institutes.

These four aspects are closely linked and inseparable. The conceptual culture is the ideological basis for behaviour culture and system culture to come into being, and also core and soul of the culture of innovation; system culture is the carrier of conceptual culture, which plays a role in regulating behaviour culture; park culture, the outward manifestation and carrier of the culture of innovation, is the material basis for conceptual culture, system culture and behaviour culture.

3 Characteristics of the culture of innovation in agricultural research institutes

The culture of innovation in agricultural research institutes has the general characteristics of social culture, and also unique performance corresponding to the characteristics of institutes.

3.1 Stability The culture of any organization is always closely linked with the development of the organization, and it is stable. The culture of innovation in agricultural research institutes is no exception. The formation of the culture of innovation is a gradual process. It has been formed, and mastered by workers in institutes, with certain stability, never changing immediately due to change of scientific research project, scientific research results, organization system, and strategic objectives.

The formation of a kind of correct culture of innovation, especially the values in the core, often takes a long time, which needs vigorous promotion and patient cultivation of leadership, needs excellent role model in research institutions, and needs guarantee of scientific rules and regulations. Once the culture of innovation takes shape, it will become wisdom for development of institutes, and play role in long-term development of institutes.

Of course, the stability of the culture of innovation in agricultural research institutes is relative. With the change of domestic and international economic conditions, social cultural development, and management strategy of institutes, the culture of innovation will continue to adjust, improve and sublimate itself.

3.2 Openness The excellent culture of innovation in agricul-
atural research institutes has the characteristic of openness\(^2\). It never excludes the influence and impact of advanced management ideas and effective management model. The openness of culture of innovation will be conducive to development of the culture of innovation. By absorbing and transforming positive and favorable cultural factors of the social culture, it is to promote incessant improvement of the culture of innovation in institutes.

3.3 Systematicness The social culture, in itself, is a system, and the culture of innovation, as a part of social culture, is also a system. It is organic whole including interrelated, interdependent and interacting parts, which constitute ideology, institution, material form and other different levels and content, of the culture of innovation in agricultural research institutes. Although they have their own characteristics and are relatively independent, they are closely integrated as a whole. The culture of innovation and the research activities of institutes are an organic whole. The research activities are always and everywhere penetrating, influencing and restricting the development of the culture of innovation, while the culture of innovation also enhances research and innovation capacity through its "radiation" function. Therefore, the culture of innovation is not the simple accumulation of many factors, but an interactive and interpenetrative organic system, having an impact on research activities of research institutes.

3.4 Self-awareness The culture of innovation is not to force workers to comply with various rules, regulations and work discipline, but rather to highlight the "consciousness" on the culture of innovation, that is, the self-awareness and initiative of workers, is to inspire workers' self-consciousness to achieve the realm of self-control and self-discipline. In terms of scientific and technical personnel of the institutes, recognition of the culture of innovation in the institution is equivalent to recognition of a kind of moral constraint of this culture. Even if they did not agree with this culture of innovation at that time, they would also be constrained by atmosphere, environment, habits and other non-mandatory rules of the culture of innovation. Once breaching such soft constraint, it will be subject to public condemnation and system punishment.

3.5 Uniqueness There are many factors influencing the culture of innovation, such as the national policy, the traditional culture in institution, and quality of workers mentioned in the previous chapter, therefore, the culture of innovation in agricultural research institutes exists in social culture, with the general characteristics. In addition, due to disparity in types of institutes, industrial nature and development, the culture of innovation in agricultural research institutes is different. In different society, different nationalities, different organizations in different regions, the style of culture is different, and even if the environment, experimental platform, organization and management, system means of two institutes are similar, different characteristics may arise in the culture of innovation, which is determined by the internal and external factors of institutes. Thus, the culture of innovation is the embodiment of basic characteristics of agricultural research institutes, and specific embodiment of unique philosophy and style of an institute. The agricultural research institutes attach importance to characteristic of institution and its impact on the management, and emphasize that the institute should carry out effective management in accordance with its own characteristics and build the culture of innovation with its own characteristics.

4 The path to the innovative culture building of agricultural research institutes

According to the general laws of cultural development, the development of the culture of innovation can be broadly divided into several stages, and the building path of each stage is very different.

4.1 The stage of cultural diagnosis of institutes China’s agricultural research institutes have experienced decades of development, having a certain amount of cultural heritage\(^3\). Through extensive investigation, each institute should conduct serious analysis of the cultural status quo, summarize good experience and practices, identify problems and shortcomings, innovate in the process of succession, and make good preparation for the further development of the culture of innovation. For example, before Chinese Academy of Agricultural Sciences carries out the culture of innovation, through the survey and research, it finds that after 40 years of development, the whole institute has formed distinctive characteristics of culture as follows: strong patriotic feelings; great foresight and vision of exploring the leading edge of agricultural science and technology; people-oriented and research-oriented views, the scientific spirit of taking the national needs as target; democratic academic atmosphere of respecting knowledge and respecting talent; hardworking spirit of conquering the difficulties and going down to the grass-roots units; dedication spirit of working assiduously, focusing on scientific research, and providing services for scientific research. Under this incentive of outstanding culture, the Chinese Academy of Agricultural Sciences has achieved a number of scientific research results up to international advanced level, fostered and gathered a large number of excellent talents, and formed agricultural scientific technology innovation team with powerful research capacity, making significant contribution to the development of China’s agricultural science and technology. However, the wide publicity of whole institute on carrying out the cultural building is insufficient, the systematic summary is inadequate, the building thinking is not clear, and the promotion of experience is not enough. We need to crystallize the overall objective, guiding principle and building content in construction of the culture of innovation.

4.2 The stage of publicity and guidance The symbol of any mature culture is to become the people’s consciousness. As to the formation of the culture of innovation in institutes, the scientific workers are first required to agree on difference and individuality in concept, tolerating innovation failure, which requires considerable public opinion guidance. At the early stage of formation of the culture of innovation, with the reform and development of institutes, the culture of innovation in institutes begins to take shape. Especially in concept of the culture of innovation, a number of research institutes and scientific workers have realized the importance of innovation, gradually established the

\(1\) Chinese Academy of Agricultural Sciences

\(2\) It

\(3\) Chinese Academy of Agricultural Sciences
innovative values, and realized that only by innovation can we achieve great breakthrough and results in research work.

At this stage, we should step up publicity efforts, actively guide work, mobilize the masses to participate in the early work regarding building of the culture of innovation, use forms of training, experts’ teaching and organizing visit and inspection, and publicize the role and significance of building of the culture of innovation, so that all scientific staff in institute and cadres fully understand the necessity and importance of carrying out building of the culture of innovation, understand the basic content of building of the culture of innovation in institutes, to lay the wide ideological foundation for carrying out building of the culture of innovation.

4.3 The stage of content building of the culture of innovation

The stage is the key stage of building the culture of innovation. In this stage, through improving organization, increasing inputs, crystallizing responsibilities, and division of labour and cooperation, we are to strengthen guidance for building work of the culture of innovation in agricultural research institutes. Generally we should establish the building pattern of the culture of innovation that the staff play a part in actively and the director takes charge of. The party committee organizations implement the building pattern and youth and women organizations at all levels make concerted efforts to manage the building pattern of the culture of innovation. Based on the elements mentioned above, we should systematically build idea, system, behaviour and park culture one by one.

4.3.1 Establish advanced system of conceptual culture. The core of the culture of innovation is concept, and the essence of building the culture of innovation is the shaping of advanced concept. Mainly from the value orientation, forward-thinking, humanistic values, integrity spirit, the spirit of tolerance and other aspects, we should foster the values and the spirit of institutes, and create free, democratic, equal, and loose academic atmosphere.

4.3.2 Build system of behaviour culture conducive to innovation. The goal of the culture of innovation is to encourage people to innovate to the extreme, and give full play to people’s potential. This brings forward higher requirement on the academic atmosphere and humanistic environment of technological innovation. It should not only respect knowledge and respect talent, but also mobilize all forces that can be mobilized to inspire and motivate people to wholeheartedly engage in scientific and technological innovation activities, so that the technological innovation makes contribution to society, and ideals and social values are realized, leading to the most perfect and vivid unity of the value of science and technology, social value and personal value of creators.

4.3.3 Perfect mechanism of system culture conducive to innovation. To bind and regulate the conduct and discipline of workers, in the process of development, agricultural research institutes more or less develop organized institutions, management system, incentive system, personalization system and so on. These systems have features of the times, and over the time, some systems are certainly not well adapted to practical activities related to technological innovation, therefore, the agricultural research institutes need to sort out the existing systems incessantly, and do a good job in abolition, overhaul and establishment of institute system, that is, repeal the outdated systems, modify flawed systems and establish new vibrant systems, so that the majority of scientific workers have systems to conform to.

4.3.4 Establish system of park culture conducive to innovation. The system of park culture is the basis of the above three cultural systems, mainly including VIS (visual identification system), working conditions and environment building of institutes. In the VIS building, we can establish integral and coherent visual communication system taking standard font and standard color as the core, to translate the cultural ideas, cultural characteristics, service content, institute norms and other abstract semantic concepts into the concepts of concrete symbols, so as to create unique image of institutes. Working conditions and environment building of institutes mainly refer to the construction of hardware facilities, which needs careful design and a lot of capital inputs. Good working conditions and excellent institute environment can bring great impetus for people in work.

4.4 The stage of solidifying and deepening of the culture of innovation

Through vigorous building of the above three stages, the culture of innovation will achieve initial success. On the basis of this, we should pay attention to consolidation of the culture of innovation. Only the culture is implemented in the external manifestation and the spirit of workers can it show great vitality and great practicality. Therefore, in the process of building the culture of innovation, we should explain the connotation of conceptual culture timely through precept of institutes, songs of institutes, flag of institutes, emblem of institutes and other carriers. We should implement conceptual culture by reasonable system, and regulate and guide the behaviour of workers, so that the culture of innovation is visible, tangible, and usable, creating satisfactory effects.

Of course, the above four stages are not isolated, and there cannot be any clear demarcation point or boundary. They are classified just according to general time order. There is interrelated relationship between them. For example, at the second stage of publicity and guidance, it will be accompanied by the building and consolidation of the culture of innovation, namely following the principle of building along with publicity. Thus, in the process of formation of the culture of innovation, we can carry out the building at various stages.

5 Proposals for building the culture of innovation in agricultural research institutes

We should carry out the building of the culture of innovation, explore the outstanding cultural connotation in institute, invest the connotation with the national spirit taking patriotism as the core and the spirit of the times taking reform and innovation as the core, create atmosphere of innovation, and nurture creative talents and innovation results, to achieve sustainable development of institutes.
5.2 The building of the culture of innovation in agricultural research institutes should be combined with long-term development strategy and mid-and-long-term planning and the development of innovative culture building should be coordinated. We should stick to people-oriented principle, constantly exploit the core values and ideas of the culture of innovation, combine these ideas with long-term development and medium-term development strategies in institutes, and conduct rational planning, so that the building of the culture of innovation is carried out vigorously and effectively.

5.3 The building of the culture of innovation in agricultural research institutes should be combined with service and technology innovation and the system management should be perfected. We should take fostering liberal research environment and scientific innovation spirit as objective, realize deep integration of the culture of innovation and system management, give play to planning, organization, guidance, supervision and other management functions, and establish orderly, harmonious and efficient management system and operation mechanism.

References


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